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GRADE 10 MATHEMATICS

TEACHER TOOLKIT

CAPS Planner

TERMS 3 & 4

Jika iMfundo
what I do matters

ENDORSED BY

GRADE 10

Mathematics

Teacher Toolkit:
CAPS Planner

TERMS 3 & 4

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A. INTRODUCTION

This book is intended to help you cover the curriculum for Grade 10 Mathematics in Terms 3 and 4. There is a companion book for Terms 1 and 2. Teachers should keep these books to use from year to year.

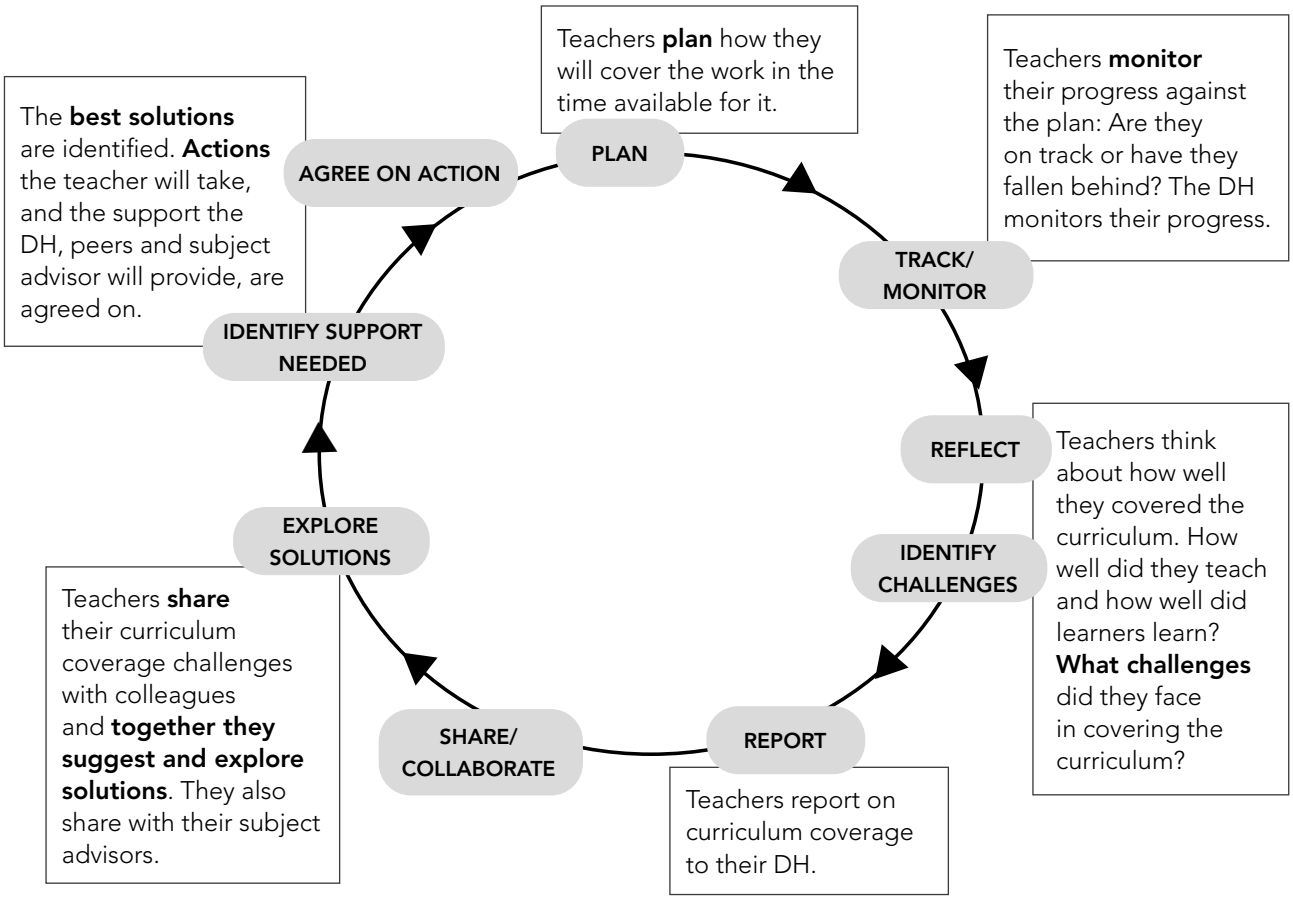
1. The need to improve curriculum coverage

In South Africa, too many learners drop out of school before Grade 12, and too few of those who reach Grade 12 do well in the NSC examinations. There are many reasons for such poor outcomes. One of the most important of these is that the curriculum is not covered each year. In other words, the teachers do not teach everything required by the CAPS in the year, and learners do not sufficiently understand the concepts and develop the skills that are taught. **Improving curriculum coverage is the key thing that teachers can do to improve learning outcomes.**

2. A cycle of activities that support improved curriculum coverage

Covering the curriculum is a complex task in which teachers face many challenges. However, there is a cycle of practices that can support curriculum coverage (see Figure 1). If these practices become routine in the school, curriculum coverage, and thus learners' outcomes, should improve.

Figure 1: The cycle of practices for supporting improved curriculum coverage



B. INFORMATION ABOUT RESOURCES IN THIS BOOK

In this book, you will find resources which will help you plan, track, reflect and report on curriculum coverage for the purpose of working collaboratively with peers and your department head (DH) and subject adviser to solve curriculum coverage problems. The resources are described below.

1. Planners for a daily programme of work

Later in this book there are planners that will help you plan what to teach each day in Term 3 and Term 4 (see Resources 1 and 2 in Section C). These planners provide a daily programme of work. There is a planner for all the books on the approved list of Learning and Teaching Support Materials (LTSMs) for Grade 10 Mathematics.

1.1 How planners link to the CAPS

Planners link the CAPS contents and skills to activities in the learner's book (LB) and teacher's guide (TG) of each set of LTSMs. The daily plan of activities ensures that time is allocated to all the work required by the CAPS in the term. Should you miss a lesson for any reason, it is important that you do not skip this lesson, but continue in the next lesson from where you left off.

Please note: The planners were compiled a few years ago, and the sequence of topics in them follows the annual teaching plan (ATP) of the KZN Department of Education at that time. Since then, the order of topics of the ATP has changed substantially. Please, therefore, follow the current ATP but use the relevant parts of the planners to help you plan the work to be done in the LTSM you are using.

In the CAPS, four-and-a-half hours have been allocated to Mathematics in the FET Phase each week. To comply with this, the planners give the content and skills for five 55-minute lessons each week.

1.2 The structure of the planners

The example of a planner below (Table 1) is Week 4 from *Mind Action Series* Term 3. It shows you how the planning for a week is arranged. The same layout, abbreviations and symbols are used in the planners for all the LTSMs for each term.

The table heading states the week of the term and the LTSM to which the planning is linked. Look at the notes to see what each column tells you.

Table 1: An example of a planner

MIND ACTION SERIES MATHEMATICS **Week 4**						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
16	Consolidation					
17	**Formal assessment: Trigonometry test (1 hour)** Review in Lesson 25					
18	**FUNCTIONS CAPS p. 24** **4. Point by point plotting of basic graphs defined by** **$y = \sin\theta$; $y = \cos\theta$; $y = \tan\theta$ for $\theta \in [0°;360°]$;** Plot basic trigonometric graphs	101–104	Basic graphs pp. 101–105 (draw own sketches)	–	pp. 158–159, 164–165, 171–172 Example 16 Example 18 Example 20	–
19	**FUNCTIONS CAPS p. 24** **5. Study the effect of a and q on the graphs defined by** **$y = a\sin\theta + q$; $y = a\cos\theta + q$; $y = a\tan\theta + q$** **where $a, q \in \mathbb{Q}$ for $\theta \in [0°;360°]$;** Investigate the effect of a and q on basic trigonometric graphs	105–111	Amplitude shifts p. 107 For you to do, Vertical shifts p. 108 For you to do	94	pp. 160–162, 165–168, 173–175 Investigation (no. 1–9) p. 160 Investigation (no. 1–9) p. 165 Investigation (no. 1–9) p. 173	–
20	Consolidation					

The columns, from left to right, give the following information:

- The number of the lesson in the term.
- The CAPS content and skills that are dealt with in each lesson, and the page in the CAPS where each topic or subtopic starts.
- The page number in the learner's book where content and work for learners can be found.
- The activity in the learner's book that should be done by the learners during the lesson.
- The page number in the teacher's guide where support is given for the work to be done.
- The page number in the *Siyavula Everything Maths* learner's book where there are activities related to the content. These are resources which you can use for teaching, revision, extension or consolidation, in class or for homework.
- The page number in the *Siyavula Everything Maths* teacher's guide where there is information to support the material in the learner's book.

Abbreviations and symbols used in the planners
• TG = teacher's guide • LB = learner's book
* = select (this indicates that teachers should choose some of the questions given in the activity referred to) # = supplement (this indicates that the activity/exercise referred to is insufficient, and teachers should provide additional examples)

1.3 How to use the planners

Plan for the term

- **Find the correct planner to use** – the one that gives the daily plans for the LTSM that you use mostly in your class. You can of course use the others to help you find additional or alternative activities related to the same skills and concepts.
- **Check the length of the term against the number of weeks in the planner.** The planners for **Term 3** are based on a third term of eleven weeks. The content is covered and one of the required tests written in the first ten weeks and the final week is set aside for the second test. **Term 4** has plans for a term that is nine weeks long. The content is covered and one test written in the first four weeks. Weeks 5 and 6 are allocated to revision and going over the test, and Weeks 7 to 9 to the end-of-year examinations.

  The planners remain the same from year to year, but the school calendar does not. If the term in any year is of a different length, or if your school allocates more or less time for end-of-term tests and examinations than is in the planner, you will have to adjust your planning accordingly. It is very important to do this planning at the beginning of the term so that you neither rush through the work when you in fact have more time for it than allocated in the planner, nor find that you have followed the pace of the planner, but run out of teaching time.

Plan for lessons

- **Compare your timetable with the number of lessons in the week, and the length of each lesson.** In the planners, there are five lessons of 55 minutes each per week. If you do not have five periods of this length each week, you will need to adjust the programme for each lesson in the planner to fit the length and number of your lessons.
- **Plan and prepare for each lesson.** The planners give support for the planning of a programme of work. They do not offer help with detailed lesson planning or preparation.

  Planning for a lesson involves drawing up a plan of action. A lesson plan should include an introduction, sequenced content and activities for learners to work on individually or in groups, a conclusion, and homework activities to consolidate the learning of the day or to prepare for the next day's lesson where possible. No lesson plan templates are provided here. You should use the one you prefer or that is specified by your school/subject adviser.

When preparing for a Mathematics lesson you should:

- make sure that you understand every aspect of the content knowledge and skills addressed in the lesson;
- consider relevant prior knowledge that the new work builds on, how you will check that learners have this knowledge, and how you will help close any gaps from the past;
- think carefully about how best to help learners understand new work and develop new skills;
- work through each of the learner activities yourself, noting alternative answers where necessary, and making notes on possible learner difficulties in relation to the activities;
- ensure that any resources you need to use in the lesson are available;
- decide how you will pair/group your learners;
- check in your teacher's guide and learner's book for enrichment/challenge activities for learners who have completed their work and/or need a challenge; and
- see where there are remedial and support activities for learners who have barriers to learning.

These brief points are elaborated on in Resource 3 in Section C.

2. Plans for assessment

Curriculum coverage requires teachers to teach the content given in the CAPS each term/year. It also requires that learners understand the concepts and develop the skills that are taught. Thus, assessment gives vital information about how well the curriculum is being covered. It tells teachers which topics or aspects of topics learners are struggling with, and how many learners are managing well, just coping, or struggling. Teachers need to reflect on possible reasons for and implications of these patterns of achievement, thinking about, for example, what they tell of the efficacy of their teaching methodology and how it could be improved, what feedback they can give learners to encourage and support improvement, and whether they can move on to new work, or need to remediate that which has already been taught.

The CAPS requires that teachers assess their learners' progress by means of both informal and formal assessment, and resources in this book assist teachers with planning for both.

2.1 Informal assessment

Informal assessment is ongoing and part of the teaching process as teachers listen to learners' responses and questions in class, and check their classwork and homework books. No record of the marks for informal assessment needs to be kept, but recording some of these will help you monitor learners' progress.

The CAPS for Mathematics in the FET Phase does not specify exactly what needs to be done for informal assessment, and consequently the planners do not schedule informal assessment activities. Teachers should use their discretion in this regard. All the LTSMs include activities that are either intended to be used for informal assessment, or which could effectively serve this purpose. You should think about which to use when you do your planning. Occasionally suggestions are made in the planners.

2.2 Formal assessment

Formal assessment is assessment for which marks are recorded. In South African schools, these marks should be entered into SA-SAMS.

The resources in this book help you plan when your learners will complete formal assessment tasks. Knowing this helps you to plan related activities such as when tasks and marking guidelines will be moderated, when marking will be completed and moderated, when marks will be recorded, and when feedback will be given to learners. All these activities are important in ensuring that assessment is at the correct level and that information from it can be used to support improved curriculum coverage.

Formal assessment tasks specified in the CAPS

The CAPS specifies two formal assessment tasks for Term 3 (both tests) and two for Term 4 (a test and the end-of-year examination).[1]

Formal assessment programmes in the LTSMs and planners

Resource 5 in Section C shows how the formal assessment tasks are integrated into the planners for Terms 3 and 4 respectively. They show when tasks are scheduled in the planner for each of the LTSMs. A note is also made of this date in the planners themselves by writing **Formal assessment** in the CAPS content column. You will see an example of this in Table 1, Lesson 17. Resource 5 also gives some information on what resources for formal assessment are provided in the LTSMs.

Not all the LTSMs provide an example of all the assessment activities required for the assessment tasks, and some of those provided might not be suitable for your class. Some provide an exemplar test or examination in the learner's book, making it unsuitable for use as a formal assessment task as learners can prepare for it in advance. It is therefore essential that you check the assessment activities carefully before giving them to the learners and, if necessary, adapt them, set your own, use examples from a different set of LTSMs or provided in Section C of this planner, use one provided by the district/province. If you use centrally set common tests, the resources in the LTSMs and in this book can be used for practice.

The dates in the assessment programme provided for your LTSM might not suit your context for some reason. You should be sure to check this, and schedule dates that are more appropriate where necessary.

1 The DBE makes changes to the assessment requirements from time to time. In such instances, you might need to change the assessment programme shown here to align with the revised requirements.

3. Resources to support content knowledge, pedagogy and assessment practices

Sound content and pedagogical knowledge and teaching and learning resources enable teachers to support learning, and thus have a positive impact on curriculum coverage. For this reason, where appropriate, guidelines for teaching certain topics or skills, explanatory information about the content, suggestions for sound structuring of lessons and exemplar assessment tasks are provided in this series of books. Below is a brief description of resources provided in the Resources section of this book.

3.1 Guidelines for preparing and presenting a Mathematics lesson

Section 1.3 above drew attention to the need for thorough preparation for a Mathematics lesson to be successful, and gave some brief pointers to effective preparation. Resource 3 in Section C gives more detail about the points made in 1.3, as well as suggestions for how to structure the main activities in a lesson. Following this format in most lessons will ensure that time is allocated to both the learning of new concepts and skills and opportunities for practising and consolidating these.

Note that the times suggested in Resource 3 in Section C are for a lesson of about one hour. You will need to make appropriate adjustments if you have lessons of a different length.

3.2 Supplementary information for Term 4

Resources 4.1 and 4.2 offer information which teachers can share with their learners.

The first provides detailed descriptions of how to use two different scientific calculators to find the mean of data with no repeats and in a frequency table.

The second provides information that explains the surface area of a cone formula and practical ways for finding the formulae of the surface area of a sphere, the volume of a sphere and the volume of a pyramid. It is hoped that these resources will help teachers to better support their learners and so contribute to improved curriculum coverage.

3.3 Exemplar Term 3 tests, memorandums and analyses of cognitive levels

Two exemplar tests are provided for Term 3. The first (Resource 6) is a trigonometry test of one hour. The second (Resource 9) is a 90-minute end-of-term test covering a range of topics. A marking memorandum together with an analysis of cognitive levels is provided for each test (Resources 7 and 10). Resources 8 and 11 show the weighting of marks in the tests across the cognitive levels compared with the weighting specified in the CAPS (p. 53).

3.4 An exemplar end-of-year test, memorandum and analysis of cognitive levels

Resource 12 is an exemplar end-of-year test, covering statistics and measurement. Resource 13 is the marking memorandum with an analysis of the cognitive level of each question. Resource 14 shows the weighting of marks in the test across the cognitive levels compared with those specified by the CAPS (p. 53).

It is probable that learners will write a provincially set common end-of-year examination. For this reason, we have not provided an end-of-year examination exemplar.

Assessment resources described in 3.3 and 3.4 above support curriculum coverage by:

- providing assessment tasks that are fully CAPS compliant, and which have been approved by district advisers (this ensures that learners will be assessed at the correct standard);
- providing correct marking guidelines so that learners' work will be marked to the same standard across different markers; and
- supporting teachers' ability to work with the levels of questions required by the CAPS by providing a detailed analysis of the levels of questions asked in the tasks (this strengthens their ability to set assessment tasks that comply with the weighting of cognitive levels themselves in future).

You can photocopy and use the exemplar tests as they are for formal or informal assessment, or adapt them in ways that make them more useful to you.

3.5 Exemplar formal assessment mark record sheets

Resource 15 provides templates on which to record formal assessment marks for Term 3 and Term 4 to help you see how individual learners are progressing, and which topics might need remedial work. Should you wish, you could also record any informal assessment marks that you have to give a fuller picture.

3.6 A template for tracking, reflecting and reporting for collaborative problem solving

Planning is one activity on the curriculum coverage support cycle (Figure 1), and you have seen how the material in this book supports teachers with planning. The templates provided as Resource 16 in Section C are tools to assist teachers with other aspects of the cycle. There is a template to use in conventional schools, and one for use in multigrade schools. The template for conventional schools is reproduced below, with annotations that show how it is used as a tool for curriculum coverage support. The template for multigrade schools works in the same way.

Teachers should print a copy of the relevant template for each week of the term and use it together with the teaching plan for that week. This teaching plan could be the planner for their LTSM in this book or the ATP or another daily planning resource. They record curriculum coverage information and their reflection on it for all the Mathematics lessons with each class they teach in the week.

Note that dates are not given in the tracking and reflecting template. Teachers should fill two dates into the spaces at the top of the template. Firstly, they should record the week in the planner when the work they are doing is scheduled to be done; secondly, they should record the week when they in fact are starting that work. These dates will help them see how well they are keeping up with the pace set in the planner they are following.

This is the no. of the week in the planner that is being followed.

This is the no. of the week in the term when the work actually starts. If curriculum coverage is behind, this might be a later week than the week in the planner.

Week no. in planner _____

Week no. in term when work planned for week started _____

Refer to the planner for details of the week's work (or the ATP for subjects without planners)

Class (or subject for FP)				
On track by end of week? (Yes/no)				
How many learners are working confidently? (Rough estimate)				
How many learners in this class?				

At the end of the week, the teacher uses evidence from informal and formal assessment, to estimate for each class how many learners out of the total are working confidently at Level 4 or above. They use this information, together with the amount of work planned that they have taught, to state whether or not their curriculum coverage is on track.

DAY	**BRIEF NOTES ON THE DAY'S WORK: Consider such things as:** *What concepts/skills did the learners struggle with or manage well in this lesson? What could be the reasons for this? Did the class complete the work you had planned? Do you need to change your plans for the next lesson? What changes will you make?*
1	
2	
3	
4	
5	

Prompts for daily reflection.

Each day, the teacher reflects on how their lesson went, and how they could improve it using the prompts provided. They also think about whether or not they can proceed as planned in the next lesson. This is a professional judgement they make based on informal and formal assessment. They note the main points here.

Reflection on the week:	
What concepts and skills for the week did learners struggle with? What could you do differently next time to better support or extend learning? What good practice could you share?	**Did you cover the curriculum for the week? If not, what were some of the challenges? What can you do to catch up? What help do you need? How will your progress this week affect your plan for next week?**
DH:	**Date:**

At the end of the week, the teacher reflects on the week's teaching and learning. They think about what learners found difficult, and how they can change their practice so learning improves.

At the end of the week, the teacher considers whether or not the work planned for the week has been taught and learnt, and if not, what can be done to solve curriculum coverage problems and get back on track.

The teacher writes their reflections here for their own professional development, but also to share them with their DH to get support in solving problems.

At the end of the week, the DH reads the teacher's reflections and record of curriculum coverage and signs the template. S/he uses the information shared in a supportive conversation with the teacher. Together they consider any curriculum coverage problems the teacher faces and work towards finding solutions.

1. PLANNERS FOR TERM 3

1.1 *Classroom Mathematics*

CLASSROOM MATHEMATICS Week 1 * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
1	**TRIGONOMETRY CAPS p. 23** **Define the trigonometric ratios sin θ, cos θ and tan θ using right-angled triangles;** Investigate the trigonometric ratios for sin θ, cos θ, tan θ Note: All Grade 10 work involves only right-angled triangles.	101–102	5.1 (no. 1–6) Note: no. 6 should read: Show △ABC|||△XYZ	174	pp. 218–220 Investigation (Need geometry sets)	36 127
2	Define the trigonometric ratios for sin θ, cos θ, tan θ	103–108	5.2 (no. 1–7)*	175	pp. 220–221, 224–226 7-1 (no. 1, 4)	129
3	**TRIGONOMETRY CAPS p. 23** **Define the reciprocals of the trigonometric ratios functions cosec θ, sec θ, cot θ, using right-angled triangles (these three reciprocals should be examined in Grade 10 only);** Define the reciprocal functions cosec θ, sec θ, cot θ	113 124	5.9 (no. 1: 2nd row) 5.5 (no. 1a–l)*	181 189	p. 222#	–
4	Use a calculator to determine values of trigonometric ratios given the angle	109–110	5.3 (no. 1–2)*	178	p. 223 7-1 (no. 2, 3)	129
5	**TRIGONOMETRY CAPS p. 23** **Derive values of the trigonometric ratios for the special cases (without using a calculator) θ ∈ {0°; 30°; 45°; 60°; 90°};** Derive and use values of the trigonometric ratios for θ ∈ {0°; 30°; 45°; 60°; 90°}	123 107–108 124	5.2 (no. 8–9) 5.9 (no. 1: top row only, 2)	176	pp. 224–228 7-1 (no. 5, 6) 7-2 (no. 1, 2)	129 130

CLASSROOM MATHEMATICS Week 2 * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
6	Consolidation					
7	**TRIGONOMETRY CAPS p. 23** **Solve simple trigonometric equations for angles between 0° and 90°** Refer to graphs to see the angle ratio ⟷ relationship	111	5.4 (no. 1a–p) Graphs: p. 127	179	pp. 231–232 7-4 (no. 1a–o)* Graphs pp. 159, 165, 172	133
8	**TRIGONOMETRY CAPS p. 23** **Solve two-dimensional problems involving right-angled triangles;** Determine side lengths in 90° triangles	114	5.6 (no. 1–5)*	182	pp. 227–230 7-2 (no. 3) 7-3 (no. 1–3)*	130 133
9	Determine angles in 90° triangles	117	5.7 (no. 1, 2)#	185	pp. 231–232 7-4 (no. 2)	133
10	Consolidation					

CLASSROOM MATHEMATICS Week 3 * Select						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
11	**TRIGONOMETRY CAPS p. 28** **Problems in two dimensions;** Working in more than one triangle	343–354	15.1 (no. 1–7)*	412	pp. 234–236, 248–250 ex. 6 p. 234 End of chapter exercises (no. 4, 7, 8)	139
12	Calculations involving angles of elevation and depression	346–349	15.2 (no. 1–13)*	416	pp. 233–234, 236–240 7-5 (no. 1–4)	135
13	**TRIGONOMETRY CAPS p. 23** **Extend the definitions of sin θ, cos θ, tan θ for 0° ≤ θ ≤ 360°;** **Use diagrams to determine the numerical values of ratios for angles from 0° to 360°**	119	5.8 (no. 1–6)*	186	pp. 241–247 7-6 (no. 1–3)	136
14	Consolidation					
15	Revision and extension	352–354	15.4 (no. 1–8)*	422 425	pp. 248–250 End of chapter exercises (no. 1–3, 5, 6, 9–15)*	139

CLASSROOM MATHEMATICS Week 4 * Select						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
16	Consolidation					
17	**Formal assessment: Trigonometry test (1 hour)** Review in Lesson 25					
18	**FUNCTIONS CAPS p. 24** **4. Point by point plotting of basic graphs defined by $y = \sin\theta$; $y = \cos\theta$; $y = \tan\theta$ for $\theta \in [0°;360°]$;** Plot basic trigonometric graphs	125–127	5.10 (no. 1–5)	190	pp. 158–159, 164–165, 171–172 ex. 16, 18, 20	–
19	**FUNCTIONS CAPS p. 24** **5. Study the effect of a and q on the graphs defined by $y = a\sin\theta + q$; $y = a\cos\theta + q$; $y = a\tan\theta + q$ where $a, q \in \mathbb{Q}$ for $\theta \in [0°;360°]$;** Investigate the effect of a and q on basic trigonometric graphs	180–187	8.6 (no. 1–6)	233	pp. 160–162, 165–168, 173–175 Investigation (no. 1–9) p. 160 Investigation (no. 1–9) p. 165 Investigation (no. 1–9) p. 173	–
20	**FUNCTIONS CAPS p. 24** **6. Sketch graphs;** Note: Sketching of the graphs must be based on the observation of number 5. Sketch $y = a\sin\theta + q$; $y = a\cos\theta + q$; $y = a\tan\theta + q$	187–190	8.7 (no. 1, 5)* Use $x \in [0°;360°]$	235	pp. 163–164, 169–170, 176–177, 184 5–6 End of chapter exercises (no. 9a–e)	105 106

CLASSROOM MATHEMATICS Week 5

* Select # Supplement

Lesson	CAPS concepts and skills	LB pp.	LB ex.	TG pp.	*Siyavula Everything Maths*	
					LB ex.	TG pp.
21	Consolidation					
22	**FUNCTIONS CAPS p. 24** **6. Find the equation of given graphs and interpret graphs;** Determine equations of and interpret trigonometric graphs	180–190	8.6 (no. 7) 8.7 (no. 2–4)	233 235	pp. 183–184, 177, 185–191 5–6 (no. 2a–b) End of chapter exercises (no. 10e–g, 17)	105 106
23	Consolidation					
24	Revision and extension	128–130 131–133	5.11 (no. 1–6)* 5.12 (no. 1–3)* 6.1 (no. 13)	192 194 200	pp. 185–191 End of chapter exercises (no. 14)#	106
25	Consolidation; Go over trigonometry test					

CLASSROOM MATHEMATICS Week 6

* Select # Supplement

Lesson	CAPS concepts and skills	LB pp.	LB ex.	TG pp.	*Siyavula Everything Maths*	
					LB ex.	TG pp.
26	**FINANCE AND GROWTH CAPS p. 26** **Use the simple and compound growth formulae $A = P(1 + in)$ and $A = P(1 + i)^n$ to solve problems including annual interest;** Compare the effects of simple and compound interest; Derivation (optional) of the simple interest formula: $A = P(1 + in)$	261–263	Example p. 262: do as an exercise	–	pp. 192–193, 203–205	–
27	Derivation (optional) of the compound interest formula: $A = P(1 + i)^n$ Calculate values for A and I (interest in Rand) using the simple and compound interest formulae	264–266	12.1 (no. 1–5, 9)*	331	pp. 194–200 6-1 (no. 1–3) (n is calculated in Question 3) p. 198 6-2 (no. 1) (# calculating I)	117 119
28	Calculate values for P and i (hence r) using the simple and compound interest formulae	265–267	12.1 (no. 6–8) 12.2 (no. 1–4)	332 334	pp. 197–202, 205 6-1 (no. 4) (# calculating P) 6-2 (no. 2, 3)	117 119
29	**FINANCE AND GROWTH CAPS p. 26** **Use the simple and compound growth formulae $A = P(1 + in)$ and $A = P(1 + i)^n$ to solve problems including hire purchase** Note: $A = P(1 + in)$ is used for Hire Purchase.	268	12.3 (no. 1–7)*	335	pp. 205–209 6-3 (no. 1–3)	120
30	**FINANCE AND GROWTH CAPS p. 26** **Use the simple and compound growth formulae $A = P(1 + in)$ and $A = P(1 + i)^n$ to solve problems including inflation** Note: $A = P(1 + i)^n$ is used for inflation.	271–273	12.4 (no. 1–2) 12.5 (no. 1–8)*	337 338	pp. 209–211, 213 6-4 (no. 1, 2)#	121

CLASSROOM MATHEMATICS Week 7 * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
31	**FINANCE AND GROWTH CAPS p. 26** **Use the simple and compound growth formulae $A = P(1 + in)$ and $A = P(1 + i)^n$ and to solve problems including population growth and other real life problems** Note: $A = P(1 + i)^n$ is used for population growth.	274–275	12.6 (no. 1–4) Enrichment: 12.6 (no. 5) [This is done in matric using logs]	340	pp. 212–213 6-4 (no. 3)#	121
32	Revision and extension	285–286	Check your skills 12.9 (no. 1–4, 7) Extend your skills 12.10 (no. 4–5)	347 349	pp. 215–217 End of chapter exercises (no. 1–10)* p. 216	123
33	**FINANCE AND GROWTH CAPS p. 26** **Understand the implication of fluctuating foreign exchange rates (e.g. on the petrol price, imports, exports, overseas travel)**	276–279	12.7 (no. 1–10)*	342	pp. 213–215 6-5 (no. 1–2)	122
34	**PROBABILITY CAPS p. 29** See https://apps.statssa.gov.za/censusatschool/docs/FET_Study_Guide.pdf **1. The use of probability models to compare the relative frequency of events with the theoretical probability;** Revise the language of probability Note: If no practical work with coins, dice, counters, etc. was done in Grade 8 or 9, see *Platinum Mathematics* LB p. 290 ex. 1 (no. 1–3) or *Mind Action Series Mathematics* TG pp. 246–247.	375 378–382 384–385	17.1 (no. 1a–b, 4a–c) 17.2 (no. 1a–c, 2a–c, 3a–c, 4a–b, 5a)* 17.3 no. 1a, b, d)	450 452 453	pp. 321–324#	–
35	Calculate the theoretical probability and the relative frequency of events happening	385–390	17.3 (no. 6, 5) 17.4 (no. 1–7)*	453 456	pp. 325–331 10-1 (no. 1–5) p. 326	173

CLASSROOM MATHEMATICS Week 8 * Select						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
36	**PROBABILITY CAPS p. 29** **2. The use of Venn diagrams to solve probability problems** Use Venn Diagrams to solve problems Note: Use only two events in Grade 10 Venn diagrams.	380 382–386	17.3 (no. 2–4, 7) 17.5 (no. 1–2, 4–5)	453 458	pp. 331–335 10-2 (no. 1, 3) p. 334	174
37	**PROBABILITY CAPS p. 29** **2. … deriving and applying the following for any two events A and B in a sample space S: $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$;** Derive and use $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ See *Siyavula Everything Maths* pp. 355–336 for a visual representation of union and intersection	391 395–397	17.6 (no. 7, 10a Ignore: A multiple of 3 is drawn: M) *Note:* The answer to 7b (iii) should be $\frac{1}{12}$	460	pp. 335–340, 341–344 10-3 (no. 1a–c, 2a–d)	177

Lesson	CAPS concepts and skills	LB pp.	LB ex.	TG pp.	*Siyavula Everything Maths*	
					LB ex.	TG pp.
38	**PROBABILITY CAPS p. 29** **2. … deriving and applying the following for any two events A and B in a sample space S:** **… A and B are mutually exclusive if $P(A$ and $B) = 0$;** **A and B are complementary if they are mutually exclusive, and $P(A) + P(B) = 1$;** **Then $P(B) = P(\text{not } (A)) = 1 - P(A)$** Determine probabilities when events are mutually exclusive or complementary Note: It is preferable to write **not (A)** and not to use the notations or the complement of A.	383 392–397	Example p. 383 part f Calculate **probabilities** for ii–v 17.6 (no. 1–6, 8–9, 11)*	– 460	pp. 338–344 10-3 (no. 1d, 2e, 3a–h)	177
39	Consolidation					
40	Revision and extension	398–400	17.7 (no. 1–9)* 17.8 (no. 1–4)*	464–466	pp. 344–348 End of chapter exercises (no. 1–9, 12–15)*	180

CLASSROOM MATHEMATICS Week 9

* Select

Lesson	CAPS concepts and skills	LB pp.	LB ex.	TG pp.	*Siyavula Everything Maths*	
					LB ex.	TG pp.
41	**ANALYTICAL GEOMETRY CAPS p. 26** **Represent geometric figures on a Cartesian co-ordinate system**	239–241	11.1 (no. 1*–2)	304	pp. 251, 281 End of chapter exercises (no. 1)*	16 153
42	**ANALYTICAL GEOMETRY CAPS p. 26** **Derive and apply for any two points (x_1, y_1) and (x_2, y_2) the formulae for calculating the:** **1. distance between the two points** Note: 1. Plot points for each question on the Cartesian Plane. 2. Letters may also be used for co-ordinates. For example, the co-ordinates of A can be written $(x_A; y_A)$. Derive the 'distance' formula; Use the 'distance' formula when the co-ordinates of the given points are numerical	242–247	11.2 (no. 1–2, 4, 6–8)*	307	pp. 251–255, 256–257, 281 Investigation 8-1 (no. 1) End of chapter exercises (no. 3)	16 145 153
43	Use the 'distance' formula to calculate unknown co-ordinates	244–247	11.2 (no. 3*, 5)	307	pp. 255–257 8-1 (no. 2)	145
44	**ANALYTICAL GEOMETRY CAPS p. 26** **Derive and apply for any two points (x_1, y_1) and (x_2, y_2) the formulae for calculating the:** **3. coordinates of the mid-point of the line segment joining the two points** Note: The symbol for midpoint is **M** (uppercase). Derive the 'mid-point' formula; Use the 'mid-point' formula to calculate the co-ordinates of the mid-point of a line segment	248–252	11.3 (no. 1, 3–4, 6)*	317	pp. 272–276, 279, 281–283 Investigation 8-4 (no. 1) End of chapter exercises (no. 8)	147 153
45	Use the 'mid-point' formula when the midpoint is known	249–252	11.3 (no. 2, 5, 7)	317	pp. 276–283 8-4 (no. 2–3) End of chapter exercises (no. 6)	147 153

CLASSROOM MATHEMATICS Week 10 * Select						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
46	**ANALYTICAL GEOMETRY CAPS p. 26** **Derive and apply for any two points (x_1, y_1) and (x_2, y_2) the formulae for calculating the:** **2. gradient of the line segment connecting the two points (and from that identify parallel and perpendicular lines)** Note: The symbol for gradient is **m** (lowercase). Derive the 'gradient' formula; Use the 'gradient' formula (when the co-ordinates of the given points are numerical) to determine gradients and prove whether lines are parallel or perpendicular to each other	253–255, 257	11.4 (no. 1–4)*	319	pp. 257–259 261 264–268 271 8-2 (no. 1) 8-3 (no. 1)	147
47	Use the 'gradient' formula (when the co-ordinates of the given points are numerical) to prove that points are collinear (lie on the same straight line) Note: The 'distance' formula could also be used to prove points are collinear; See *Siyavula Everything Maths* p. 269.	256–257	11.4 (no. 5, 7)	322	pp. 268–271 281–283 8-3 (no. 2) End of chapter exercises (no. 9e)	147 153
48	Use the 'gradient' formula to calculate unknown co-ordinates	256–257	11.4 (no. 6, 8)	322	pp. 260–261, 266–267, 271 8-2 (no. 2) 8-3 (no. 3, 4)	147
49	Revision and extension; Also see *Mind Action Series Mathematics* TG pp. 186–187	258–260	Check your skills 11.5 (no. 1–8)* Extend your skills 11.6 (no. 1–8)*	325	pp. 281–283 End of chapter exercises (no. 2, 4–5, 7, 9–12)*	153
50	Term 3 revision	401–416	18.1* 18.2* 18.3*	471–488	#	#

CLASSROOM MATHEMATICS Week 11 **End-of-term test (90 minutes); Review end-of-term test and remediate**

1.2 *Mind Action Series*

MIND ACTION SERIES MATHEMATICS Week 1 * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
1	**TRIGONOMETRY CAPS p. 23** **Define the trigonometric ratios sin θ, cos θ and tan θ using right-angled triangles;** Investigate the trigonometric ratios for sin θ, cos θ, tan θ Note: All Grade 10 work involves only right-angled triangles.	77–80	Investigation 1, 2 (Need rulers)	–	pp. 218–220 Investigation (Need geometry sets)	36 127
2	Define the trigonometric ratios for sin θ, cos θ, tan θ	81–82	1 (no. 1, 2)	86	pp. 220–221, 224–226 7-1 (no. 1, 4)	129
3	**TRIGONOMETRY CAPS p. 23** **Define the reciprocals of the trigonometric ratios functions cosec θ, sec θ, cot θ, using right-angled triangles (these three reciprocals should be examined in Grade 10 only);** Define the reciprocal functions cosec θ, sec θ, cot θ	88–90	5 (no. 1, 2)	88	p. 222 #	–
4	Use a calculator to determine values of the trigonometric ratios given the angle	82–83	2 (no. 1, 2)*	86	pp. 223–226 7-1 (no. 2, 3)	129
5	**TRIGONOMETRY CAPS p. 23** **Derive values of the trigonometric ratios for the special cases (without using a calculator) θ ∈ {0°; 30°; 45°; 60°; 90°};** Derive and use values of the trigonometric ratios for θ ∈ {0°; 30°; 45°; 60°; 90°}	83–87	# 3 (no. a–j)	– 87	pp. 224–228 7-1 (no. 5, 6) 7-2 (no. 1, 2)	129 130

MIND ACTION SERIES MATHEMATICS Week 2 * Select						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
6	Consolidation					
7	**TRIGONOMETRY CAPS p. 23** **Solve simple trigonometric equations for angles between 0 and 90°;** Refer to graphs to see the angle ⟷ ratio relationship	87–88	4 (no. a– r)* Graphs pp. 101, 102, 104	88	pp. 231–232 7-4 (no. 1a–o)* Graphs pp. 159, 165, 172	133
8	**TRIGONOMETRY CAPS p. 23** **Solve two-dimensional problems involving right-angled triangles;** Determine side lengths in 90° triangles	90–92	6 (no. 1–3)	89	pp. 227–230 7-2 (no. 3) 7-3 (no. 1–3)*	130, 133
9	Determine angles in 90° triangles	92–93	7 (no. 1, 2, 4)	90	pp. 231–232 7-4 (no. 2)	133
10	Consolidation					

MIND ACTION SERIES MATHEMATICS Week 3 * Select						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
11	**TRIGONOMETRY CAPS p. 28** **Problems in two dimensions;** Working in more than one triangle	90–93	6 (no. 4, 5) 7 (no. 3, 5)	89	pp. 234–236, 248–250 End of chapter exercises (no. 4, 7–8)	139
12	Calculations involving angles of elevation and depression	94–96	8 (no. 1–4)	90	pp. 233–234, 236–240 7-5 (no. 1–4)	135
13	**TRIGONOMETRY CAPS p. 23** **Extend the definitions of sin θ, cos θ, tan θ for 0° ≤ θ ≤ 360°;** **Use diagrams to determine the numerical values of ratios for angles from 0° to 360°**	97 99 –100	10 (no. 1–8)*	91	pp. 241–247 7-6 (no. 1–3)	136
14	Consolidation					
15	Revision and extension	112–117	Mixed revision exercise (no. 1–9)* Some challenges (no. 1–4)*	97 101	pp. 248–250 End of chapter exercises (no. 1–3, 5–6, 9–15)*	139

MIND ACTION SERIES MATHEMATICS Week 4						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
16	Consolidation					
17	**Formal assessment: Trigonometry test (1 hour)** Review in Lesson 25					
18	**FUNCTIONS CAPS p. 24** **4. Point by point plotting of basic graphs defined by** **y = sin θ; y = cos θ; y = tan θ for θ ∈ [0°;360°];** Plot basic trigonometric graphs	101–104	Basic graphs pp. 101–105 (draw own sketches)	–	pp. 158–159, 164–165, 171–172 Example 16 Example 18 Example 20	–
19	**FUNCTIONS CAPS p. 24** **5. Study the effect of a and q on the graphs defined by** **$y = a$ sin θ + q; $y = a$ cos θ + q; $y = a$ tan θ + q** **where a, q ∈ ℚ for θ ∈ [0°;360°];** Investigate the effect of a and q on basic trigonometric graphs	105–111	Amplitude shifts p. 107 For you to do, Vertical shifts p. 108 For you to do	94	pp. 160–162, 165–168, 173–175 Investigation (no. 1–9) p. 160 Investigation (no. 1–9) p. 165 Investigation (no. 1–9) p. 173	–
20	Consolidation					

MIND ACTION SERIES MATHEMATICS Week 5 # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
21	**FUNCTIONS CAPS p. 24** **6. Sketch graphs** Note: Sketching of the graphs must be based on the observation of number 5. Sketch, determine equations of and interpret trigonometric graphs	109–111	11 (no. 1–3)	95	pp. 163–164, 169–170, 176–177 (Use $\theta \in \{0°; 90°; 180°; 270°; 360°\}$ to sketch the graphs), 184 5-6 (no. 1a–f) End of chapter exercises (no. 9a–e)	105 106
22	As above	109–111	11 (no. 4–6)	95	pp. 183–184, 177 185–191 5-6 (no. 2a–b) End of chapter exercises (no. 10e, 10g, 17)	105 106
23	Consolidation					
24	Revision and extension	112–115	Mixed revision exercise (no. 10, 11)#	97	pp. 185–191 End of chapter exercises (no. 14)#	106
25	Consolidation; Go over trigonometry test					

MIND ACTION SERIES MATHEMATICS Week 6 # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
26	**FINANCE AND GROWTH CAPS p. 26** **Use the simple and compound growth formulae $A = P(1 + in)$ and $A = P(1 + i)^n$ to solve problems including annual interest;** Derivation (optional) and use of the simple interest formula: $A = P(1 + in)$ to calculate values for A and I (interest in Rand)	225–228	1 (no. 1, 2)	190	pp. 192–196, 198 6-1 (no. 1, 2)	117
27	Use of the simple interest formula: $A = P(1 + in)$ to calculate values for P, n and i (hence r)	226–228	1 (no. 3–9)	190	pp. 196–198 6-1 (no. 3, 4)#	117
28	**FINANCE AND GROWTH CAPS p. 26** **Use the simple and compound growth formulae $A = P(1 + in)$ and $A = P(1 + i)^n$ and to solve problems including hire purchase** Note: Is used for Hire Purchase.	228–230	2 (no. 1–6)	190	pp. 205–209 6-3 (no. 1–3)	120
29	Consolidation					
30	Derivation (optional) of the compound interest formula: $A = P(1 + i)^n$; Calculate values for A, P and i (hence r) using the compound interest formula; Compare the effects of simple and compound interest	230–234	3 (no. 1–7)	192	pp. 199–205 6-2 (no. 1–3)	119

MIND ACTION SERIES MATHEMATICS **Week 7** * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
31	**FINANCE AND GROWTH CAPS p. 26** **Use the simple and compound growth formulae $A = P(1 + in)$ and $A = P(1 + i)^n$ and to solve problems including inflation, population growth and other real life problems;** # Population growth Note: Is used for inflation and population growth.	234–235#	4 (no. 1–3)#	192	pp. 209–211, 213 6-4 (no. 1–3)#	121
32	**FINANCE AND GROWTH CAPS p. 26** **Understand the implication of fluctuating foreign exchange rates (e.g. on the petrol price, imports, exports, overseas travel)**	236–238	5 (no. 1–10)	193	pp. 213–215 6-5 (no. 1, 2)	122
33	Revision and extension	230–240	Mixed revision exercise (no. 1–7)* Some challenges (no. 1–4)* (3 and 4 involve changing r and P values –timelines; This is usually done in Grade 11)	194 195	pp. 215–217 End of chapter exercises (no. 1–10)*	123
34	**PROBABILITY CAPS p. 29** See https://apps.statssa.gov.za/censusatschool/docs/FET_Study_Guide.pdf **1. The use of probability models to compare the relative frequency of events with the theoretical probability;** Revise the language of probability; Also see *Platinum Mathematics* LB p. 290 Ex. 1 (no. 1–3) for practical work	291–293 (Omit e on p. 292)	1 (no. 1)* If no practical work with coins, dice, counters, etc. was done in Grades 8 or 9 do the project on theoretical and experimental probability	237 246–247	pp. 321–324 #	–
35	Calculate the theoretical probability and the relative frequency of events happening	293–296	1 (no. 2–9)	237	pp. 325–331 10-1 (no. 1–5)	173

MIND ACTION SERIES MATHEMATICS Week 8 * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
36	**PROBABILITY CAPS p. 29** **2. The use of Venn diagrams to solve probability problems;** Use Venn Diagrams to solve problems; Note: Use only two events in Grade 10 Venn diagrams.	297–300	2 (no. 1, 2)	238	pp. 331–335 10-2 (no. 1, 3)	174
37	**PROBABILITY CAPS p. 29** **2. … deriving and applying the following for any two events A and B in a sample space S:** **$P(A$ or $B) = P(A) + P(B) - P(A$ and $B)$;** **A and B are mutually exclusive if $P(A$ and $B) = 0$** Derive and use $P(A$ or $B) = P(A) + P(B) - P(A$ and $B)$ Determine probabilities when events are mutually exclusive Note: **Inclusive** is not mentioned in the CAPS, rather ask if the events are mutually exclusive and show that $P(A$ and $B) \neq 0$.	300–304	3 (no. 1–3, 5)	238	pp. 335–340, 341–344 10-3 (no. 1a–c, 2a–d, f–h)	177
38	**PROBABILITY CAPS p. 29** **2. … deriving and applying the following for any two events A and B in a sample space S:** **A and B are complementary if they are mutually exclusive; and $P(A) + P(B) = 1$** **Then $P(B) = P$(not $(A) = 1 - P(A)$** **Determine probabilities when events are complementary** Note: 1. Exhaustive events are not mentioned in the CAPS so use the CAPS definition as above. 2. It is preferable to write **not (A)** and not to use the notations or the complement of A.	306–309	4 (no. 1: state mutually exclusive or not mutually exclusive, complementary or not complementary) (no. 2–6: adapt to not use exhaustive and inclusive) (no. 7)	239	pp. 338–348 10-3 (no. 1d, 2e, 3e) End of chapter exercises (no. 10–11)	177 180
39	Consolidation					
40	Revision and extension	310–312	Mixed revision questions (no. 1–4)* Challenge questions (no. 1–6)*	243 244	pp. 344–348 End of chapter exercises (no. 1–9, 12–15)*	180

MIND ACTION SERIES MATHEMATICS Week 9 * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
41	**ANALYTICAL GEOMETRY CAPS p. 26** **Represent geometric figures on a Cartesian co-ordinate system**	#	#	#	pp. 251, 281 End of chapter exercises (no. 1)*	16 153
42	**ANALYTICAL GEOMETRY CAPS p. 26** **Derive and apply for any two points $(x_1; y_1)$ and $(x_2; y_2)$ the formulae for calculating the:** **1. distance between the two points** Note: 1. Plot points for each question on the Cartesian Plane. 2. Letters may also be used for co-ordinates. For example, the co-ordinates of A can be written: $(x_A; y_A)$. Derive the 'distance' formula; Use the 'distance' formula when the co-ordinates of the given points are numerical	207–211	For you to do (no. 1, 2) 1 (no. 1–4)*	– 176	pp. 251–257, 281 Investigation p. 252 8-1 (no. 1) End of chapter exercises (no. 3)	16 – 145 153
43	Use the 'distance' formula to calculate unknown co-ordinates	# 210	1 (no. 5)#	176	pp. 255–257 8-1 (no. 2)	145
44	**ANALYTICAL GEOMETRY CAPS p. 26** **Derive and apply for any two points $(x_1; y_1)$ and $(x_2; y_2)$ the formulae for calculating the:** **3. coordinates of the mid-point of the line segment joining the two points** Note: The symbol for midpoint is: **M** (uppercase). Derive the 'midpoint' formula; Use the 'mid-point' formula to calculate the co-ordinates of the mid-point of a line segment	212–214	For you to do (no. 1, 2) 2 (no. 1)	– 178	pp. 272–276, 279, 281–283 Investigation p. 272 8-4 (no. 1) End of chapter exercises (no. 8)	– 147 153
45	Use the 'mid-point' formula when the midpoint is known	213–214 221	2 (no. 2) Mixed revision exercise (no. 3)	178 181	pp. 276–283 8-4 (no. 2–3) End of chapter exercises (no. 6)	147 153

MIND ACTION SERIES MATHEMATICS Week 10 * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
46	**ANALYTICAL GEOMETRY CAPS p. 26** **Derive and apply for any two points $(x_1; y_1)$ and $(x_2; y_2)$ the formulae for calculating the:** **2. gradient of the line segment connecting the two points (and from that identify parallel and perpendicular lines)** Note: The symbol for gradient is **m** (lowercase). Derive the 'gradient' formula; Use the 'gradient' formula (when the co-ordinates of the given points are numerical) to determine gradients	214–220 216 220	For you to do p. 216 (no. a–b) 3 (no. 1–2)*	– 179	pp. 257–259, 261 8-2 (no. 1)	147
47	Use the 'gradient' formula (when the co-ordinates of the given points are numerical) to determine gradients and prove whether lines are parallel or perpendicular	217–220	For you to do (no. a–c) pp. 217–218 For you to do (no. a–b) p. 218 3 (no. 3)	– 179	pp. 264–268, 271 8-3 (no. 1)	147
48	Use the 'gradient' or 'distance' formula (when the co-ordinates of the given points are numerical) to prove that points are collinear (lie on the same straight line)	210#	1 (no. 4)# Also do by proving $m_{AB} = m_{BC} = m_{AC}$	176	pp. 268–271, 281–283 8-3 (no. 2) End of chapter exercises (no. 9e)	147 153
49	Use the 'gradient' formula to calculate unknown co-ordinates	220#	3 (no. 4)	179	pp. 260–261, 266–267, 271 8-2 (no. 2) 8-3 (no. 3–4)	147
50	Revision and extension	221–224	Mixed revision exercise (no. 1, 2, 4–6)* Some challenges (no. 1–3)* Investigation (The midpoint theorem) See TG	181–189	pp. 281–283 End of chapter exercises (no. 2, 4–5, 7, 9–12)*	153

MIND ACTION SERIES MATHEMATICS Week 11 **End-of-term test (90 minutes); Review end-of-term test and remediate**

1.3 *Platinum Mathematics*

PLATINUM MATHEMATICS Week 1 * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
1	**TRIGONOMETRY CAPS p. 23** **Define the trigonometric ratios sin θ, cos θ and tan θ using right-angled triangles;** Investigate the trigonometric ratios for sin θ, cos θ, tan θ Note: All Grade 10 work involves only right-angled triangles.	84–85 87	Investigate when angle fixed/changes (Need geometry sets)	60	pp. 218–220 Investigation (Need geometry sets)	36 127
2	Define the reciprocal functions cosec θ, sec θ, cot θ	85–86	1 (no. 1, 2)	61	pp. 220–221, 224–226 7-1 (no. 1, 4)	129
3	Use a calculator to determine values of the trigonometric ratios given the angle	87–88	2 (no. 1, 2)*	61	pp. 223–226 7-1 (no. 2–3)	129
4	**TRIGONOMETRY CAPS p. 23** **Derive values of the trigonometric ratios for the special cases (without using a calculator) θ ∈ {0°; 30°; 45°; 60°; 90°}** Derive and use values of the trigonometric ratios for θ ∈ {0°; 30°; 45°; 60°; 90°}	89–90	3 (no. 1–11)* 4 (no. 2)	61	pp. 224–228 7-1 (no. 5–6) 7-2 (no. 1–2)	129 130
5	**TRIGONOMETRY CAPS p. 23** **Define the reciprocals of the trigonometric ratios functions cosec θ, sec θ, cot θ, using right-angled triangles (these three reciprocals should be examined in Grade 10 only;** Define the reciprocal functions cosec θ, sec θ, cot θ	90–91	4 (no. 2)	63	p. 222#	–

PLATINUM MATHEMATICS Week 2 * Select						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
6	Consolidation					
7	**TRIGONOMETRY CAPS p. 23** **Solve simple trigonometric equations for angles between 0° and 90°** Refer to graphs to see the angle ⟷ ratio relationship	96 99	8 (no. 1–9)* 11 (no. 1–9)* Graphs pp. 102, 103, 105	65 66	pp. 231–232 7-4 (no. 1a–o)* Graphs pp. 159, 165, 172	133
8	**TRIGONOMETRY CAPS p. 23** **Solve two-dimensional problems involving right-angled triangles;** Determine side lengths in 90° triangles	92	5 (no. 1–9)*	63	pp. 227–230 7-2 (no. 3) 7-3 (no. 1–3)*	130 133
9	Determine angles in 90° triangles	97–98	9 (no. 1–9)* 10 (no. 1–6)*	65 66	pp. 231–232 7-4 (no. 2)	133
10	Consolidation					

PLATINUM MATHEMATICS Week 3 * Select						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
11	**TRIGONOMETRY CAPS p. 28** **Problems in two dimensions;** Working in more than one triangle	93–94 98	6 (no. 1–6)* 10 (no. 1–6)*	64 66	pp. 234–236, 248–250 End of chapter exercises (no. 4, 7–8)	139
12	Calculations involving angles of elevation and depression	259–260 94–95 99 –100 261–264	7 (no. 1–5)* 12 (no. 1–4)* 2 (no. 1–13)*	64 66 188	pp. 233–234, 236–240 7-5 (no. 1–4)	135
13	**TRIGONOMETRY CAPS p. 23** **Extend the definitions of sin θ, cos θ, tan θ for $0° \leq \theta \leq 360°$** **Use diagrams to determine the numerical values of ratios for angles from 0° to 360°**	91	4 (no. 1)	62	pp. 241–247 7-6 (no. 1–3)	136
14	Consolidation					
15	Revision and extension	107–109 – 265–266 –	Revision (no. 1–8)* Target worksheets 5B (no. 5c) 5A (no. 1, 6) Revision (no. 1–8)* Target worksheets 12B (no. 1–4) 12A (no. 1, 5) Programme of Assessment Term 1 (no. 9–12)*	70 252 287 251 285 191 266 316 265 314 76	pp. 248–250 End of chapter exercises (no. 1–3, 5–6, 9–15)*	139

PLATINUM MATHEMATICS Week 4						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
16	Consolidation					
17	**Formal assessment: Trigonometry test (1 hour)** Review in Lesson 25					
18	**FUNCTIONS CAPS p. 24** **4. Point by point plotting of basic graphs defined by** **$y = \sin\theta$; $y = \cos\theta$; $y = \tan\theta$ for $\theta \in$ [0°;360°];** Plot basic trigonometric graphs	102–106 137	Use 13 (no. 1a, c, 2a, c: Use the graphs on p. 137 to answer 1c, 2c) 14 (no. 1a, c, d, e: Use the graph on p. 137 to answer 1c)	67	pp. 158–159, 164–165, 171–172 Example 16 Example 18 Example 20	–
19	**FUNCTIONS CAPS p. 24** **5. Study the effect of a and q on the graphs defined by** **$y = a\sin\theta + q$; $y = a\cos\theta + q$; $y = a\tan\theta + q$ where $a, q \in \mathbb{Q}$ for $\theta \in$ [0°;360°];** **6. Sketch graphs** Note: Sketching of the graphs must be based on the observation of number 5. Investigate the effect of a on basic trigonometric graphs; Sketch $y = a\sin\theta$; $y = a\cos\theta$; $y = a\tan\theta$	137–141	12 (no. 1, 2) 13 (no. 1, 2)	100 101	pp. 160–164, 169–170, 176–177, 184–191 Investigation (no. 1–9) p. 160 Investigation (no. 1–9) p. 165 Investigation (no. 1–9) p. 173 5-6 (no. 1a–b) End of chapter exercises (no. 9a)	– 105 106
20	Consolidation					

PLATINUM MATHEMATICS Week 5 * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
21	Investigate the effect of q on basic trigonometric graphs; Sketch $y = a\sin\theta + q$; $y = a\cos\theta + q$; $y = a\tan\theta + q$	140–142	14 Use $0° \leq x \leq 360°$ (no. 1, 2)	102	pp. 160–164, 169–170, 176–177, 184–191 Investigation (no. 1–9) p. 160 Investigation (no. 1–9) p. 165 Investigation (no. 1–9) p. 173 5-6 (no. 1c–f) End of chapter exercises (no. 9b–e)	– 105 106
22	Consolidation					
23	**FUNCTIONS CAPS p. 24** **6. Find the equation of given graphs and interpret graphs;** Determine equations of and interpret trigonometric graphs	141–143	14 (no. 2, 3)	102	pp. 183–184, 177, 185–191 5-6 (no. 2a–b) End of chapter exercises (no. 10e, 10g, 17)	105 106
24	Revision and extension	184	Target worksheet 6B (no. 3)#	254 290	pp. 185–191 End of chapter exercises (no. 14)#	106
25	Consolidation; Go over trigonometry test					

PLATINUM MATHEMATICS Week 6 * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
26	**FINANCE AND GROWTH CAPS p. 26** **Use the simple and compound growth formulae $A = P(1 + in)$ and $A = P(1 + i)^n$ to solve problems including annual interest;** Derivation (optional) and use of the simple interest formula: to calculate values for A, I (interest in Rand), P, n and i (hence r)	205–208	1 (no. 1, 2) 2 (no. 1–6)*	153	pp. 192–198 6-1 (no. 1–4)#	117
27	Derivation (optional) of the compound interest formula: $A = P(1 + i)^n$ Calculate values for A, P and i (hence r) using the compound interest formula Note: n is calculated in Grade 12 using logs. Compare the effects of simple and compound interest	209–212	3 (no. 1, 2) 4 (no. 1–4, 6–7)*	153 154	pp. 199–205 6-2 (no. 1–3)	119
28	Consolidation					
29	**FINANCE AND GROWTH CAPS p. 26** **Use the simple and compound growth formulae $A = P(1 + in)$ and $A = P(1 + i)^n$ to solve problems including population growth and other real life problems** Note: Is used for population growth.	212–213	5 (no. 1, 3a)	155	pp. 212–213 6-4 (no. 3)#	121
30	**FINANCE AND GROWTH CAPS p. 26** **Use the simple and compound growth formulae $A = P(1 + in)$ and $A = P(1 + i)^n$ to solve problems including inflation** Note: Is used for inflation.	214	6 (no. 1, 3)	155	pp. 209–211, 213 6-4 (no. 1–2)#	121

PLATINUM MATHEMATICS Week 7 * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
31	**FINANCE AND GROWTH CAPS p. 26** **Use the simple and compound growth formulae** **$A = P(1 + in)$ and $A = P(1 + i)^n$ to solve problems including hire purchase** Note: $A = P(1 + in)$ is used for Hire Purchase.	215–216	7 (no. 1–2)	156	pp. 205–209 6-3 (no. 1–3)	120
32	**FINANCE AND GROWTH CAPS p. 26** **Understand the implication of fluctuating foreign exchange rates (e.g. on the petrol price, imports, exports, overseas travel)**	217–219	8 (no. 1–4)*	156	pp. 213–215 6-5 (no. 1–2)	122
33	Revision and extension	220–222 – 284	Revision (no. 1–16, 18–19, 21–22, 24–28)* Target Worksheets 9B*, 9A* Programme of assessment Term 3 (no. 2–4)*	158 260 304 259 308 211	pp. 215–217 End of chapter exercises (no. 1–10)*	123
34	**PROBABILITY CAPS p. 29** See https://apps.statssa.gov.za/censusatschool/docs/FET_Study_Guide.pdf **1. The use of probability models to compare the relative frequency of events with the theoretical probability;** Revise the language of probability; Also see *Mind Action Series Mathematics* TG pp. 186–187	288 290	1 (no. 1–3)* Perform the experiment	217	pp. 321–324 #	–
35	Calculate the theoretical probability and the relative frequency of events happening	289–291	1 (no. 1–6)*	217	pp. 325–331 10-1 (no. 1–5)	173

PLATINUM MATHEMATICS Week 8 * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
36	**PROBABILITY CAPS p. 29** **2. The use of Venn diagrams to solve probability problems;** Use Venn Diagrams to solve problems Note: Use only two events in Grade 10 Venn diagrams.	292 295	2 (no. 2a, 3a)	218	pp. 331–335 10-2 (no. 1, 3)	174
37	**PROBABILITY CAPS p. 29** **2. … deriving and applying the following for any two events A and B in a sample space S:** **$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$;** Derive and use $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$	293# (or use S, A and D to draw a Venn diagram and determine if $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ 295 See *Siyavula Everything Maths* LB pp. 331–338	2 adapted: (no. 1 Show that $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ no. 2 Show that $P(M \text{ or } L) = P(M) + P(L) - P(M \text{ and } L)$	–	pp. 335–340, 341–344 10-3 (no. 1a–c, 2a–d)	177
38	**PROBABILITY CAPS p. 29** **2. … deriving and applying the following for any two events A and B in a sample space S:** **… A and B are mutually exclusive $P(A \text{ and } B) = 0$ if;** **A and B are complementary if they are mutually exclusive; and $P(A) + P(B) = 1$ then** **Then $P(B) = P(\text{not } (A)) = 1 - P(A)$** Determine probabilities when events are mutually exclusive or complementary Note: 1. **Exhaustive events** are not mentioned in the CAPS so use the CAPS definition as above. 2. It is preferable to write **not (A)** and not to use the notations or the complement of *A*.	293# See *Siyavula Everything Maths* LB pp. 338–344	2 (no. 2b, 3b–c)	218	pp. 338–348 10-3 (no. 1d, 2e, 3a–h) End of chapter exercises (no. 10, 11)	177 180
39	Consolidation					
40	Revision and extension	296–299	Revision (no. 1–3, 5)* Programme of assessment Term 4 (no. 1–4, 6)*	219 221	pp. 344–348 End of chapter exercises (no. 1–9, 12–15)*	180

PLATINUM MATHEMATICS Week 9 # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
41	**ANALYTICAL GEOMETRY CAPS p. 26** **Represent geometric figures on a Cartesian co-ordinate system**	186	2 Draw sketches for (no. 1–3, 8–9)*	140	pp. 251, 281 End of chapter exercises (no. 1)*	16 153
42	**ANALYTICAL GEOMETRY CAPS p. 26** **Derive and apply for any two points $(x_1; y_1)$ and $(x_2; y_2)$ the formulae for calculating the:** **1. distance between the two points** Note: 1. Plot points for each question on the Cartesian Plane. 2. Letters may also be used for co-ordinates. For example, the co-ordinates of A can be written: $(x_A; y_A)$. Derive the 'distance' formula; Use the 'distance' formula when the co-ordinates of the given points are numerical	185 188	1 (no. 1, 2) 2 (no. 1–3, 8–9)*	138 140	pp. 251–255, 256–257, 281 Investigation p. 252 8-1 (no. 1) End of chapter exercises (no. 3)	16 – 145 153
43	Use the 'distance' formula to calculate unknown co-ordinates	188–189#	1 (no. 3) 2 (no. 4–7)	139–140	pp. 255–257 8-1 (no. 2)	145
44	**ANALYTICAL GEOMETRY CAPS p. 26** **Derive and apply for any two points $(x_1; y_1)$ and $(x_2; y_2)$ the formulae for calculating the:** **2. gradient of the line segment connecting the two points (and from that identify parallel and perpendicular lines)** Note: 1. The symbol for gradient is **m** (lowercase). 2. d_{AB} is usually written AB. Derive the 'gradient' formula; Use the 'gradient' formula (when the co-ordinates of the given points are numerical) to determine gradients and prove whether lines are parallel or perpendicular	# Derivation 191–194	3 (no. 2–4)	142	pp. 257–259, 261, 264–268, 271 8-2 (no. 1) 8-3 (no. 1)	147
45	Use the 'gradient' or 'distance' formula (when the co-ordinates of the given points are numerical) to prove that points are collinear (lie on the same straight line)	#	#	#	pp. 268–271, 281–283 8-3 (no. 2) End of chapter exercises (no. 9e)	147 153

PLATINUM MATHEMATICS Week 10 * Select						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
46	Use the 'gradient' formula to calculate unknown co-ordinates	194–195 193	4 (no. 1–3) 3 (no. 1)	144 142	pp. 260–261, 266–267, 271 8-2 (no. 2) 8-3 (no. 3, 4)	147
47	**ANALYTICAL GEOMETRY CAPS p. 26** **Derive and apply for any two points $(x_1; y_1)$ and $(x_2; y_2)$ the formulae for calculating the:** **3. coordinates of the mid-point of the line segment joining the two points** Note: The symbol for midpoint is **M** (uppercase). Derive the 'mid-point' formula; Use the 'mid-point' formula to calculate the co-ordinates of the mid-point of a line segment	# Derivation 196–198	5 (no. 1, 4, 5)	145	pp. 272–276, 279, 281–283 Investigation 8-4 (no. 1) End of chapter exercises (no. 8)	– 147 153
48	Use the 'mid-point' formula when the midpoint is known	196–201	5 (no. 2–3) 6 (no. 2–3, 6)	145 146	pp. 276–283 8-4 (no. 2–3) End of chapter exercises (no. 6)	147 153
49	Revision and extension; Also see *Mind Action Series Mathematics* TG pp. 186–187	199 203 – 284	6 (no. 1, 4–5)* Revision (no. 1–4)* Target worksheet 8B*, 8A* Programme of assessment Term 3 (no. 1)	146 149 151 258 301 257 298 211	pp. 281–283 End of chapter exercises (no. 2, 4–5, 7, 9–12)*	153
50	Consolidation					

PLATINUM MATHEMATICS Week 11 End-of-term test (90 minutes); Review end-of-term test and remediate

1.4 *Siyavula Everything Maths*

SIYAVULA EVERYTHING MATHS Week 1 # Supplement				
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**
1	**TRIGONOMETRY CAPS p. 23** **Define the trigonometric ratios sin θ, cos θ and tan θ using right-angled triangles;** Investigate the trigonometric ratios for sin θ, cos θ, tan θ Note: All Grade 10 work involves only right-angled triangles.	218–220	Investigation (Need geometry sets)	36 127
2	Define the trigonometric ratios for sin θ, cos θ, tan θ	220–221 224–226	7-1 (no. 1, 4)	129
3	**Define the reciprocals of the trigonometric ratios functions cosec θ, sec θ, cot θ, using right-angled triangles (these three reciprocals should be examined in Grade 10 only);** Define the reciprocal functions cosec θ, sec θ, cot θ	222	#	–
4	Use a calculator to determine values of the trigonometric ratios given the angle	223–226	7-1 (no. 2–3)	129
5	**TRIGONOMETRY CAPS p. 23** **Derive values of the trigonometric ratios for the special cases (without using a calculator) θ ∈ {0°; 30°; 45°; 60°; 90°};** Derive and use values of the trigonometric ratios for θ ∈ {0°; 30°; 45°; 60°; 90°}	224–228	7-1 (no. 5–6) 7-2 (no. 1–2)	129 130

SIYAVULA EVERYTHING MATHS Week 2 * Select				
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**
6	Consolidation			
7	**TRIGONOMETRY CAPS p. 23** **Solve simple trigonometric equations for angles between 0° and 90°;** Refer to graphs to see the angle ratio ⟷ relationship	231–232	7-4 (no. 1a–o)* Graphs pp. 159, 165, 172	133
8	**TRIGONOMETRY CAPS p. 23** **Solve two-dimensional problems involving right-angled triangles;** Determine side lengths in 90° triangles	227–230	7-2 (no. 3) 7-3 (no. 1–3)*	130 133
9	Determine angles in 90° triangles	231–232	7-4 (no. 2)	133
10	Consolidation			

SIYAVULA EVERYTHING MATHS Week 3 * Select				
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**
11	**TRIGONOMETRY CAPS p. 28** **Problems in two dimensions;** Working in more than one triangle	234–236 248–250	End of chapter exercises (no. 4, 7, 8)	139
12	Calculations involving angles of elevation and depression	233–234 236–240	7-5 (no. 14)	135
13	**TRIGONOMETRY CAPS p. 23** **Extend the definitions of sin θ, cos θ, tan θ for 0° ≤ θ ≤ 360°;** **Use diagrams to determine the numerical values of ratios for angles from 0° to 360°**	241–247	7-6 (no. 1–3)	136
14	Consolidation			
15	Revision and extension	248–250	End of chapter exercises (no. 1–3, 5, 6, 9–15)*	139

SIYAVULA EVERYTHING MATHS Week 4				
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**
16	Consolidation			
17	**Formal assessment: Trigonometry test (1 hour)** Review in Lesson 25			
18	**FUNCTIONS CAPS p. 24** **4. Point by point plotting of basic graphs defined by $y = \sin\theta$; $y = \cos\theta$; $y = \tan\theta$ for $\theta \in [0°;360°]$;** Plot basic trigonometric graphs	158–159 164–165 171–172	Example 16 Example 18 Example 20	–
19	**FUNCTIONS CAPS p. 24** **5. Study the effect of a and q on the graphs defined by $y = a\sin\theta + q$; $y = a\cos\theta + q$; $y = a\tan\theta + q$ where $a, q \in \mathbb{Q}$ for $\theta \in [0°;360°]$;** Investigate the effect of a and q on basic trigonometric graphs	160–162 165–168 173–175	Investigation (no. 1-9) p. 160 Investigation (no. 1-9) p. 165 Investigation (no. 1-9) p. 173	
20	Consolidation			

SIYAVULA EVERYTHING MATHS Week 5				
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**
21	**FUNCTIONS CAPS p. 24** **6. Sketch graphs** Note: Sketching of the graphs must be based on the observation of number 5. Sketch $y = a\sin\theta + q$; $y = a\cos\theta + q$; $y = a\tan\theta + q$	163–164, 169–170, 176–177 (Use $\theta \in \{0°; 90°; 180°; 270°; 360°\}$ to sketch the graphs), 184	5-6 (no. 1a–f) End of chapter exercises (no. 9a–e)	105 106
22	Consolidation			
23	**Functions CAPS p. 24** **6. Find the equation of given graphs and interpret graphs;** Determine equations of and interpret trigonometric graphs	183–184 177 185–191	5-6 (no. 2a–b) End of chapter exercises (no. 10e–g, 17)	105 106
24	Revision and extension	185–191	End of chapter exercises (no. 14)#	106
25	Consolidation; Go over trigonometry test			

SIYAVULA EVERYTHING MATHS Week 6 # Supplement				
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**
26	**FINANCE AND GROWTH CAPS p. 26** **Use the simple and compound growth formulae $A = P(1 + in)$ and $A = P(1 + i)^n$ to solve problems including annual interest;** Derivation (optional) and use of the simple interest formula: $A = P(1 + in)$ to calculate values for A, n and i (hence r); # Finding P and I (interest in Rand)	192–198	6-1 (no. 1–4)#	117
27	Derivation (optional) of the compound interest formula: $A = P(1 + i)^n$ Calculate values for A, P and i (hence r) using the compound interest formula; Compare the effects of simple and compound interest	199–205	6-2 (no. 1–3)	119
28	**FINANCE AND GROWTH CAPS p. 26** **Use the simple and compound growth formulae$A = P(1 + in)$ and $A = P(1 + i)^n$ to solve problems including hire purchase;** Note: $A = P(1 + in)$ is used for Hire Purchase.	205–209	6-3 (no. 1–3)	120
29	Consolidation			
30	**FINANCE AND GROWTH CAPS p. 26** **Use the simple and compound growth formulae $A = P(1 + in)$ and $A = P(1 + i)^n$ to solve problems including inflation** Note: $A = P(1 + i)^n$ is used for inflation.	209–211 213	6-4 (no. 1, 2)#	121

SIYAVULA EVERYTHING MATHS Week 7				
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**
31	Revision and extension	215–217	End of chapter exercises (no. 1–10)*	123
32	**FINANCE AND GROWTH CAPS p. 26** **Use the simple and compound growth formulae $A = P(1 + in)$ and $A = P(1 + i)^n$ to solve problems including population growth and other real life problems** Note: $A = P(1 + i)^n$ is used for population growth.	212–213	6-4 (no. 3)#	121
33	**FINANCE AND GROWTH CAPS p. 26** **Understand the implication of fluctuating foreign exchange rates (e.g. on the petrol price, imports, exports, overseas travel)**	213–215	6-5 (no. 1–2)	122
34	**PROBABILITY CAPS p. 29** See https://apps.statssa.gov.za/censusatschool/docs/FET_Study_Guide.pdf **1. The use of probability models to compare the relative frequency of events with the theoretical probability;** Revise the language of probability Note: If no practical work with coins, dice, counters etc. was done in Grades 8 or 9, see *Platinum Mathematics* LB p. 290 Ex. 1 (no. 1–3) or *Mind Action Series Mathematics* TG pp. 246–247.	321–324	–	–
35	Calculate the theoretical probability and the relative frequency of events happening	325–331	10-1 (no. 1–5)	173

SIYAVULA EVERYTHING MATHS Week 8 * Select				
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**
36	**PROBABILITY CAPS p. 29** **2. The use of Venn diagrams to solve probability problems;** Use Venn Diagrams to solve problems Note: Use only two events in Grade 10 Venn diagrams.	331–335	10-2 (no. 1, 3)	174
37	**PROBABILITY CAPS p. 29** **2. ... deriving and applying the following for any two events A and B in a sample space S: $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$;** Derive and use $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$	335–340 341 –344	10-3 (no. 1a–c, 2a–d)	177
38	**PROBABILITY CAPS p. 29** **2. ... deriving and applying the following for any two events A and B in a sample space S: ... A and B are mutually exclusive if $P(A \text{ and } B) = 0$;** **A and B are complementary if they are mutually exclusive, and $P(A) + P(B) = 1$; Then $P(B) = P(\text{not } A) = 1 - P(A)$** Determine probabilities when events are mutually exclusive or complementary Note: It is preferable to write **not (A)** and not to use the notations or the complement of A.	338–348	10-3 (no. 1d, 2e, 3a–h) End of chapter exercises (no. 10, 11)	177 180
39	Consolidation			
40	Revision and extension	344–348	End of chapter exercises (no. 1–9, 12–15)*	180

SIYAVULA EVERYTHING MATHS Week 9				
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**
41	**ANALYTICAL GEOMETRY CAPS p. 26** **Represent geometric figures on a Cartesian co-ordinate system**	251 281	End of chapter exercises (no. 1)*	16 153
42	**ANALYTICAL GEOMETRY CAPS p. 26** **Derive and apply for any two points $(x_1; y_1)$ and $(x_2; y_2)$ the formulae for calculating the:** **1. distance between the two points** Note: 1. Plot points for each question on the Cartesian Plane. 2. Letters may also be used for co-ordinates; For example, the co-ordinates of A can be written: $(x_A; y_A)$. 3. d_{AB} is usually written AB. Derive the 'distance' formula; Use the 'distance' formula when the co-ordinates of the given points are numerical	251–255 256–257 281	Investigation p. 252 8-1 (no. 1) End of chapter exercises (no. 3)	16 – 145 153
43	Use the 'distance' formula to calculate unknown co-ordinates	255–257	8-1 (no. 2)	145
44	**ANALYTICAL GEOMETRY CAPS p. 26** **Derive and apply for any two points $(x_1; y_1)$ and $(x_2; y_2)$ the formulae for calculating the:** **2. gradient of the line segment connecting the two points (and from that identify parallel and perpendicular lines)** Note: The symbol for gradient is **m** (lowercase). Derive the 'gradient' formula; Use the 'gradient' formula (when the co-ordinates of the given points are numerical) to determine gradients and prove whether lines are parallel or perpendicular	257–259 261 264–268 271	8-2 (no. 1) 8-3 (no. 1)	147
45	Use the 'gradient' or 'distance' formula (when the co-ordinates of the given points are numerical) to prove that points are collinear (lie on the same straight line)	268–271 281–283	8-3 (no. 2) End of chapter exercises (no. 9e)	147 153

SIYAVULA EVERYTHING MATHS Week 10 * Select				
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**
46	Use the 'gradient' formula to calculate unknown co-ordinates	260–261 266–267 271	8-2 (no. 2) 8-3 (no. 3, 4)	147
47	**ANALYTICAL GEOMETRY CAPS p. 26** **Derive and apply for any two points $(x_1; y_1)$ and $(x_2; y_2)$ the formulae for calculating the:** **3. coordinates of the mid-point of the line segment joining the two points** Note: The symbol for midpoint is **M** (uppercase). Derive the 'mid-point' formula; Use the 'mid-point' formula to calculate the co-ordinates of the mid-point of a line segment	272–276 279 281–283	Investigation 8-4 (no. 1) End of chapter exercises (no. 8)	– 147 153
48	Use the 'mid-point' formula when the midpoint is known	276–283	8-4 (no. 2–3) End of chapter exercises (no. 6)	147 153
49	Revision and extension	281–283	End of chapter exercises (no. 2, 4–5, 7, 9–12)*	153
50	Consolidation			

SIYAVULA EVERYTHING MATHS Week 11 End-of-term test (90 minutes); Review end-of-term test and remediate

1.5 *Survival Series*

SURVIVAL SERIES **Week 1** * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
1	**TRIGONOMETRY CAPS p. 23** Investigate the trigonometric ratios for sin θ, cos θ, tan θ Note: All Grade 10 work involves only right-angled triangles.	82–83	Investigation (no. 1–3, 7) (Need geometry sets)	70 (no solutions)	pp. 218–220 Investigation (Need geometry sets)	36 127
2	Define the reciprocal functions cosec θ, sec θ, cot θ	91 #	#	–	pp. 220–221, 224–226 7-1 (no. 1, 4)	129
3	**Define the reciprocals of the trigonometric ratios functions cosec θ, sec θ, cot θ, using right-angled triangles (these three reciprocals should be examined in Grade 10 only);** Define the reciprocal functions cosec θ, sec θ, cot θ	98–100	8.6 (no. 1–2)*	79	p. 222#	–
4	Use a calculator to determine values of trigonometric ratios given the angle	83–85	8.1 (no. 1–4)*	70	pp. 223–226 7-1 (no. 2, 3)	129
5	**Trigonometry: CAPS p. 23** **Derive values of the trigonometric ratios for the special cases (without using a calculator) θ ∈ {0°; 30°; 45°; 60°; 90°}** Derive and use values of the trigonometric ratios for θ ∈ {0°; 30°; 45°; 60°; 90°}	96–100	8.5 (no. 1–3) 8.6 (no. 4)*	78 79	pp. 224–228 7-1 (no. 5, 6) 7-2 (no. 1, 2)	129 130

SURVIVAL SERIES **Week 2** * Select						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
6	Consolidation					
7	**TRIGONOMETRY CAPS p. 23** **Solve simple trigonometric equations for angles between 0° and 90°;** Refer to graphs to see the angle ⟷ ratio relationship	85–86	8.2 (no. 1) Graphs p. 333	71	pp. 231–232 7-4 (no. 1a–o)* Graphs pp. 159, 165, 172	133
8	**TRIGONOMETRY CAPS p. 23** **Solve two-dimensional problems involving right-angled triangles;** Determine side lengths in 90° triangles	91–96	8.4 (no. 3 a–f)	75	pp. 227–230 7-2 (no. 3) 7-3 (no. 1–3)*	130 133
9	Determine angles in 90° triangles	92–96	8.4 (no. 2a–d, 3g)	75	pp. 231–232 7-4 (no. 2)	133
10	Consolidation					

SURVIVAL SERIES Week 3 * Select						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
11	**TRIGONOMETRY CAPS p. 28** **Problems in two dimensions;** Working in more than one triangle	92–96	8.4 (no. 4, 6, 8–9, 11–12)	75	pp. 234–236, 248–250 End of chapter exercises (no. 4, 7–8)	139
12	Calculations involving angles of elevation and depression	100–102 93–96	8.4 (no. 1,7)* 8.7 (no. 1–9)*	75 81	pp. 233–234, 236–240 7-5 (no. 1–4)	135
13	**TRIGONOMETRY CAPS p. 23** **Extend the definitions of sin θ, cos θ, tan θ for 0° ≤ θ ≤ 360°;** **Use diagrams to determine the numerical values of ratios for angles from 0° to 360°**	86–91 (Leave out the CAST diagram) 99–100	8.3 (no. 1–7, 9–11)* 8.6 (no. 3)	72 79	pp. 241–247 7-6 (no. 1–3)	136
14	Consolidation					
15	Revision and extension	105–108, 90, 93, 99, 273–274	Worksheet (Revision)* Extension: 8.3 (no. 8) 8.4 (no. 5, 10) 8.6 (no. 5)	84 72 75 79	pp. 248–250 End of chapter exercises (no. 1–3, 5–6, 9–15)*	139

SURVIVAL SERIES Week 4 # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
16	Consolidation					
17	**Formal assessment: Trigonometry test (1 hour)** Review in Lesson 25					
18	**FUNCTIONS CAPS p. 24** **4. Point by point plotting of basic graphs defined by $y = \sin\theta$; $y = \cos\theta$; $y = \tan\theta$ for $\theta \in [0°;360°]$;** Plot basic trigonometric graphs	132–133	Plot 10.1 to 10.3 p. 133 using intervals of 15° in tables # Investigation	–	pp. 158–159, 164–165, 171–172 Example 16 Example 18 Example 20	–
19	**FUNCTIONS CAPS p. 24** **5. Study the effect of a and q on the graphs defined by** **$y = a\sin\theta + q$; $y = a\cos\theta + q$; $y = a\tan\theta + q$ where $a, q \in \mathbb{Q}$ for $\theta \in [0°;360°]$;** Investigate the effect of a and q on basic trigonometric graphs	134–135#	#	94	pp. 160–162, 165–168, 173–175 Investigation (no. 1–9) p. 160 Investigation (no. 1–9) p. 165 Investigation (no. 1–9) p. 173	–
20	Consolidation					

SURVIVAL SERIES Week 5 # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
21	**FUNCTIONS CAPS p. 24** **6. Sketch graphs** Note: Sketching of the graphs must be based on the observation of number 5. Sketch $y = a \sin \theta + q$; $y = a \cos \theta + q$; $y = a \tan \theta + q$	135	9.8 (no. 1) Use $x \in \{0°; 90°; 180°; 270°; 360°\}$ to sketch the graphs	94	pp. 163–164, 169–170, 176–177 5-6 (no. 1a–f) End of chapter exercises (no. 9a–e)	105 106
22	Consolidation					
23	**FUNCTIONS CAPS p. 24** **6. Find the equation of given graphs and interpret graphs;** Determine equations of and interpret trigonometric graphs	135–147 188	9.9 (no. 21–25)	95	pp. 183–184, 177, 185–191 5-6 (no. 2a–b) End of chapter exercises (no. 10e, 10g, 17)	105 106
24	Revision and extension	154–159# 279–280	9.9 (no. 20) Worksheet (no. 2–3, 6–7)	95 104	pp. 185–191 End of chapter exercises (no. 14)#	106
25	Consolidation; Go over trigonometry test					

SURVIVAL SERIES Week 6 * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
26	**FINANCE AND GROWTH CAPS p. 26** **Use the simple and compound growth formulae $A = P(1 + in)$ and $A = P(1 + i)^n$ to solve problems including annual interest;** Derivation (optional), and use of the simple interest formula: $A = P(1 + in)$ and the compound interest formula: $A = P(1 + i)^n$ to calculate values for A and P; Compare the effects of simple and compound interest	202–204 # Derivation	12.1 (no. 1–6)	124	pp. 192–205 6-1 (no. 1, 2)# 6-2 (no. 1, 3)	117 119
27	Use $A = P(1 + in)$ and $A = P(1 + i)^n$ to calculate values for i (hence r) and n; # Calculate values for I (interest in Rand) Note: Calculating values for n in $A = P(1 + i)^n$ is done in Grade 12 using logs.	204–206	12.2 (no. 1–4)	125	pp. 192–205 6-1 (no. 3–4)# 6-2 (no. 2)	117 119
28	**FINANCE AND GROWTH CAPS p. 26** **Use the simple and compound growth formulae $A = P(1 + in)$ and $A = P(1 + i)^n$ to solve problems including hire purchase** Note: $A = P(1 + in)$ is used for Hire Purchase.	206–208 $I = P \times i \times n$ for Type 2 on p. 207 where n is in years	12.3 (no. 1–8)* Question 1 Hint should read: Extra costs = Amount to pay + deposit – original amount	126	pp. 205–209 6-3 (no. 1–3)	120
29	Consolidation					
30	**FINANCE AND GROWTH CAPS p. 26** **Use the simple and compound growth formulae $A = P(1 + in)$ and $A = P(1 + i)^n$ to solve problems including inflation** Note: $A = P(1 + i)^n$ is used for inflation.	208	12.4 (no. 1–3)	127	pp. 209–211, 213 6-4 (no. 1, 2)#	121

SURVIVAL SERIES **Week 7** * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
31	**FINANCE AND GROWTH CAPS p. 26** **Use the simple and compound growth formulae $A = P(1 + in)$ and $A = P(1 + i)^n$ to solve problems including population growth and other real life problems;** Note: $= P(1 + i)^n$ is used for population growth.	#	#	–	pp. 212–213 6-4 (no. 3)#	121
32	Revision and extension	214–216 283–284	Worksheet (no. 1–3) Problem solving p. 214	129	pp. 215–217 End of chapter exercises (no. 1–10)*	123
33	**FINANCE AND GROWTH CAPS p. 26** **Understand the implication of fluctuating foreign exchange rates (e.g. on the petrol price, imports, exports, overseas travel)**	211–213	12.6 (no. 1–9) *	128	pp. 213–215 6-5 (no. 1–2)	122
34	**PROBABILITY CAPS p. 29** See https://apps.statssa.gov.za/censusatschool/docs/FET_Study_Guide.pdf **1. The use of probability models to compare the relative frequency of events with the theoretical probability;** Revise the language of probability; Also see *Platinum Mathematics* LB p. 290 Ex. 1 (no. 1–3) or *Mind Action Series Mathematics* TG pp. 246–247	251–254	Investigation: relative frequency 15.1 (no. 1)	– 145	pp. 321–324	–
35	Calculate the theoretical probability and the relative frequency of events happening	252–254 256 260	15.1 (no. 1) 15.2 (no. 1–2)	145 147	pp. 325–331 10-1 (no. 1–5)	173

SURVIVAL SERIES Week 8 * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
36	**Probability CAPS p. 29** **2. The use of Venn diagrams to solve probability problems;** Use Venn Diagrams to solve problems Note: 1. Use only two events in Grade 10 Venn diagrams. 2. It is preferable to write ***A* or *B***, ***A* and *B*** and **not (*A*)** and not to use the notations $A \cup B$, $A \cap B$, A' or the complement of A.	254–258	15.1 (no. 2–7)*	145	pp. 331–335 10-2 (no. 1, 3)	174
37	**PROBABILITY CAPS p. 29** **2. … deriving and applying the following for any two events *A* and *B* in a sample space *S*: $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$;** Derive and use $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$	258–260 # Derivation	15.1 (no. 2d, 4e, 7c (iii)) (Use the rule) Solutions: 2d: $\frac{4}{5}$; 4e: $\frac{7}{12} + \frac{4}{12} - \frac{1}{12} = \frac{10}{12} = \frac{6}{6}$; 7c (iii): $\frac{9}{9} = \frac{7}{9} + \frac{6}{9} -$ $(P(A \text{ and } B)$ $\therefore P(A \text{ and } B) = \frac{1}{2}$	145	pp. 335–340, 341–344 10-3 (no. 1a–c, 2a–d)	177
38	**PROBABILITY CAPS p. 29** **2. … deriving and applying the following for any two events *A* and *B* in a sample space *S*:** **… *A* and *B* are mutually exclusive if $P(A \text{ and } B) = 0$;** ***A* and *B* are complementary if they are mutually exclusive, and $P(A) + P(B) = 1$;** **Then $P(B) = P(\text{not } (A)) = 1 - P(A)$** Determine probabilities when events are mutually exclusive or complementary	259–260	15.2 (no. 1–5)*	147	pp. 338–348 10-3 (no. 1d, 2e, 3a–h) End of chapter exercises (no. 10, 11)	177 180
39	Consolidation					
40	Revision and extension	262–265 287	Worksheet on probability (no. 1–9)	148	pp. 344–348 End of chapter exercises (no. 1–9, 12–15)*	180

SURVIVAL SERIES Week 9 # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
41	**ANALYTICAL GEOMETRY CAPS p. 26** **Represent geometric figures on a Cartesian co-ordinate system;** **Derive and apply for any two points (x^1; y_1) and (x_2; y_2)** **the formulae for calculating the:** **1. distance between the two points** Note: 1. Plot points for each question on the Cartesian Plane. 2. Letters may also be used for co-ordinates. For example the co-ordinates of A can be written: (x_A; y_A). 3. d_{AB} is usually written AB. Derive the 'distance' formula; Use the 'distance' formula when the co-ordinates of the given points are numerical	190–192	Investigation 11.1 (no. 1–5, 7)*	– 117	pp. 251–257, 281 Investigation p. 252 8-1 (no. 1) End of chapter exercises (no. 1, 3)	16 – 145 153
42	Consolidation					
43	Use the 'distance' formula to calculate unknown co-ordinates	191	11.1 (no. 6)#	117	pp. 255–257 8-1 (no. 2)	145
44	**ANALYTICAL GEOMETRY CAPS p. 26** **Derive and apply for any two points (x^1; y_1) and (x_2; y_2)** **the formulae for calculating the:** **2. gradient of the line segment connecting the two points (and from that identify parallel and perpendicular lines)** Note: The symbol for gradient is **m** (lowercase). Derive the 'gradient' formula; Use the 'gradient' formula (when the co-ordinates of the given points are numerical) to determine gradients and whether lines are parallel or perpendicular	193–195	11.2 (no. 1, 2, 4)	120	pp. 257–259, 261, 264–268, 271 8-2 (no. 1) 8-3 (no. 1)	147
45	Use the 'gradient' or 'distance' formula (when the co-ordinates of the given points are numerical) to prove that points are collinear (lie on the same straight line)	# Collinear points 192	11.1 (no. 4) # using gradient	117	pp. 268–271, 281–283 8-3 (no. 2) End of chapter exercises (no. 9e)	147 153

SURVIVAL SERIES Week 10 * Select						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
46	Use the 'gradient' formula to calculate unknown co-ordinates	193–195	11.2 (no. 3, 5–6)	120	pp. 260–261, 266–267, 271 8-2 (no. 2) 8-3 (no. 3, 4)	147
47	**ANALYTICAL GEOMETRY CAPS p. 26** **Derive and apply for any two points $(x^1; y_1)$ and $(x_2; y_2)$ the formulae for calculating the:** **3. coordinates of the mid-point of the line segment joining the two points** Note: The symbol for midpoint is **M** (uppercase). Derive the 'midpoint' formula; Use the 'mid-point' formula to calculate the co-ordinates of the mid-point of a line segment	# Derivation 195–197	11.3 (no. 1, 3, 5)	121	pp. 272–276, 279, 281–283 Investigation 8-4 (no. 1) End of chapter exercises (no. 8)	– 147 153
48	Use the 'mid-point' formula when the midpoint is known	196–197	11.3 (no. 2, 4, 6–7)	121	pp. 276–283 8-4 (no. 2, 3) End of chapter exercises (no. 6)	147 153
49	Revision and extension; Also see *Mind Action Series Mathematics* TG pp. 186–187	199–201 283	Analytical geometry worksheet (no. 1–5)	122	pp. 281–283 End of chapter exercises (no. 2, 4–5, 7, 9–12)*	153
50	Consolidation					

SURVIVAL SERIES Week 11 End-of-term test (90 minutes); Review end-of-term test and remediate

2. PLANNERS FOR TERM 4

2.1 *Classroom Mathematics*

Notes for Weeks 1 and 2:
1. See https://apps.statssa.gov.za/censusatschool/docs/FET_Study_Guide.pdf.
2. See **Resource 4.1** for calculator key sequences.

CLASSROOM MATHEMATICS **Week 1** * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
1	**STATISTICS CAPS p. 27** **1. Revise measures of central tendency in ungrouped data** Determine measures of central tendency in listed data; Effect of outliers on the mean	287–292, 322	13.1 (no. 1–10)*	354	pp. 288–297 9-1 (no. 1-5)	36, 161
2	**STATISTICS CAPS p. 27** **1. Revise measures of central tendency in ungrouped data** Determine measures of central tendency of data in a frequency table	296–299	13.3 (no. 1–5)*	359	#	#
3	**STATISTICS CAPS p. 27** **2. Measures of central tendency in grouped data** Types of data – discrete, continuous, categorical (qualitative); Find reasonable estimates of the measures of central tendency	293–295, 303–306	13.2 [Optional] (no. 1, 2, 3a) 13.5 (no. 1a–c, e, f, 2a–c, 3, 4)*	358, 364	pp. 284–287, 297–302 9-2 (no. 1a) 9-3 (no. 1, 2)	163, 164
4	**STATISTICS CAPS p. 27** **3. Revision of range as a measure of dispersion and extension to include percentiles, quartiles, interquartile and semi-interquartile range** Determine percentiles and quartiles	319–321#	13.9 (no. 1, 2)	374	pp. 305–308, 310–312	–
		#See *Platinum Mathematics* pp. 231–234				
5	**STATISTICS CAPS p. 27** **3. Revision of range as a measure of dispersion and extension to include percentiles, quartiles, interquartile and semi-interquartile range** Determine range, quartiles, interquartile and semi-interquartile range	307–312	13.6 (no. 1–3) 13.8 (no. 1, 2)	367, 373	pp. 303–304, 308–309, 312–313 9-4 (no. 1–4)	166

CLASSROOM MATHEMATICS **Week 2** * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
6	Consolidation					
7	**STATISTICS CAPS p. 27** **4. Five number summary (maximum, minimum and quartiles)** Determine the five number summary and draw box and whisker diagrams	313–318	13.7 (no. 1–4)	370	pp. 314–316 9-5 (no. 1–4)	167
8	**STATISTICS CAPS p. 27** **5. Use the statistical summaries (measures of central tendency and dispersion), and graphs to analyse and make meaningful comments on the content associated with the given data**	322–323#	13.10 (no. 1–4)	376	pp. 317–320 Analysis examples pp. 294, 304# End of chapter exercises (no. 4a, b, 6)	170
		#See *Platinum Mathematics* pp. 238–241				

Lesson	CAPS concepts and skills	LB pp.	LB ex.	TG pp.	*Siyavula Everything Maths*	
					LB ex.	TG pp.
9	Revision and extension	324–326	Check your skills (no. 1–5)* Extend your skills (no. 1–4)*	377, 380	pp. 317–320 End of chapter exercises (no. 1–3, 5) #percentiles	170
10	Consolidation					

Notes for Weeks 3 and 4:
Revise formulae to determine areas and perimeters of polygons; Nets of the objects enhance understanding of the surface area formulae; Solid and transparent models of the objects enhance understanding of the volume formulae; Candidates must know the formulae for the volume and surface areas of right prisms and cylinders.

CLASSROOM MATHEMATICS Week 3
* Select

Lesson	CAPS concepts and skills	LB pp.	LB ex.	TG pp.	*Siyavula Everything Maths*	
					LB ex.	TG pp.
11	**MEASUREMENT CAPS p. 28** **1. Revise the volume and surface areas of right prisms and cylinders** Calculate the surface area and volume of right prisms and cylinders	#Revision of area of polygons 355–356, 363, 367#	16.1 (no. 1c–e) 16.2 (no. 1a–b)	430–432, 436	pp. 394–411 12-1 (no. 1–8)* [Revision of area of polygons] 12-2 (no. 1, 2) 12-3 (no. 1–3)	37, 209, 211, 213
		#See *Mind Action Series Mathematics* pp. 280, 281, 283 for questions where tops are not closed				
12	As above					
13	**MEASUREMENT CAPS p. 28** **2. Study the effect on volume and surface area when multiplying any dimension by a constant factor k**	370–371	16.3 (no. 1–2, 4–5)	439	pp. 430–435 12-5 (no. 1–3)	216
14	**MEASUREMENT CAPS p. 28** **3. Calculate the volume and surface areas of spheres, right pyramids and right cones; in case of pyramids, bases must be either an equilateral triangle or a square**	357–359, Note: Change the base of Example 3 to be a square of side 4 cm, volume of the square-based pyramid is then 53,3 cm^3 364–368	16.1 (no. 1f–h, 2, 3, 5)* 16.2 (no. 1c–i, 3–5)	432, 436	pp. 418–424, 428–429 12-4 (no. 1, 2)	215
		Note: In Grade 12, candidates select the appropriate formula from a given list See **Resource 4.2** for practical explanations on how some of the formulae are arrived at				
15	As above					

CLASSROOM MATHEMATICS Week 4 * Select						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
16	**MEASUREMENT CAPS p. 28** **Problem types must include composite figures** Calculate the volume and surface area of composite figures Note: A maximum of TWO objects form a composite figure.	366–369, 372	16.2 (no. 2) 16.4 (no. 7, 8) 16.5 (no. 2)	436, 441, 444	pp. 425–429 12-4 (no. 3)#	215
17	Revision and extension	372–374, 401–416	16.4 (no. 1–6, 9) 16.5 (no. 1) Term 3 revision: 18.1* 18.2* 18.3*	441, 444, 471–488	pp. 436–438 End of chapter exercises (no. 1–3)*	218
18	Consolidation					
19	Revision for test					
20	**Formal assessment: Test (60 minutes)** Review in Week 5					

Notes for Week 5:
1. Go over the test.
2. Revision for end-of-year examinations: You could choose questions from Ex. 18.1–18.3 (LB p. 401, TG p. 470) or elsewhere. We suggest that you allocate marks to each question and allow learners 1–2 minutes per mark to answer the questions. This gives learners practice in examination-writing skills.

CLASSROOM MATHEMATICS Week 5 Revision, go over test – plan your own week						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
21						
22						
23						
24						
25	Go over test					

CLASSROOM MATHEMATICS Week 6 Revision – plan your own week						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
26						
27						
28						
29						
30						

CLASSROOM MATHEMATICS Weeks 7–9 End-of-year examinations

2.2 *Mind Action Series*

Notes for Weeks 1 and 2:
1. See https://apps.statssa.gov.za/censusatschool/docs/FET_Study_Guide.pdf.
2. See **Resource 4.1** for calculator key sequences.

MIND ACTION SERIES MATHEMATICS **Week 1** # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
1	**STATISTICS CAPS p. 27** **1. Revise measures of central tendency in ungrouped data** Determine measures of central tendency in listed data; Effect of outliers on the mean	250–254	3 (no. 1a–c) 1 (no. 4b–c)	204, 198	pp. 288–297 9-1 (no. 1–5)	36, 161
2	**STATISTICS CAPS p. 27** **1. Revise measures of central tendency in ungrouped data** Determine measures of central tendency of data in a frequency table	251, 252, 254#	3 (no. 2)	204	#	#
		#See *Classroom Mathematics* pp. 269–299				
3	**STATISTICS CAPS p. 27** **2. Measures of central tendency in grouped data** Find reasonable estimates of the measures of central tendency	246–247, 255–257#	4 (no. 1, 2)	205	pp. 284–287, 297–302 9-2 (no. 1a) 9-3 (no. 1, 2)	163, 164
		#Types of data – discrete, continuous, categorical (qualitative)				
4	**STATISTICS CAPS p. 27** **3. Revision of range as a measure of dispersion and extension to include percentiles, quartiles, interquartile and semi-interquartile range** Determine percentiles and quartiles	257, 261	#	–	pp. 305–308, 310–312#	–
		#See *Platinum Mathematics* pp. 231–234 and *Classroom Mathematics* pp. 319–321				
5	**STATISTICS CAPS p. 27** **3. Revision of range as a measure of dispersion and extension to include percentiles, quartiles, interquartile and semi-interquartile range** Determine range, quartiles, interquartile and semi-interquartile range	258–262	5 (no. 1–3)	206	pp. 303–304, 308–309, 312–313 9-4 (no. 1–4)	166

MIND ACTION SERIES MATHEMATICS Week 2 * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
6	Consolidation					
7	**STATISTICS CAPS p. 27** **4. Five number summary (maximum, minimum and quartiles)**	262–264, 266–267	6 (no. 1a–c, 2a, 3a–c)	208	pp. 314–316 9-5 (no. 1–4)	167
8	**STATISTICS CAPS p. 27** **5. Use the statistical summaries (measures of central tendency and dispersion), and graphs to analyse and make meaningful comments on the content associated with the given data**	266–267#	6 (no. 1c) [use the box and whisker diagrams] Mixed revision exercise (no. 1a–g) [for 1g comment on the matches played and the goals against] 7 (no. 1–6)*	208, 210, 211	pp. 317–320 Analysis examples pp. 294, 304# End of chapter exercises (no. 4a–b, 6)	170
			#See *Platinum Mathematics* pp. 238–241			
9	Revision and extension	270–272	Mixed revision exercise (no. 3a–i) Some challenges (no. 1–3) #percentiles	211, 215	pp. 317–320 End of chapter exercises (no. 1–3, 5) #percentiles	170
10	Consolidation					

Notes for Weeks 3 and 4:
Revise formulae to determine areas and perimeters of polygons; Nets of the objects enhance understanding of the surface area formulae; Solid and transparent models of the objects enhance understanding of the volume formulae; Candidates must know the formulae for the volume and surface areas of right prisms and cylinders.

MIND ACTION SERIES MATHEMATICS Week 3 * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
11	**MEASUREMENT CAPS p. 28** **1. Revise the volume and surface areas of right prisms and cylinders** Calculate the surface area and volume of right prisms	273–274, 275 Triangular and rectangular prism, cube, cylinder formulae 276–280 #triangular prisms	1 (no. 1)#	221, 223	pp. 394–396, 397–411 12-1 (no. 1–8)* [Revision of area of polygons] 12-2 (no. 1a, c, 2a) 12-3 (no. 1, 2)	37, 209, 211, 213
12	Calculate the surface area and volume of cylinders	281–284	2 (no. 1) [values for d: radius = 7 m height = 4 m]	223	pp. 398–411 12-2 (no. 1b, 2b) 12-3 (no. 3)	211, 213
13	**MEASUREMENT CAPS p. 28** **2. Study the effect on volume and surface area when multiplying any dimension by a constant factor k**	277–284#	1 (no. 2, 3)* 2 (no. 2, 3)*	221, 223	pp. 430–435 12-5 (no. 1–3)	216
		#See *Survival Series* pp. 238–240 for real life questions				

Lesson	CAPS concepts and skills	LB pp.	LB ex.	TG pp.	*Siyavula Everything Maths*	
					LB ex.	TG pp.
14	**MEASUREMENT CAPS p. 28** **3. Calculate the volume and surface areas of spheres, right pyramids and right cones;** **In case of pyramids, bases must be either an equilateral triangle or a square;** Calculate the surface area of spheres, right pyramids and right cones	284–287 Note: Example on p. 284 should read "Square based pyramid" not "Rectangular pyramid"	3 (no. 1a–c) [Calculate the surface area]	226	pp. 411–418, 428 12-4 (no. 1a–d)	215
		Note: In Grade 12, candidates select the appropriate formula from a given list See **Resource 4.2** for practical explanations on how some of the formulae are arrived at				
15	Calculate the volume of spheres, right pyramids and right cones	As above	3 (no. 1a–c) [Calculate the volume]	226	pp. 419–424, 428–429 12-4 (no. 2a–d)	215

MIND ACTION SERIES MATHEMATICS **Week 4** * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
16	**MEASUREMENT CAPS p. 28** **Problem types must include composite figures** Calculate the volume and surface area of composite figures Note: A maximum of TWO objects form a composite figure	286–287, #Example	3 (no. 2–4)	226	pp. 425–429 12-4 (no. 3)#	215
17	Revision and extension	288–290	Mixed revision exercise (no. 1–3) Some challenges (no. 1–3)	231, 232	pp. 426–438 End of chapter exercises (no. 1–3)*	218
18	Consolidation					
19	Revision for test					
20	**Formal assessment: Test (60 minutes)** Review in Week 5					

Notes for Week 5:
1. Go over the test.
2. Revision for end-of-year examinations: You could choose from assessment tasks in the TG. You could also choose questions from the LB or elsewhere. We suggest that you allocate marks to each question and allow learners 1–2 minutes per mark to answer the questions. This gives learners practice in examination-writing skills.

MIND ACTION SERIES MATHEMATICS Week 5 Revision, go over test – plan your own week						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
21						
22						
23						
24						
25	Go over test					

MIND ACTION SERIES MATHEMATICS Week 6 Revision – plan your own week						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
26						
27						
28						
29						
30						

MIND ACTION SERIES MATHEMATICS Weeks 7–9 End-of-year examinations

2.3 *Platinum Mathematics*

Notes for Weeks 1 and 2:
1. See https://apps.statssa.gov.za/censusatschool/docs/FET_Study_Guide.pdf.
2. See **Resource 4.1** for calculator key sequences.

PLATINUM MATHEMATICS **Week 1** # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
1	**STATISTICS CAPS p. 27** **1. Revise measures of central tendency in ungrouped data** Determine measures of central tendency in listed data; Effect of outliers on the mean	224–226	1 (no. 1, 3, 4)	162	pp. 288–297	36, 161
2	**STATISTICS CAPS p. 27** **1. Revise measures of central tendency in ungrouped data** Determine measures of central tendency of data in a frequency table	226#	1 (no. 2)	162	#	#
		#See *Mind Action Series Mathematics* pp. 250–254 and *Classroom Mathematics* pp. 269–299				
3	**STATISTICS CAPS p. 27** **2. Measures of central tendency in grouped data** Types of data – discrete, continuous, categorical (qualitative); Find reasonable estimates of the measures of central tendency	224, 226–230	2 (no. 1–3, 4a–c)	163	pp. 284–287, 297–302 9-2 (no. 1a) 9-3 (no. 1, 2)	163, 164
4	**STATISTICS CAPS p. 27** **3. Revision of range as a measure of dispersion and extension to include percentiles, quartiles, interquartile and semi-interquartile range** Determine percentiles and quartiles	231–234#	3 (no. 1–3)	165	pp. 305–308, 310–312#	–
		#See *Classroom Mathematics* pp. 319–321				
5	**STATISTICS CAPS p. 27** **3. Revision of range as a measure of dispersion and extension to include percentiles, quartiles, interquartile and semi-interquartile range** Determine range, quartiles, interquartile and semi-interquartile range	234–235	5 (no. 1–2)	166	pp. 303–304, 308–309, 312–313 9-4 (no. 1–4)	166

PLATINUM MATHEMATICS Week 2 * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
6	Consolidation					
7	**STATISTICS CAPS p. 27** **4. Five number summary (maximum, minimum and quartiles)** Determine the five number summary and draw box and whisker diagrams	236–237	5 (no. 1–4)	167	pp. 314–316 9-5 (no. 1–4)	167
8	**STATISTICS CAPS p. 27** **5. Use the statistical summaries (measures of central tendency and dispersion), and graphs to analyse and make meaningful comments on the content associated with the given data**	238–241	6 (no. 1–6)*	168	pp. 317–320 Analysis examples pp. 294, 304# End of chapter exercises (no. 4a–b, 6)	170
9	Revision and extension	286, 242–244, 284	Revision (no. 1–5)* Target worksheet 10B* 10A* Programme of assessment (no. 5)	170, 262, 307, 261, 305, 211	pp. 317–320 End of chapter exercises (no. 1–3, 5) #percentiles	170
10	Consolidation					

Notes for Weeks 3 and 4:
Revise formulae to determine areas and perimeters of polygons; Nets of the objects enhance understanding of the surface area formulae; Solid and transparent models of the objects enhance understanding of the volume formulae; Candidates must know the formulae for the volume and surface areas of right prisms and cylinders.

PLATINUM MATHEMATICS Week 3 * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
11	**MEASUREMENT CAPS p. 28** **1. Revise the volume and surface areas of right prisms and cylinders** Calculate the surface area and volume of right prisms	254–258 Revision of area and perimeter of polygons includes trigonometry 267–269#	1 (no. 1–9)* 1 (no. 1, 2)	185, 195–198	p. 394 12-1 (no. 1–8)* [Revision of area of polygons] 12-2 (no. 1a, c) 12-3 (no. 1–2)	37, 209, 211, 213
		#See *Mind Action Series Mathematics* pp. 280, 281, 283 for questions where tops are not closed				
12	Calculate the surface area and volume of cylinders; Go over Test 1	270–271, 273–274	2 (no. 1, 2) 3 (no. 5)	199	pp. 400, 404–406, 407–411 12-2 (no. 1b, 2) 12-3 (no. 3)	211, 213
		#See *Mind Action Series Mathematics* pp. 280, 281, 283 for questions where tops are not closed				

Lesson	CAPS concepts and skills	LB pp.	LB ex.	TG pp.	*Siyavula Everything Maths*	
					LB ex.	TG pp.
13	**MEASUREMENT CAPS p. 28** **2. Study the effect on volume and surface area when multiplying any dimension by a constant factor k**	#	#	#	pp. 430–435 12-5 (no. 1–3)	216
		#See *Survival Series* pp. 238–240 for real life questions				
14	**MEASUREMENT CAPS p. 28** **3. Calculate the volume and surface areas of spheres, right pyramids and right cones** **In case of pyramids, bases must be either an equilateral triangle or a square**	271–274	3 (no. 1–4) Note: Change question 2 to have a square base of side 80 units Answers: a) 226 800 units^2 b) EF = FG = 53 units c) 13 770 units^2 d) 21 870 units^2	199	pp. 411–429 12-4 (no. 1a–c, 2a–c)	215
		Note: In Grade 12, candidates select the appropriate formula from a given list See **Resource 4.2** for practical explanations on how some of the formulae are arrived at				
15	Calculate the surface area and volume of spheres	274–275	4 (no. 1, 2)	201	pp. 411–429 12-4 (no. 1d, 2d)	215

PLATINUM MATHEMATICS Week 4

* Select # Supplement

Lesson	CAPS concepts and skills	LB pp.	LB ex.	TG pp.	*Siyavula Everything Maths*	
					LB ex.	TG pp.
16	**MEASUREMENT CAPS p. 28** **Problem types must include composite figures** Calculate the volume and surface area of composite figures Note: A maximum of TWO objects form a composite figure.	276–279 Note: Change no. 3 of *WORKED EXAMPLES* to a square based pyramid of side 16 m	5 (no. 1–6)* 6 (no. 1–3)*	202, 203	pp. 425–429 12-4 (no. 3)#	215
17	Revision and extension	280–286	Revision (no. 1, 3–6)* Programme of assessment Term 3 (no. 7) Target worksheets 13B*, 13A*	205, 208, 211, 268, 318, 267, 317	pp. 436–438 End of chapter exercises (no. 1–3)*	218
18	Consolidation					
19	Revision for test					
20	**Formal assessment: Test (60 minutes)** Review in Week 5					

Notes for Week 5:
1. Go over the test.
2. Revision for end-of-year examinations: You could choose from examination practice Papers 1 and 2 LB pp. 301–317, TG pp. 223–242. We suggest that you allow learners 1–2 minutes per mark to answer the questions. This gives learners practice in examination-writing skills. If the questions you choose are found elsewhere and they have no marks allocated to them, we suggest that you allocate marks to each question.

PLATINUM MATHEMATICS Week 5 Revision, go over test – plan your own week						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
21						
22						
23						
24						
25	Go over test					

PLATINUM MATHEMATICS Week 6 Revision – plan your own week						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
26						
27						
28						
29						
30						

PLATINUM MATHEMATICS Weeks 7–9 End-of-year examinations

2.4 *Siyavula Everything Maths*

Notes for Weeks 1 and 2:
1. See https://apps.statssa.gov.za/censusatschool/docs/FET_Study_Guide.pdf.
2. See **Resource 4.1** for calculator key sequences.

SIYAVULA EVERYTHING MATHS **Week 1** # Supplement				
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**
1	**STATISTICS CAPS p. 27** **1. Revise measures of central tendency in ungrouped data** Determine measures of central tendency in listed data. Effect of outliers on the mean	288–297	9-1 (no. 1–5)	36, 161
2	**STATISTICS CAPS p. 27** **1. Revise measures of central tendency in ungrouped data** Determine measures of central tendency of data in a frequency table	#	#	#
		#See *Mind Action Series Mathematics* pp. 250–254 and *Classroom Mathematics* pp. 269–299		
3	**STATISTICS CAPS p. 27** **2. Measures of central tendency in grouped data** Types of data – discrete, continuous, categorical (qualitative); Find reasonable estimates of the measures of central tendency	284–287, 297–302	9-2 (no. 1a) 9-3 (no. 1, 2)	163, 164
4	**STATISTICS CAPS p. 27** **3. Revision of range as a measure of dispersion and extension to include percentiles, quartiles, interquartile and semi-interquartile range** Determine percentiles and quartiles	305–308, 310–312	#	–
		#See *Platinum Mathematics* pp. 231–234 and *Classroom Mathematics* pp. 319–321		
5	**STATISTICS CAPS p. 27** **3. Revision of range as a measure of dispersion and extension to include percentiles, quartiles, interquartile and semi-interquartile range** Determine range, quartiles, interquartile and semi-interquartile range	303–304, 308–309, 312–313	9-4 (no. 1–4)	166

SIYAVULA EVERYTHING MATHS **Week 2** # Supplement				
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**
6	Consolidation			
7	**STATISTICS CAPS p. 27** **4. Five number summary (maximum, minimum and quartiles)** Determine the five number summary and draw box and whisker diagrams	314–316	9-5 (no. 1–4)	167
8	**STATISTICS CAPS p. 27** **5. Use the statistical summaries (measures of central tendency and dispersion), and graphs to analyse and make meaningful comments on the content associated with the given data**	317–320 Analysis examples pp. 294, 304#	End of chapter exercises (no. 4a–b, 6)#	170
		#See *Platinum Mathematics* pp. 238–241		
9	Revision and extension	317–320	End of chapter exercises (no. 1–3, 5) #percentiles	170
10	Consolidation			

Notes for Weeks 3 and 4:
Revise formulae to determine areas and perimeters of polygons; Nets of the objects enhance understanding of the surface area formulae; Solid and transparent models of the objects enhance understanding of the volume formulae; Candidates must know the formulae for the volume and surface areas of right prisms and cylinders.

SIYAVULA EVERYTHING MATHS **Week 3** * Select # Supplement				
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**
11	**Measurement CAPS p. 28** **1. Revise the volume and surface areas of right prisms and cylinders** Calculate the surface area of right prisms and cylinders	394–406	12-1 (no. 1–8)* [Revision of area of polygons] 12-2 (no. 1, 2)#	37, 209, 211
		#See *Mind Action Series Mathematics* pp. 280, 281, 283 for questions where tops are not closed		
12	Calculate the volume of right prisms and cylinders	406–411	12-3 (no. 1–3)	213
		#See *Mind Action Series Mathematics* pp. 280, 281, 283 for questions where tops are not closed		
13	**MEASUREMENT CAPS p. 28** **2. Study the effect on volume and surface area when multiplying any dimension by a constant factor k**	430–435	12-5 (no. 1–3)#	216
		#See *Survival Series* pp. 238–240 for real life questions		
14	**MEASUREMENT CAPS p. 28** **3. Calculate the volume and surface areas of spheres, right pyramids and right cones** **In case of pyramids, bases must be either an equilateral triangle or a square** Calculate the surface area of spheres, right pyramids and right cones	411–418, 428	12-4 (no. 1a–d)	215
		Note: In Grade 12 candidates select the appropriate formula from a given list See **Resource 4.2** for practical explanations on how some of the formulae are arrived at		
15	Calculate the volume of spheres, right pyramids and right cones	419–424, 428–429	12-4 (no. 2a–d)	215

SIYAVULA EVERYTHING MATHS **Week 4** * Select # Supplement				
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**
16	**MEASUREMENT CAPS p. 28** **Problem types must include composite figures** Calculate the volume and surface area of composite figures Note: A maximum of TWO objects form a composite figure.	425–429	12-4 (no. 3)#	215
17	Revision and extension	436–438	End of chapter exercises (no. 1–3)*	218
18	Consolidation			
19	Revision for test			
20	**Formal assessment: Test (60 minutes)** Review in Week 5			

Notes for Week 5:
1. Go over the test.
2. Revision for end-of-year examinations: You could choose questions from end-of-chapter exercises or find questions elsewhere. We suggest that you allocate marks to each question and allow learners 1–2 minutes per mark to answer the questions. This gives learners practice in examination-writing skills.

SIYAVULA EVERYTHING MATHS Week 5 Revision, go over test – plan your own week				
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**
21				
22				
23				
24				
25	Go over test			

SIYAVULA EVERYTHING MATHS Week 6 Revision – plan your own week				
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**
26				
27				
28				
29				
30				

SIYAVULA EVERYTHING MATHS Weeks 7–9 End-of-year examinations

2.5 *Survival Series*

Notes for Weeks 1 and 2:
1. See https://apps.statssa.gov.za/censusatschool/docs/FET_Study_Guide.pdf.
2. See **Resource 4.1** for calculator key sequences.

SURVIVAL SERIES **Week 1** # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
1	**STATISTICS CAPS p. 27** **1. Revise measures of central tendency in ungrouped data** Determine measures of central tendency in listed data; Effect of outliers on the mean	217–221, 224–227 Omit cumulative frequency	13.1 (no. 1a–c, 2a–c, 6, 7a–d)	130	pp. 288–297 9-1 (no. 1–5)	36, 161
2	**STATISTICS CAPS p. 27** **1. Revise measures of central tendency in ungrouped data** Determine measures of central tendency of data in a frequency table	#	#	#	#	#
		#See *Mind Action Series Mathematics* pp. 250–254 and *Classroom Mathematics* pp. 269–299				
3	**STATISTICS CAPS p. 27** **2. Measures of central tendency in grouped data** #Types of data – discrete, continuous, categorical (qualitative); #Find reasonable estimates of the measures of central tendency	221#	#	–	pp. 284–287, 297–302 9-2 (no. 1a) 9-3 (no. 1, 2)	163, 164
4	**STATISTICS CAPS p. 27** **3. Revision of range as a measure of dispersion and extension to include percentiles, quartiles, interquartile and semi-interquartile range** Determine percentiles and quartiles	222, 224#	13.1 (no. 7e)#	130	pp. 305–308, 310–312#	–
		#See *Platinum Mathematics* pp. 231–234 and *Classroom Mathematics* pp. 319–321				
5	**STATISTICS CAPS p. 27** **3. Revision of range as a measure of dispersion and extension to include percentiles, quartiles, interquartile and semi-interquartile range** Determine range, quartiles, interquartile and semi-interquartile range	221–223	13.1 (no. 1d, 2d–e, 3, 7f–h)	130	pp. 303–304, 308–309, 312–313 9-4 (no. 1–4)	166

SURVIVAL SERIES **Week 2** # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
6	Consolidation					
7	**STATISTICS CAPS p. 27** **4. Five number summary (maximum, minimum and quartiles)** Determine the five number summary and draw box and whisker diagrams	225	13.1 (no. 2f, 4, 5)	130	pp. 314–316 9-5 (no. 1–4)	167
8	**STATISTICS CAPS p. 27** **5. Use the statistical summaries (measures of central tendency and dispersion), and graphs to analyse and make meaningful comments on the content associated with the given data**	227–228	13.2 (no. 1, 2)#	132	pp. 317–320 Analysis examples pp. 294, 304# End of chapter exercises (no. 4a–b, 6)	170
		#See *Platinum Mathematics* pp. 238–241				

Lesson	CAPS concepts and skills	LB pp.	LB ex.	TG pp.	*Siyavula Everything Maths*	
					LB ex.	TG pp.
9	Revision and extension	229–233	Project data handling, problem solving, worksheet on statistics (no. 1–4)	14, 133, 134	pp. 317–320 End of chapter exercises (no. 1–3, 5) #percentiles	170
10	Consolidation					

Notes for Weeks 3 and 4:
Revise formulae to determine areas and perimeters of polygons; Nets of the objects enhance understanding of the surface area formulae; Solid and transparent models of the objects enhance understanding of the volume formulae; Candidates must know the formulae for the volume and surface areas of right prisms and cylinders.

SURVIVAL SERIES **Week 3** * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
11	**MEASUREMENT CAPS p. 28** **1. Revise the volume and surface areas of right prisms and cylinders** Calculate the perimeter and area of a shape; Calculate the surface area of right prisms and cylinders	234–237 Note: The table headings for the formulae should read perimeter **of the base** and area **of the base**	Investigation (no. 1, 2ii, 3) **or** 14.1 (no. 1a–d) [find surface area only]#	– 135	pp. 394–406 12-1 (no. 1–8)* [Revision of area of polygons] 12-2 (no. 1, 2)	37, 209, 211
		#See *Mind Action Series Mathematics* pp. 280, 281, 283 for questions where tops are not closed				
12	Calculate the volume of right prisms and cylinders	234–238	Investigation (no. 2i, 4–6)* **or** 14.1 (no. 1a–d [find volume only], 2a, 4, 7)#	– 135	pp. 406–411 12-3 (no. 1–3)	213
		#See *Mind Action Series Mathematics* pp. 280, 281, 283 for questions where tops are not closed				
13	**MEASUREMENT CAPS p. 28** **2. Study the effect on volume and surface area when multiplying any dimension by a constant factor *k***	238–240	14.2 (no. 1, 3, 4)	138	pp. 430–435 12-5 (no. 1–3)	216
14	**MEASUREMENT CAPS p. 28** **3. Calculate the volume and surface areas of spheres, right pyramids and right cones** **In case of pyramids, bases must be either an equilateral triangle or a square** Calculate the surface area of spheres, right pyramids and right cones	242–243	#find the total surface area of **each** shape 14.3 (no. 1a–b, 2a) 14.4 (no. 1a–d)	– 140–141	pp. 411–418, 428 12-4 (no. 1a–d)	215
		Note: In Grade 12 candidates select the appropriate formula from a given list See **Resource 4.2** for practical explanations on how some of the formulae are arrived at				
15	Calculate the volume of spheres, right pyramids and right cones	242–243	#find the volume of **each** shape: 14.3 (no. 1a, c, 2b) 14.4 (no. 1a–d)	– 140–141	pp. 419–424, 428–429 12-4 (no. 2a–d)	215

SURVIVAL SERIES Week 4 * Select # Supplement						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
16	**MEASUREMENT CAPS p. 28** **Problem types must include composite figures** Calculate the volume and surface area of composite figures Note: A maximum of TWO objects form a composite figure.	240–244	14.3 (no. 1a–c, 2a–b) 14.4 (no. 1a–d)	140–141	pp. 425–429 12-4 (no. 3)#	215
17	Revision and extension	244–250, 239	Revision: Worksheet on measurement (no. 1–6)* Extension: Problem solving 14.1 (no. 3, 5, 6, 8, 9) 14.2 (no. 2, 5) 14.3 (no. 1d, 2c)	142, 135, 138, 140	pp. 436–438 End of chapter exercises (no. 1–3)*	218
18	Consolidation					
19	Revision for test					
20	**Formal assessment: Test (60 minutes)** Review in Week 5					

Notes for Week 5:

1. Go over the test.
2. Revision for end-of-year examinations: You could choose questions that you may not have done or that the learners found difficult from the problem solving section in each chapter or elsewhere. We suggest that you allocate marks to each question and allow learners 1–2 minutes per mark to answer the questions. This gives learners practice in examination-writing skills AND/OR
3. You could also choose questions that you may not have done or that the learners found difficult from the worksheets (which have mark allocations) in each chapter. Solutions for problem solving and worksheets can be found in the TG.

SURVIVAL SERIES Week 5 Revision, go over test – plan your own week						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
21						
22						
23						
24						
25	Go over test					

SURVIVAL SERIES Week 6 Revision – plan your own week						
Lesson	**CAPS concepts and skills**	**LB pp.**	**LB ex.**	**TG pp.**	***Siyavula Everything Maths***	
					LB ex.	**TG pp.**
26						
27						
28						
29						
30						

SURVIVAL SERIES Weeks 7–9 End-of-year examinations

3. Guidelines for preparing a Mathematics lesson

The planner provides a detailed programme to guide you through the daily content you need to teach your class, and when to do formal assessments. You are still required to draw up your own lesson plans and will still make the final professional choices about which examples and explanations to give, which activities to set for your class and how to manage your class on a daily basis. It is a good idea that you and your Mathematics colleagues agree on a day that you can get together to plan your lessons as a group and submit your plans to your DH for quality assurance. To deliver the lessons successfully **you must do the necessary preparation yourself**. Bear in mind that your lessons will not succeed if you have not prepared properly for them. This entails a number of key steps, such as those noted below.

1. **Review the term focus:** Start by looking at the CAPS and ***orientating*** yourself to the CAPS content focus for the year and the term. It is important that you are clear about the content focus, as this will frame everything you do in your Mathematics lessons during the term. **The time allocation per term** is given in the CAPS document on page 17. This indicates how many hours are to be spent on each topic. Note that where the term length is different to the total number of weeks specified in the CAPS, you will have to adjust the pace at which you work on each topic.

2. **Prepare resources:** It is very important that you ***check what is required for each lesson ahead of time*** so that you have all your resources available and ready for use.

3. **Prepare the content:** Think carefully about what it is that you will teach your learners in each lesson. Think about the prior knowledge of the content that learners should have learned in earlier grades that will be built on in the lesson. You should refer to the CAPS content and skills clarification column for further guidance while you prepare.
   - Prepare ***a short introduction*** to the topic so that you can explain it in simple terms to your learners. The Learner's Book and Teacher's Guide will assist you. Also think about how learners will develop an understanding of the main concepts of the lesson topic. You need to think about how to explain new Mathematics content and skills to your learners.
   - ***Make sure you have prepared for teaching concepts before you teach.*** Prepare yourself to assist learners with any questions they might have during the lesson. Look at the activities in the Learner's Book and in the *Siyavula Everything Maths* Learner's Book and think about how best to help your learners engage with them. Consider what will be done in class and at home. Be sure to have some extension and remediation activities ready to use as needed. Also identify any common misconceptions and plan how you will address these.

Consider the needs of any learners with barriers to learning in your class and how best you can support them. The DBE has published some excellent materials to support you in working with learners with learning barriers.

4. **Plan the steps in your lesson, and think carefully about how much time to allocate to different learner activities.** Also think about how to organise the learners when they work. Most lessons should include the steps below and we have suggested the time to be spent on each (for a 55 minute lesson) – but you might find that you need to work differently in some lessons, such as when a test is being written.
   - **Homework review/reflection (10 minutes):** This is the first activity of the lesson. During this part of the lesson you may reflect on the previous day's work. We recommend that you use these 10 minutes to remediate and correct the previous day's homework and do spot testing. Learners should have marked their work from the answers provided at the back of their Learner's Book. Choose one or two activities that you noted were problematic, to go over more thoroughly. Allow learners the opportunity to write corrections as needed. If peer or individual marking has been done, you should regularly sample some learners' books to moderate this marking and to see what errors are being made so you can remediate these.
   - **Lesson content – introduction and concept development (10 minutes):** This is the second activity of the lesson. We recommend that you are actively involved with your class for 10 minutes – going through examples interactively with your learners or assisting them with introductory investigations. There are worked examples, suggested explanations and introductory investigations in the Learner's Book or Teacher's Guide that you should go through with your class as a whole. The CAPS content clarification column would also be a useful reference should you need further examples or ideas to enrich your explanations. You should elaborate on these explanations and provide additional examples if necessary.
   - **Classwork activity (30 minutes):** This is the third activity of the lesson. This part of the lesson provides an opportunity for learners to consolidate new concepts by doing activities or exercises from the Learner's Book or the *Siyavula Everything Maths* Learner's Book. These activities allow learners to practise their mathematical and problem solving skills. It is important that you ***prepare yourself for the classwork activity*** because you need to assist learners as they do the classwork. You may also need to select particular questions from each activity for the classwork in advance. This will ensure that all activity types and concepts are covered each day and enable you to give quick and clear instructions to your learners about which exercise they should do, which is necessary as the **exercises given in the various Learner's Books vary greatly in length**.

Depending on your learners and the activities, you could discuss one or two of the classwork activities with the whole class before allowing the learners to work independently. Give the learners an opportunity to complete these activities alone, in pairs, and in groups, so that they experience working alone as well as with their peers. Encourage learners, where appropriate, to write the questions with their answers and to show their working neatly and systematically in their workbooks. Plan the timing of the lesson so that you and the learners can go over some of the classwork together and they can do corrections in the lesson.

If you require your learners to work in groups, carefully assign learners in such a way that there are learners with mixed abilities who can assist each other in each group.

This is also the part of the lesson where you can assist learners who need extra support and extend those who need enrichment. Throughout the lesson, try to identify learners who need additional support or extension by paying attention to how well they managed the homework, how they respond when you develop the new content, and how they cope with the class activities. While the rest of the class is busy working through the classwork activities, you should spend some time with those that need extra support and help them to work through the remediation activities**.** If learners successfully complete the daily classwork activities ahead of the rest of the class, be prepared to give them extension activities to do. All the LTSMs provide activities and ideas for remediation and extension. A table summarising what each set of LTSMs offers for each topic is provided in Section C to help you access these resources in the LTSM you are using with your class, and in others you might have available.

- **Allocate homework (5 minutes):** This is the fourth and final activity of the lesson. In this step you should tell the learners about the homework for the day and make sure they know what is expected of them and understand what it is that they have to do. It is a good idea to get learners into the habit of regular daily homework such as completing unfinished classwork, revising what was done in class and noting what they did not understand. Once they have done this they should complete any additional work that you have set them to do for homework, such as specific questions that you have chosen from the classwork to be done as homework, or some of the remediation or extension activities given in the LTSMs you are using.

  Homework enables the learners to consolidate the Mathematics that you have taught them in class. It also promotes learner writing, development of mathematical knowledge and language and the development of regular study habits. Encourage your learners to show their parent(s) or their guardian(s) the work they have done.

5. **After each lesson, reflect on how it went:** The tracking template has prompts to assist you, and spaces where you can note your thoughts about your lessons. You will use these notes as you plan and prepare for your teaching and in discussions with your DH and peers.

4. Supplementary information for Term 4

4.1 Using a scientific calculator to find the mean of data

a) Using a scientific calculator to find the mean of data with no repeats

Find the mean of the following data: 4; 7; 1; 9; 4; 8; 11; 10; 19; 2; 5; 7; 19; 3

CASIO *fx-82ZA* PLUS:

[MODE] [2 : STAT] [1: 1 – VAR]

4 [=] 7 [=] 1 [=] 9 [=] 4 [=] 8 [=] 11 [=] 10 [=] 19 [=] 2[=] 5 [=] 7 [=] 19 [=] 3 [=] [AC]

[SHIFT] [1 : STAT] [4 : VAR] [2 : $\bar{x}$] [=]

SHARP EL-W535HT

[MODE] [1 : STAT] [0 : SD] [2ndF] [CA]

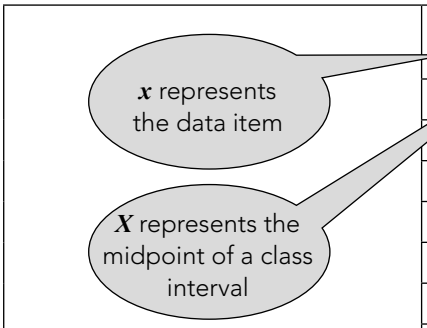
4 [DATA] 7 [DATA] 1 [DATA] 9 [DATA] 4 [DATA] 8 [DATA] 11 [DATA]

10 [DATA] 19 [DATA] 2 [DATA] 5 [DATA] 7 [DATA] 19 [DATA] 3 [DATA]

[ALPHA] [=] [$\bar{x}$]

Both calculators give the value $\bar{x}$ = 7,7857... ≈ 7,79

b) Using a scientific calculator to find the mean of data in a frequency table



Number (x) or (X)	Frequency (f)
24	3
25	4
26	2
27	4
28	6
29	2
30	2
31	3

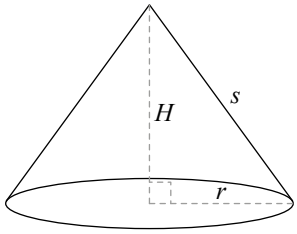
CASIO *fx-82ZA* PLUS	SHARP EL-W535HT
• First add in a frequency column: [SHIFT] [SETUP] [▼] [3:STAT] [1:ON] • Then enter the data [SETUP] [2:STAT] [1:1-VAR] 24 [=] 25 [=] 26 [=] 27 [=] 28 [=] 29 [=] 30 [=] 31 [=] [▼] [▶] 3 [=] 4 [=] 2 [=] 4 [=] 6 [=] 2 [=] 2 [=] 3 [=] [AC] [SHIFT] [STAT] [1] [4:VAR] [2 : $\bar{x}$]	[MODE] [1 : STAT] [0 : SD] [2ndF] [MODE] [CA] 24 [(x ; y)] 3 [DATA] 25 [(x ; y)] 4 [DATA] 26 [(x ; y)] 2 [DATA] 27 [(x ; y)] 4 [DATA] 28 [(x ; y)] 6 [DATA] 29 [(x ; y)] 2 [DATA] 30 [(x ; y)] 2 [DATA] 31 [(x ; y)] 3 [DATA] [ALPHA] [4] [$\bar{x}$]

Both calculators give the mean as 27,3461... ≈ 27,35

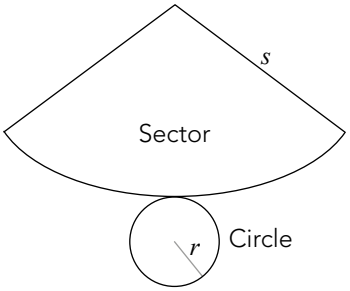
4.2. Explaining formulae for cones, spheres and pyramids

1. Explaining the surface area of a cone formula

A right cone:

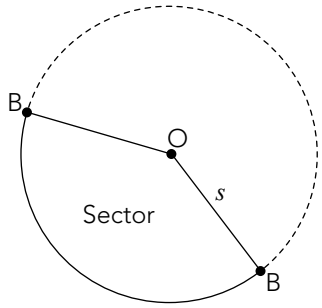


The net of a right cone:



The **net** of a cone consists of two parts: a sector that gives the curved surface and a circle that gives the base.

The area of the sector is a fraction of the area of the circle with radius s.



To find this fraction we make use of equivalence:

$$\frac{\text{area sector BOB}}{\text{area circle centre O}} = \frac{\text{length arc B}}{\text{circumferene circle centre O}}$$

$$= \frac{2\pi r}{2\pi s}$$

$$= \frac{r}{s}$$

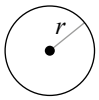
$\therefore$ area sector BOB = area circle centre O $\times \frac{r}{s}$

$$= \pi s^2 \times \frac{r}{s}$$

$$= \pi rs$$

The area of the base of the cone

$= \pi r^2$



The surface area of a right cone

= area of the sector + area of the base

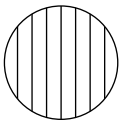
$= \pi rs + \pi r^2$

$= \pi r(r + s)$

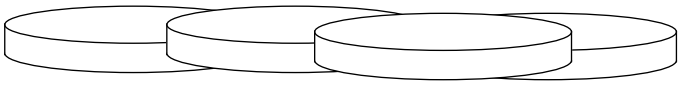
2. A practical way of finding the surface area of a sphere

Equipment needed: An orange, a knife, a ruler, a marker, paper towel.

1. Mark off equal widths along the orange.
2. Use the knife to cut the orange along the marked lines.



3. You should now have a number of cylinders of the same height.



4. Remove the fruit from one of these cylinders and cut the skin to flatten the cylinder into a rectangle.

The length of this rectangle

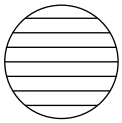
= the circumference of the cylinder

$= 2\pi r$

5. The height of all the cylinders stacked on top of each other

   = the height of the orange

   $= 2r$



So, the surface area of the orange

$= 2r \times 2\pi r$

$= 4\pi r^2$

Reference: http://www.youtube.com/watch?v=Oh9ZtvfCVEg&feature=related Mrmechanicaltech

3. A practical method of finding a formula for the volume of a cone

- Fill a cone with coloured water, bird seed or salt.
- Transfer the water, bird seed or salt into a cylinder having the same base and height as the cone.
- Repeat until the cylinder is full of water, bird seed or salt.
- You should find that it takes 3 cones to fill the cylinder.
- Hence volume of cone = $\frac{1}{3}$ volume of cylinder = $\frac{1}{3}\pi r^2 \times H = \frac{1}{3}\pi r^2 H$

4. A practical method of finding a formula for the volume of a sphere

- Fill a sphere with coloured water, bird's seed or salt.
- Transfer the water, bird seed or salt into a cylinder having the same radius and height as the sphere.
- You should find that the sphere fills $\frac{2}{3}$ of the cylinder.
- Volume of sphere = $\frac{2}{3}$ × volume of cylinder = $\frac{2}{3}\pi r^2 H$
- But height of sphere = 2 × radius of sphere = $2r$
- hence, volume of a sphere = $\frac{2}{3}\pi r^2 2r = \frac{4}{3}\pi r^3$

5. A practical method of finding a formula for the volume of a pyramid

- Fill a square-based pyramid with coloured water, bird seed or salt.
- Transfer the water, bird seed or salt into a cube having the same base and height as the pyramid.
- Repeat until the cube is full of water, bird seed or salt.
- You should find that it takes 3 square-based pyramids to fill the cube.
- Hence volume square pyramid = $\frac{1}{3}$ of volume cube = $\frac{1}{3} \times b^2 \times H$

Note: The same would apply to a tetrahedron with the same height and base area as a triangular prism.

- Volume of a tetrahedron = $\frac{1}{3} \times (\frac{1}{2} \times b \times h) \times H = \frac{1}{6}bhH$

5. Assessment term plans

5.1 Term 3: Formal assessment tasks included in each set of LTSMs

LTSMs	Resource material for setting tests	Exemplar Trigonometry test *More time may need to be arranged for the 60-minute exemplar*	Exemplar end-of-term test *More time may need to be arranged for the 90-minute exemplar*
Classroom Mathematics	1. Resource CD to generate tests and memoranda 2. Tests with memoranda in TG as follows: Trigonometry TG p. 195 (35 minutes, 35 marks) Trigonometric functions TG p. 196 Question 5 (4 marks); TG p. 247 (1 hour, 45 marks) Trigonometry problems in two dimensions TG p. 427 (35 minutes 30 marks) Finance and growth TG p. 345 (35 minutes 30 marks) Probability TG p. 467 (35 minutes 30 marks)	**Week 4 – Lesson 17** Trigonometry exemplar test (60 minutes)	**Week 11** End-of-term exemplar test (90 minutes)
Mind Action Series Mathematics	No tests provided	**Week 4 – Lesson 17** Trigonometry exemplar test (60 minutes)	**Week 11** End-of-term exemplar test (90 minutes)
Platinum Mathematics	1. Resource CD with test questions and memoranda covering the following topics: Trigonometry; Measurement; Functions and graphs; Finance, growth and decay; Probability; Analytical geometry 2. Four practice tests of 50 marks each	**Week 4 – Lesson 17** Trigonometry exemplar test (60 minutes)	**Week 11** End-of-term exemplar test (90 minutes)
Siyavula Everything Maths	No tests provided	**Week 4 – Lesson 17** Trigonometry exemplar test (60 minutes)	**Week 11** End-of-term exemplar test (90 minutes)
Survival Series	No tests provided	**Week 4 – Lesson 17** Trigonometry exemplar test (60 minutes)	**Week 11** End-of-term exemplar test (90 minutes)

Exemplar test in Section C of this planner includes questions on: **Trigonometry** – Ratios, reciprocals, calculator usage, special angles, equations – Solving two dimensional problems – Using diagrams to determine ratios of angles from to	Exemplar end-of-term test in Section C of this planner includes questions on: **Trigonometry** – Ratios, reciprocals, special angles, equations – Using diagrams to determine ratios of angles from to – Solving two-dimensional problems – Trigonometric functions **Finance and growth** **Probability** **Analytical geometry**

5.2 Term 4: Formal assessment tasks included in each set of LTSMs

LTSMs	Resource material for setting tests or informal assessments	Exemplar end-of-year test
Classroom Mathematics	• Resource CD to generate tests and memoranda • Test with memorandum: Volume and surface area test TG p. 445 (35 minutes; 30 marks)	**Week 4 – Lesson 20** Exemplar test in Section C of this planner (60 minutes)
Mind Action Series Mathematics	• No tests provided • Assessment task: Assignment (on Measurement) TG pp. 233–236 could be used as a test • Assessment task: Assignment (no. a, b, e–i on Statistics) TG pp. 216, 218 could be used as a test	**Week 4 – Lesson 20** Exemplar test in Section C of this planner (60 minutes)
Platinum Mathematics	• Tests are provided in LB hence not suitable for formal assessment • Resource CD with test questions and memoranda could be used as a source Topics: Trigonometry, Measurement, Functions and Graphs, Finance – growth and decay, Probability, Statistics, Euclidean geometry, Analytical geometry Four practice tests of 50 marks each	**Week 4 – Lesson 20** Exemplar test in Section C of this planner (60 minutes)
Siyavula Everything Maths	• No tests provided • TG pp. 29, 30, 34 requirements for and how to mark journals/ assignments/orals	**Week 4 – Lesson 20** Exemplar test in Section C of this planner (60 minutes)
Survival Series	• Tests are provided in LB hence not suitable for formal assessment • *Project: Patio* LB p. 244 could be used as an informal assessment	**Week 4 – Lesson 20** Exemplar test in Section C of this planner (60 minutes)
The exemplar test in this tracker includes questions on: • Statistics • Measurement		

6. The exemplar Term 3 Trigonometry test

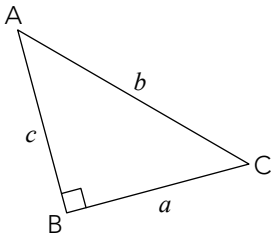
Time: 60 minutes *Total: 50 marks*

INSTRUCTIONS TO LEARNERS:

1. There are nine questions. Answer all questions.
2. Show all your calculations where necessary. Full marks will not be awarded where working out should be shown but is not.
3. Scientific non-programmable calculators may be used. If necessary, round off answers to TWO decimal places, unless stated otherwise.
4. Diagrams are not drawn to scale.
5. Number the answers correctly according to the numbering system used in this question paper.
6. Write neatly and legibly.

QUESTION 1

In the diagram below, △ABC is right-angled at B.
Fill in the name of the ratio in place of the dots:



(1) $\frac{c}{b}$ = ... $\hat{A}$

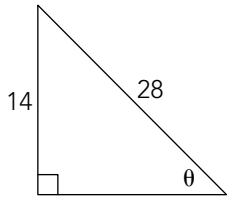
(2) $\frac{c}{b}$ = ... $\hat{C}$

[2]

QUESTION 2

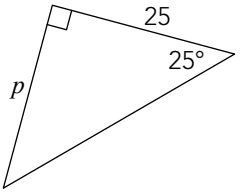
Determine the value of the unknown in the triangles below.

2.1



(2)

2.2



(3)

[5]

QUESTION 3

Use a calculator to simplify the following expressions.

3.1 cos 20° + cos 15° (1)

3.2 cos (20° + 15°) (1)

3.3 $\tan^2 73°$ (1)

3.4 sec 27° (2)

[5]

QUESTION 4

Solve for x, where $x \in [0°; 90°]$.

4.1 $\frac{1}{2} \tan x = 1{,}214$ (2)

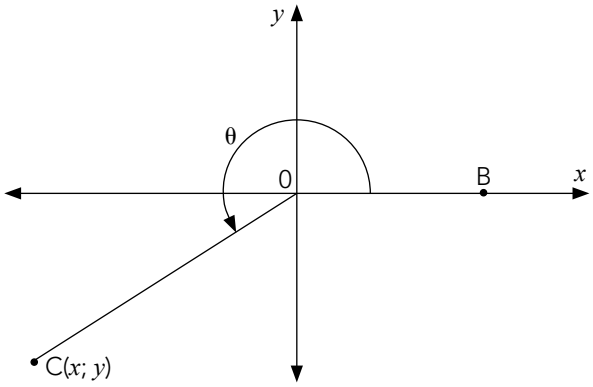
4.2 $3 \sin x + 1 = 1{,}8$ (3)

4.3 $3 \cos (x + 10°) = 0{,}98$ (3)

[8]

QUESTION 5

If 13 sin θ = –5, use the diagram below to determine the value of:



5.1 tan θ (4)

5.2 $\sin^2 \theta + \cos^2 \theta$ (3)

[7]

QUESTION 6

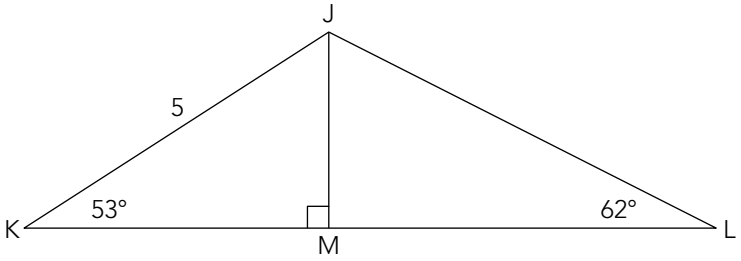
Determine the value of the following without using a calculator.

$\sin 30° + 2 \tan 45° - \cos 60° + \frac{\sin 45°}{\cos 45°}$

[6]

QUESTION 7

JKL is a triangle with JM perpendicular to KL, JK = 5, $J\hat{K}M = 53°$ and $J\hat{L}M = 62°$.



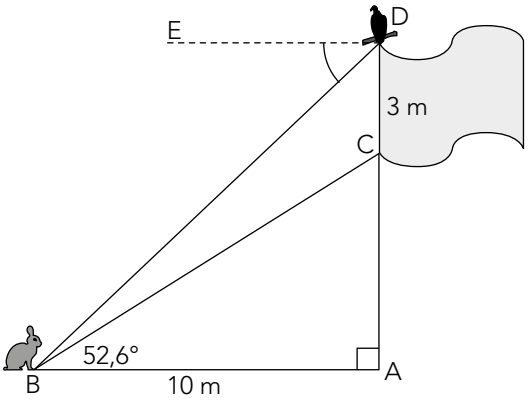
7.1 Calculate the length of KM. (3)

7.2 Calculate the length of ML. (4)

[7]

QUESTION 8

A bird is at the top of a flag D on a flag pole AD.
The bird sees a rabbit on the ground at B,
10 metres from the foot of the flag pole.
If the width of the flag, DC, is 3 metres and
the angle of elevation from B to C is 52,6°,
calculate the angle of depression from D to B.



[6]

QUESTION 9

Explain, with the help of a diagram, that sin θ < 1 for θ ∈ [0°; 90°).

[4]

TOTAL: 50

7. Memorandum and analysis of cognitive levels in the Term 3 Trigonometry test

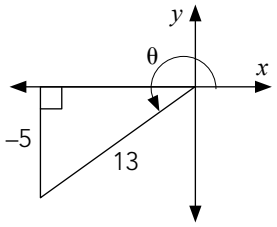
Note: The last column in the memorandum shows the cognitive level for each question in the test. The levels are:

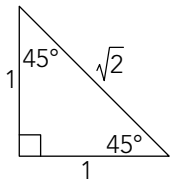
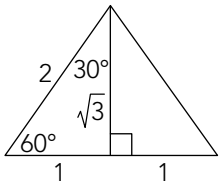
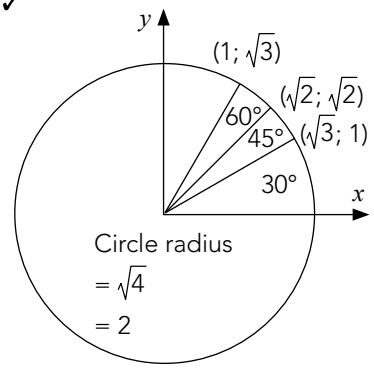
K	**Knowledge** – straight recall of facts
R	**Routine procedures** – well-known, simple applications and calculations
C	**Complex procedures** – procedures involving complex calculations and/or higher reasoning
P	**Problem solving** – solving problems for which higher order reasoning and processes are involved
More information about these levels can be found in the CAPS (p. 53).	

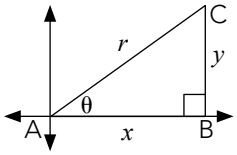
A suggestion for test and exam marking

Underline errors committed by learners and apply Consistent Accuracy (CA) marking. This means the learner loses the mark for each mistake made and you mark the rest of the answer according to their mistake(s). However, if the learner shows a lack of understanding of the concept, no marks are given. Also, if the learner has made the question easier, no marks are given from that part onwards.

SOLUTIONS **NOTE:** Other methods for the solutions are acceptable (as long as they are mathematically sound)	**MARKS**	**COGNITIVE LEVELS**
QUESTION 1 $\frac{c}{b} = \cos \hat{A}$ ✓ and $\frac{c}{b} = \sin \hat{C}$ ✓ *1 mark for cos $\hat{A}$, 1 mark for sin $\hat{C}$*	(2)	**K**
QUESTION 2 2.1 $\sin \theta = \frac{14}{28}$ ✓ *1 mark for statement* $\theta = \sin^{-1}(\frac{14}{28})$ $\theta = 30°$ ✓ *1 mark for answer* 2.2 $\frac{p}{25} = \tan 25°$ ✓ *1 mark for statement* $p = 25 \tan 25°$ ✓ *1 mark for rearranging the equation* $p = 11{,}657\ldots$ $p \approx 11{,}66$ ✓ *1 mark for the answer*	(2) (3)	**R** **R**
QUESTION 3 3.1 $\cos 20° + \cos 15° = 1{,}905\ldots \approx 1{,}91$ ✓ *1 mark for the final answer* 3.2 $\cos (20° + 15°) = 0{,}8191\ldots \approx 0{,}82$ ✓ *1 mark for the final answer* 3.3 $\tan^2 73° = (\tan 73°)^2 = 10{,}698\ldots \approx 10{,}70$ ✓ *1 mark for the final answer* 3.4 $\sec 27° = \frac{1}{\cos 27°}$ ✓ $= 1{,}122\ldots \approx 1{,}12$ ✓ *1 mark for changing ratio to cosine; 1 mark for final answer*	(1) (1) (1) (2)	**R** **R** **R** **R**

SOLUTIONS **NOTE:** Other methods for the solutions are acceptable (as long as they are mathematically sound)	MARKS	COGNITIVE LEVELS
QUESTION 4		
4.1 $\frac{1}{2}\tan x = 1{,}214$		
$\tan x = \frac{1{,}214}{\frac{1}{2}}$ ✓ **OR** $\tan x = 1{,}214 \times 2$ *1 mark for rearranging the equation*		
$x = \tan^{-1}\left(\frac{1{,}214}{\frac{1}{2}}\right)$ **OR** $x = \tan^{-1}(1{,}214 \times 2)$		
$x = 67{,}615\ldots°$		
$x \approx 67{,}62°$ ✓ *1 mark for answer*	(2)	**R**
4.2 $3\sin x + 1 = 1{,}8$		
$3\sin x = 1{,}8 - 1$ ✓ *1 mark for rearranging the equation*		
$\sin x = \frac{0{,}8}{3}$ ✓ *1 mark for rearranging the equation*		
$x = \sin^{-1}\frac{0{,}8}{3}$		
$x = 15{,}466\ldots°$		
$x \approx 15{,}47°$ ✓ *1 mark for answer*	(3)	**C**
4.3 $3\cos(x + 10°) = 0{,}98$		
$\cos(x + 10°) = \frac{0{,}98}{3}$ ✓ *1 mark for rearranging the equation*		
$(x + 10°) = \cos^{-1}\left(\frac{0{,}98}{3}\right)$ **OR** $x = \cos^{-1}\left(\frac{0{,}98}{3}\right) - 10°$		
$(x + 10°) = 70{,}9334199°$		
$x = 60{,}933\ldots°$		
$x \approx 60{,}93°$ ✓✓ *2 marks for answer*	(3)	**C**
QUESTION 5		
		
5.1 $13\sin\theta = -5$		
$\sin\theta = \frac{-5}{13}$ ✓ *1 mark for rearranging the equation*		
$\therefore y = -5$ and $r = 13$		
$x = \pm\sqrt{13^2 - (-5)^2}$ *Theorem of Pythagoras* ✓		
$x = \pm\sqrt{169 - 25}$		
$x = \pm\sqrt{144}$		
$\therefore x = -12$ ✓ *1 mark for final answer*		
$\therefore \tan\theta = \frac{-5}{-12} = \frac{5}{12}$ ✓ *1 mark for final value of tan θ*	(4)	**R**
5.2 $\sin^2\theta + \cos^2\theta$		
$= \left(\frac{-5}{13}\right)^2$✓ $+ \left(\frac{-12}{13}\right)^2$ ✓ *1 mark for each* substitution		
$= \frac{25}{169} + \frac{144}{169} = \frac{169}{169} = 1$ ✓ *1 mark for the answer*	(3)	**R**

SOLUTIONS **NOTE:** Other methods for the solutions are acceptable (as long as they are mathematically sound)	MARKS	COGNITIVE LEVELS
QUESTION 6 Using triangles: $\sin 30° + 2\tan 45° - \cos 60° + \frac{\sin 45°}{\cos 45°}$ $= \frac{1}{2}$ ✓ $+ \frac{2}{1}\cdot\frac{1}{1}$ ✓ $- \frac{1}{2}$ ✓ $+ \frac{\frac{1}{\sqrt{2}}}{\frac{1}{\sqrt{2}}}$ ✓ $= \frac{1}{2} + 2 - \frac{1}{2} + 1$ $= 3$ ✓ *marks for special angle substitutions and for final answer*   **OR:** Using a circle: $\sin 30° + 2\tan 45° - \cos 60° + \frac{\sin 45°}{\cos 45°}$ $= \frac{1}{2}$ ✓ $+ \frac{2}{1}\cdot\frac{\sqrt{2}}{\sqrt{2}}$ ✓ $- \frac{1}{2}$ ✓ $+ \frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}}$ ✓ *1 mark per substitution* $= \frac{1}{2} + 2 - \frac{1}{2} + 1$ $= 3$ ✓ *1 mark for answer* 	(6)	**R**
QUESTION 7 7.1 In △JKM $\cos \hat{K} = \frac{KM}{JK}$ ✓ *1 mark for formula* $\cos 53° = \frac{KM}{5}$ ✓ *1 mark for substitution* ∴ KM ≈ 3,00 ✓ *1 mark for answer correct to 2 decimal places* 7.2 In △JKM $\sin \hat{K} = \frac{JM}{KJ}$ $\sin 53° = \frac{JM}{5}$ JM = 5 sin 53° = 3,99317755 ✓ *1 mark for either answer* In △LJM $\tan L = \frac{JM}{ML}$ ✓ *1 mark for formula* $\tan 62° = \frac{5 \sin 53°}{ML}$ ✓ **OR** $\tan 62° = \frac{3,99317755}{ML}$ *1 mark for substitution* $ML = \frac{5 \sin 53°}{\tan 62°}$ **OR** $ML = \frac{3,99317755}{\tan 62°}$ ML = 2,123… ∴ ML ≈ 2,12 ✓ 1 mark for answer	(3) (4)	**R** **C**

SOLUTIONS **NOTE:** Other methods for the solutions are acceptable (as long as they are mathematically sound)	MARKS	COGNITIVE LEVELS
QUESTION 8 $E\hat{D}B = D\hat{B}A$ ✓ (alt.∠s ED||BA) *1 mark for showing the angle of depression from D to B equals the angle of elevation from B to D* In △CBA $\tan C\hat{B}A = \frac{CA}{BA}$ ✓ *1 mark for formula* $\tan 52{,}6° = \frac{CA}{10}$ ✓ *1 mark for substitution* $CA = 10 \tan 52{,}6°$ $CA = 13{,}07945704…$ $\therefore CA \approx 13{,}08$ ✓ *1 mark for answer correct to 2 decimal places* In △DBA, DA = 13,08 + 3 = 16,08 $\tan D\hat{B}A = \frac{DA}{BA}$ $\tan D\hat{B}A = \frac{16{,}08}{10}$ ✓ *1 mark for substitution* $D\hat{B}A = \tan^{-1}(\frac{16{,}08}{10})$ $D\hat{B}A = 58{,}122…$ $D\hat{B}A \approx 58{,}12°$ $\therefore E\hat{D}B \approx 58{,}12°$ ✓ *1 mark for final answer*	(6)	**P**
QUESTION 9 △ABC must have a right angle in order to find sin θ. ✓ If $\hat{B} = 90°$ then $\theta \in [0°;90°)$ ✓ Diagram which helps explanation: ✓ $\sin\theta = \frac{CB}{CA}$ or $\frac{y}{r}$ or $\frac{opposite}{hypotenuse}$  The hypotenuse is the longest side in a right-angled triangle, $y<r$, so sin θ will be less than 1. ✓ **OR** any feasible answer supported by a diagram.	(4)	**P**

8. Weighting of cognitive levels in the Term 3 Trigonometry test

The table below shows the weighting of marks across the cognitive levels in the exemplar test provided. As can be seen, this differs slightly from the suggested weightings in the CAPS. This is acceptable, provided the two lower cognitive levels add up to approximately 55%, while the two higher levels add up to approximately 45%. In this exemplar test, the two lower levels together account for 60% of the marks, and the two higher for 40%.

Cognitive levels	Mark out of 50	Percentage of marks in the test	Percentage of marks at each level prescribed by the CAPS (p. 53)
Knowledge (K)	2	4%	≈ 20%
Routine procedures (RP)	28	56%	≈ 35%
Complex procedures (CP)	10	20%	≈ 30%
Problem solving (PS)	10	20%	≈ 15%

9. The exemplar Term 3 end-of-term test

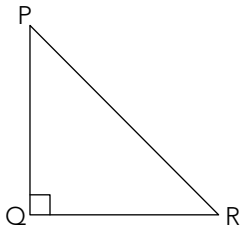
Time: 90 minutes *Total: 75 marks*

INSTRUCTIONS TO LEARNERS:

1. There are eight questions. Answer all questions.
2. Show all your calculations where necessary. Full marks will not be awarded where working out should be shown but is not.
3. Scientific non-programmable calculators may be used. If necessary, round off answers to TWO decimal places, unless stated otherwise.
4. Diagrams are not drawn to scale.
5. Number the answers correctly according to the numbering system used in this question paper.
6. Write neatly and legibly.

QUESTION 1

1.1 In the diagram below, △PQR is right-angled at Q. Copy and complete the following statement:



… $\hat{R} = \frac{QR}{PQ}$ (1)

1.2 Determine the value of the following without using a calculator.

$$\frac{\sin 60°.\cos 45°}{\cot 30°}$$ (4)

1.3 Solve for x, rounded off to one decimal place, for $0° \leq x \leq 90°$.

1.3.1 $3 \tan x = 5$ (2)

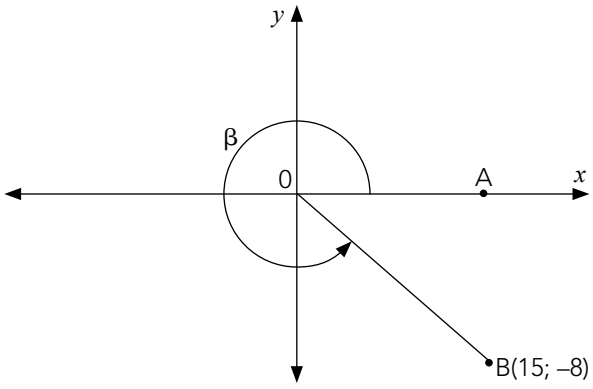
1.3.2 $\cos 2x + 1 = 1{,}53$ (3)

1.3.3 $3 \sec x - 5 = 4$ (3)

[13]

QUESTION 2

In the sketch below, B (15; –8) is a point on the Cartesian plane and Reflex $A\hat{O}B = \beta$.



Use the sketch to determine:

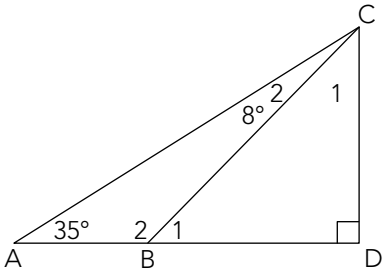
2.1 $\cos \beta$ (3)

2.2 $\text{cosec}^2 \beta - 1$ (2)

[5]

QUESTION 3

In the figure below, CD represents a vertical cliff face. From A in the same horizontal plane as the foot of the cliff, the angle of elevation of the top of the cliff is 35°. $A\hat{C}B = 8°$.



If CB is 1 545 m, calculate the height of the cliff face.

[4]

QUESTION 4

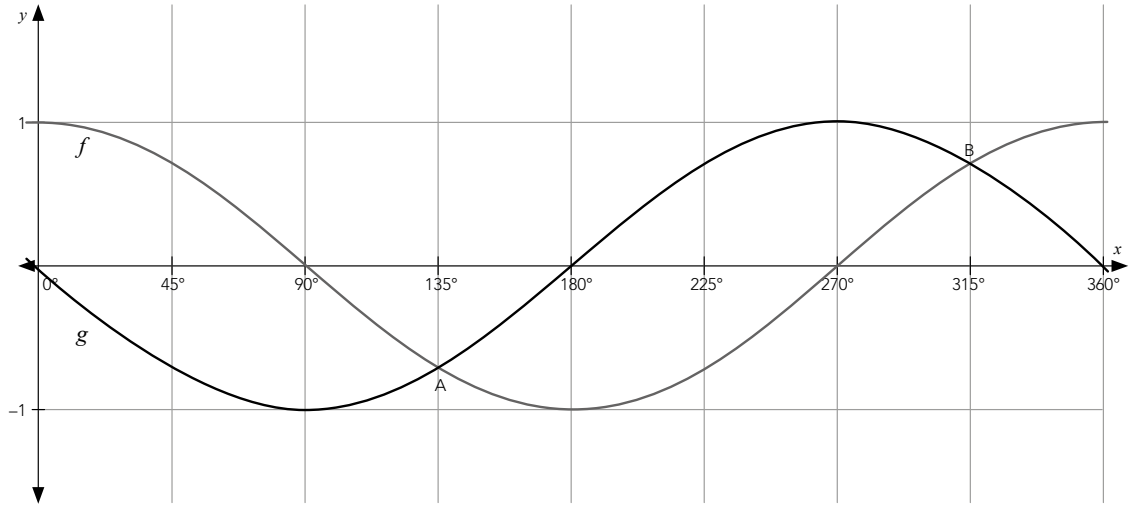
Sketch the graph of for $g(x) = -\tan x$ for $x \in [0°; 360°]$.

Clearly indicate the intercepts with the axes as well as the asymptotes.

[3]

QUESTION 5

The diagram below represents the graphs of $f(x) = \cos x$ and $g(x) = -\sin x$ for $x \in [0°; 360°]$.



5.1 If the y-coordinate of A is $\frac{-\sqrt{2}}{2}$, what is the y-coordinate of B? (1)

5.2 Give the range of $g(x) + 1$. (2)

5.3 For which values of x does $f(x)$ decrease as x increases? (2)

5.4 For which values of x is $f(x) + g(x) = 1$? (3)

5.5 Give one value of x for which $g(x) \div f(x) = 0$. (1)

[9]

QUESTION 6

6.1 6.1.1 While on holiday in Botswana, Pumi bought some clothes which cost her 750 Botswana Pula (BWP). If the exchange rate was 1 BWP = ZAR 1,387 85 calculate how much money she spent on clothes in rand (ZAR). (2)

6.1.2 If the South African rate of inflation continues at 6,1% for the next 2 years, how much will 750 BWP be in ZAR in 2 years' time? (4)

6.2 Mrs Maluleke wants to buy a new washing machine marked at R3 200. She pays a 20% deposit and she takes out a hire purchase agreement over 36 months for the balance. She is charged an interest rate of 14,5% p.a.

6.2.1 Calculate Mrs Maluleke's monthly instalment. (5)

6.2.2 Calculate how much more she will pay for the washing machine than if she had bought it cash. (2)

[13]

QUESTION 7

7.1 A survey was conducted to determine the preference of 140 Grade 10 learners for Cream Soda and Fanta cold drinks. The results of the survey are given in the table below:

54	Enjoy Cream Soda
79	Enjoy Fanta
15	Enjoy Cream Soda and Fanta
22	Do not enjoy these cold drinks

7.1.1 Draw a Venn Diagram to show these results. (3)

7.1.2 Are the events of liking Cream Soda (C) and liking Fanta (F) mutually exclusive? Explain your answer. (2)

7.1.3 What is the probability that a learner selected at random does not like Fanta? (2)

7.2 A number is chosen at random from the set of natural numbers from 1 to 20, including 1 and 20. Event A is choosing a prime number. Event B is choosing an odd number.

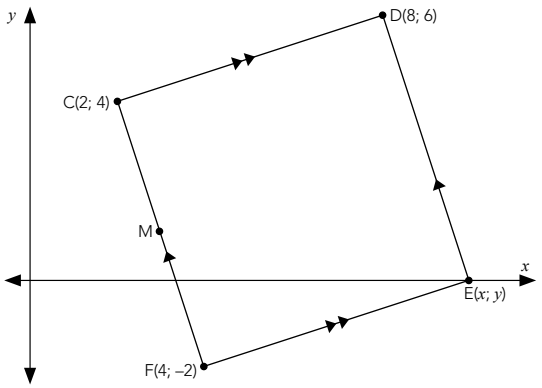
7.2.1 Determine P(A). (2)

7.2.2 Determine P(A and B). (2)

[11]

QUESTION 8

In the diagram, parallelogram CDEF has vertices C(2; 4), D(8; 6), E(x; y) and F(4; –2).



8.1 Show that the gradient of CD is $\frac{1}{3}$. (2)

8.2 Determine the coordinates of E. (3)

8.3 Show that CF⊥CD. (3)

8.4 Calculate the lengths of CF and CD. (3)

8.5 Why is parallelogram CDEF is a square? (1)

8.6 Determine the coordinates of M, the midpoint of CF. (2)

8.7 Determine the equation of the line which passes through M and is parallel to EF. (3)

[17]

TOTAL: 75

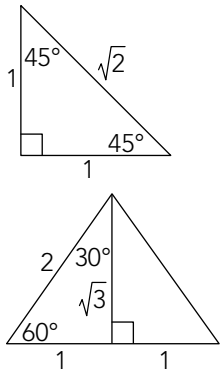
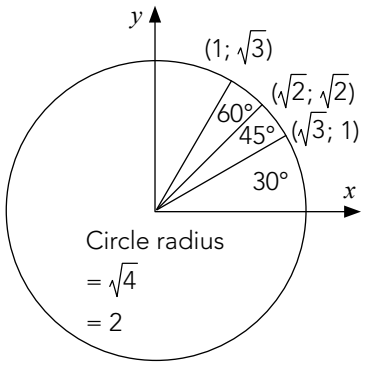
10. Memorandum and analysis of cognitive levels in the Term 3 end-of-term test

Note: The last column in the memorandum shows the cognitive level for each question in the test. The levels are:

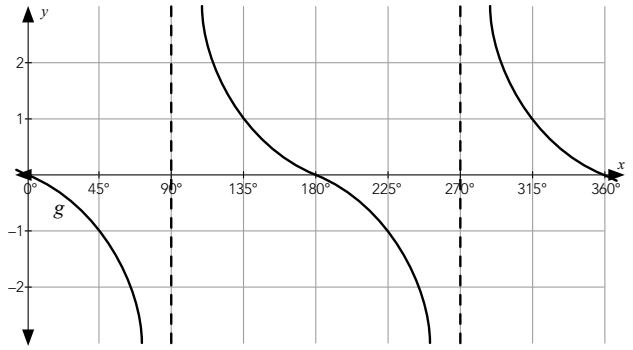
K	**Knowledge** – straight recall of facts
R	**Routine procedures** – well-known, simple applications and calculations
C	**Complex procedures** – procedures involving complex calculations and/or higher reasoning
P	**Problem solving** – solving problems for which higher order reasoning and processes are involved
More information about these levels can be found in the CAPS (p. 53).	

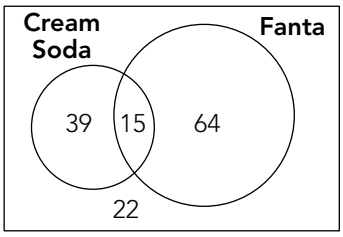
A suggestion for test and exam marking

Underline errors committed by learners and apply Consistent Accuracy (CA) marking. This means the learner loses the mark for each mistake made and you mark the rest of the answer according to their mistake(s). However, if the learner shows a lack of understanding of the concept, no marks are given. Also, if the learner has made the question easier no marks are given from that part onwards.

SOLUTIONS **NOTE:** Other methods for the solutions are acceptable (as long as they are mathematically sound)	**MARKS**	**COGNITIVE LEVELS**
QUESTION 1		
1.1 $\cot R = \frac{QR}{PQ}$ ✓ *1 mark for cot*	(1)	**K**
1.2 Using triangles: $\frac{\sin 60°.\cos 45°}{\cot 30°}$ $= \frac{\frac{\sqrt{3}}{2}✓.\frac{1}{\sqrt{2}}✓}{\frac{\sqrt{3}}{1}}$ ✓ $= \frac{2}{2\sqrt{2}}$ ✓ *1 mark per substitution;* *1 mark for answer*  Using a circle: $\frac{\sin 60°.\cos 45°}{\cot 30°}$ $= \frac{\frac{\sqrt{3}}{2}✓.\frac{\sqrt{2}}{2}✓}{\frac{\sqrt{3}}{1}}$ ✓ $= \frac{\sqrt{2}}{4}$ ✓ *1 mark per substitution* *1 mark for answer* 	(4)	**R**

SOLUTIONS **NOTE:** Other methods for the solutions are acceptable (as long as they are mathematically sound)	MARKS	COGNITIVE LEVELS
NOTE: ONLY 1 MARK DEDUCTED FOR INCORRECT ROUNDING OFF IN 1.3		
1.3 1.3.1 $3 \tan x = 5$ $\tan x = \frac{5}{3}$ ✓ *1 mark for rearranging the equation* $x = 59{,}036\ldots°$ $x \approx 59{,}0°$ ✓ *1 mark answer to 1 decimal place*	(2)	**R**
1.3.2 $\cos 2x + 1 = 1{,}53$ $\cos 2x = 1{,}53 - 1$ $\cos 2x = 0{,}53$ ✓ *1 mark for simplifying* $2x = 57{,}99454517$ ✓ **OR** $2x = \cos^{-1}(0{,}53)$ $x = 28{,}997\ldots$ $x \approx 29{,}0°$ ✓ *1 mark for answer to 1 decimal place*	(3)	**R**
1.3.3 $3 \sec x - 5 = 4$ $3 \sec x = 9$ ✓ *1 mark for simplifying* $\sec x = \frac{9}{3}$ ✓ *1 mark for rearranging the equation* $\cos x = \frac{3}{9}$ $x = 70{,}52\ldots°$ $x \approx 70{,}5°$ ✓ *1 mark for answer rounded off to 1 decimal place*	(3)	**C**
QUESTION 2		
2.1 $x = 15$ and $y = -8$ $r = \sqrt{15^2 + (-8)^2}$ *Theorem of Pythagoras* ✓ *1 mark for correct substitution into the theorem of Pythagoras* $r = \sqrt{225 + 64}$ $r = \sqrt{289}$ $\therefore r = 17$ ✓ *1 mark for this statement* $\therefore \cos \beta = \frac{15}{17}$ ✓ *1 mark for this statement*	(3)	**R**
2.2 $\text{cosec}^2 \beta - 1 = \left(\frac{17}{-8}\right)^2 - 1$ ✓ *1 mark for substitution* $= \frac{289}{64} - \frac{64}{64} = \frac{225}{64}$ ✓ *1 mark for the answer*	(2)	**R**
QUESTION 3		
$\hat{B}_1 = 35° + 8° = 43°$ ext.∠ of △ ✓ *1 mark for angle* $\frac{CD}{CB} = \sin B_1$ ✓ *1 mark for statement* $\frac{CD}{1545} = \sin 43°$ $CD = 1\,545 \sin 43°$ ✓ *1 mark for substitution* $= 1\,053{,}687\ldots$ $\approx 1\,053{,}69$ m ✓ *1 mark for answer*	(4)	**C**

SOLUTIONS **NOTE:** Other methods for the solutions are acceptable (as long as they are mathematically sound)	MARKS	COGNITIVE LEVELS
QUESTION 4 ✓ *shape [at $x = 45°$:$y = -1$]* ✓ *x-intercepts at 0°,180° and 360°* ✓ *asymptotes at 90° and 270°*  	(3)	**R**
QUESTION 5		
5.1 $y = \frac{\sqrt{2}}{2}$ ✓ *1 mark for the answer*	(1)	**R**
5.2 $g(x) + 1 = -\sin x + 1$	(2)	**R**
Range $y \in [0;2]$ ✓✓ *1 mark for values; 1 mark for brackets*		
5.3 $x \in (0°;180°)$ ✓✓ *1 mark for values; 1 mark for brackets*	(2)	**R**
5.4 0° ✓ 270° ✓ 360° ✓ *1 mark per answer*	(3)	**P**
5.5 0°; 180°; 360° ✓ *1 mark for any one of the three answers*	(1)	**P**
QUESTION 6		
6.1 6.1.1 750 × 1,38785 ✓ =1 040,8875 *1 mark for multiplying* **OR** $\frac{x}{750} = \frac{1,38785}{1}$ ✓ *1 mark for setting up the proportion* So, Pumi spent R1 040,89 ✓ *1 mark for the answer*	(2)	**R**
6.1.2 $P = 1,38785 \quad i = \frac{6,1}{100} = 0,061 \quad n = 2 \quad A = ?$ $A = P(1 + i)^n$ ✓ *1 mark for using the CI formula* $A = 1,387\,85(1 + 0,061)^2$ ✓ *1 mark for substitution* $\therefore A = 1,56233189$ 1,56233189 × 750 ✓ = 1 171,748917 *1 mark for multiplying the un-rounded off answer by 750* So in 2 years' time, 750 BWP will be 1 171,75 ✓ in ZAR *1 mark for answer* **OR** $A = P(1 + i)^n$ ✓ *1 mark for using the CI formula* A = 1 040,89✓ $(1 + 0,061)^2$ ✓ *2 marks for substitution* $\therefore A$ =1 171,7517… So in 2 years' time, 750 BWP will be 1 171,75 ✓ in ZAR *1 mark for answer*	(4)	**P**

SOLUTIONS **NOTE:** Other methods for the solutions are acceptable (as long as they are mathematically sound)	MARKS	COGNITIVE LEVELS
6.2 6.2.1 Deposit = 20% × R3 200 = R640 Balance = R3 200 – R640 = R2 560 **OR** Balance = 80% × R3 200=R2 560 P = 2 560 ✓ *1 mark for cash price less deposit* $i = \frac{14,5}{100} = 0,145$ $n = \frac{36}{12} = 3$ ✓ *1 mark for converting months into years A = ?* $A = P(1 + in)$ ✓ *1 mark for using the SI formula* A = 2 560 (1 + 0,145(3)) A =3 673,6 ✓ *1 mark for answer* Mrs Maluleke's monthly instalment $= \frac{3\,673,6}{36}$ = R102,04 ✓ *1 mark for answer*	(5)	**C**
6.2.2 Mrs Maluleke paid R640 + R3 673,60 × 36 = R4 313,60 ✓ *1 mark for answer* R4 313,60 – R3 200 = R1 113,60 so Mrs Maluleke paid R1 113,60 ✓ more than if she had bought it cash. *1 mark for answer* **OR** Mrs Maluleke paid R640 + R102,04 × 36 = R4 313,44 ✓ *1 mark for answer* R4 313,44 – R3 200 = R1 113,44 so Mrs Maluleke paid R1 113,44 ✓ more than if she had bought it cash. *1 mark for answer* (ignore rounding off error)	(2)	**P**
QUESTION 7		
7.1 7.1.1  140 ✓ *1 mark for showing 2 intersecting sets* ✓ *1 mark for showing 39 and 64 in the correct positions* ✓ *1 mark for showing 15 and 22 in the correct positions*	(3)	**R**
7.1.2 C and F are not mutually exclusive ✓ *1 mark for answer* P(C and F) ≠ 0 **OR** some learners like Cream Soda and Fanta ✓ *1 mark for reason*	(2)	**K**
7.1.3 P(not F) = $\frac{39 + 22}{140} \times 100$ ✓ *1 mark for calculation* = 43,571…% ≈ 43,57% ✓ *1 mark for answer* **OR** P(not F) = 1 – P(F) $= 1 - \frac{15 + 64}{140}$ ✓ *1 mark for calculation* = 43,571…% ≈ 43,57% ✓ *1 mark for answer*	(2)	**R**
7.2 n(S) = 20 Prime numbers in S are 2; 3; 5; 7; 11; 13; 17; 19 7.2.1 $P(A) = \frac{n(A)}{n(S)} = \frac{8}{20}$ ✓ $= \frac{2}{5} = 0,4 = 40\%$ ✓ *mark for 8* *1 mark for answer in any of these forms:* $\frac{2}{5}$*; 0,4; 40%*	(2)	**P**
7.2.2 P(A and B) = $\frac{7}{20}$ ✓ = 0,35 = 35% ✓ *mark for 7* 1 mark for answer in any of these forms: $\frac{7}{20}$; 0,35; 35%	(2)	**P**

SOLUTIONS **NOTE:** Other methods for the solutions are acceptable (as long as they are mathematically sound)	MARKS	COGNITIVE LEVELS
QUESTION 8		
8.1 $M_{CD} = \frac{y_D - y_C}{x_D - x_C}$ ✓ *1 mark for formula* $= \frac{6-4}{8-2}$ ✓ *1 mark for substitution* $= \frac{2}{6} = \frac{1}{3}$	(2)	**R**
8.2 $y = 0$ ✓ (E lies on the x-axis) *1 mark for $y = 0$* $M_{CD} = M_{EF}$ ✓ (opp sides of ∥ m) *1 mark for $M_{CD} = M_{EF}$* $\frac{1}{3} = \frac{0-(-2)}{x-4}$ $\frac{1}{3} = \frac{2}{x-4}$ $x - 4 = 3(2)$ $x = 10$ ✓ *1 mark for answer*	(3)	**C**
8.3 Show that CF⊥CD $M_{CF} = \frac{4-(-2)}{2-4} = \frac{6}{-2} = -3$ ✓ *mark for $M_{CF} = -3$* $M_{CD} = \frac{1}{3}$ (given) $M_{CF} \times M_{CD} = -3 \times \frac{1}{3}$ ✓ *1 mark statement and substitution* $\therefore M_{CF} \times M_{CD} = -1$ $\therefore$ CF⊥CD ✓ *1 mark for both conclusions*	(3)	**C**
8.4 $CF = \sqrt{(2-4)^2 + (4-(-2))^2}$ ✓ $= \sqrt{40}$ or $2\sqrt{10}$ ✓ $CD = \sqrt{(2-8)^2 + (4-6)^2} = \sqrt{40}$ or $2\sqrt{10}$ ✓ *1 mark for using the distance formula, 1 mark for each answer*	(3)	**R**
8.5 Parallelogram CDEF is a square because it **has one right angle and the adjacent sides are equal in length**. ✓ 1 mark for the explanation	(1)	**K**
8.6 $M_{CF} = \left(\frac{2+4}{2}; \frac{4+(-2)}{2}\right)$ = (3 ✓; 1 ✓) *1 mark for each value*	(2)	**R**
8.7 $m = \frac{1}{3}$ (II lines) $\therefore y = \frac{1}{3}x + c$ ✓ *1 mark for gradient* $1 = \frac{1}{3}(3) + c$ ✓ *1 mark for substitution* $1 = 1 + c$ $0 = c$ $y = \frac{1}{3}x$ ✓ *1 mark for answer* **OR** $m = \frac{1}{3}$ (II lines) ✓ *1 mark for gradient* $y - y_M = \frac{1}{3}(x - x_M)$ $y - 1 = \frac{1}{3}(x - 3)$ ✓ *1 mark for substitution* $y = \frac{1}{3}x - \frac{1}{3}(3) + 1$ $y = \frac{1}{3}x$ ✓ *1 mark for answer*	(3)	**R**

11. Weighting of cognitive levels in the Term 3 end-of-term test

The table below shows the weighting of marks across the cognitive levels in the exemplar test provided. As can be seen, this differs slightly from the suggested weightings in the CAPS. This is acceptable, provided the two lower cognitive levels add up to approximately 55%, while the two higher levels add up to approximately 45%. In this exemplar test, the two lower levels together account for 57% of the marks, and the two higher for 43%.

Cognitive levels	Mark out of 75	Percentage of marks in the test	Percentage of marks at each level prescribed by the CAPS (p. 53)
Knowledge (K)	4	5%	≈ 20%
Routine procedures (RP)	39	52%	≈ 35%
Complex procedures (CP)	18	24%	≈ 30%
Problem solving (PS)	14	19%	≈ 15%

12. The exemplar end-of-year test

Time: 60 minutes *Total: 50 marks*

INSTRUCTIONS TO LEARNERS:

1. There are seven questions. Answer all questions.
2. Show ALL your calculations where necessary. Full marks will not be awarded where working out should be shown but is not.
3. Scientific non-programmable calculators may be used. If necessary, round off answers to TWO decimal places, unless stated otherwise.
4. Number the answers according to the numbering system used in this question paper.
5. Write neatly and legibly.

QUESTION 1

A shop owner gets a discount on bottles and cans of cold drink if she buys all one size.
The cold drink comes in 100 ml and 350 ml cans and 250 ml and 500 ml bottles.
She did a survey of 21 of her customers to find out what size cold drink people preferred.
The results, in ml, were as follows:

100; 100; 100; 100; 100; 100; 100; 250; 250; 250;

250; 250; 350; 350; 350; 350; 350; 500; 500; 500; 500

1.1 Calculate the mean, median and mode of this data. (3)

1.2 Suggest, with reasons, what size of cold drink containers the shop owner should buy. (2)

[5]

QUESTION 2

The data below gives the speeds of vehicles in a 60 km/h zone. The speeds were recorded at the same time of day on a Tuesday in areas A and B.

Data Set A	30	62	63	68	72	60	62	63	73	70	76	64
Data Set B	60	63	62	68	75	76	62	71	64	74	69	73

2.1 Determine the range of Data Set A. (1)

2.2 Determine the range of Data Set B. (1)

2.3 Which of these ranges is misleading? Give a reason for your answer. (2)

2.4 Write down the modes of Data Set A and Data Set B. (3)

2.5 Would the mode of each data set give a fair representation of the speeds of the vehicles in these two areas? Explain (calculations of the means and medians may be useful). (2)

[9]

QUESTION 3

A survey was done of the time taken by 100 people to do their shopping at a local supermarket on a Saturday morning.

Time taken (t minutes)	Number of people
$0 \leq t < 10$	43
$10 \leq t < 20$	35
$20 \leq t < 30$	17
$30 \leq t < 40$	5

3.1 Calculate an estimate of the mean time taken by these people to do their shopping. (3)

3.2 In which interval does the median lie? (1)

3.3 Give the modal class of this data. (1)

[5]

QUESTION 4

A group of 28 learners counted the number of letters in their first and last name.
They listed the number of letters in ascending order, as follows:

7; 7; 8; 9; 9; 9; 9; 10; 10; 11; 11; 11; 12; 12; 12; 12; 12; 13; 13; 13; 13; 13; 14; 14; 15; 15; 16; 17

4.1 Give the five number summary of the data and use it to draw a box-and-whisker diagram to illustrate the data. (5)

4.2 Sipho says "the number of letters in 18 of the learners' first and last name lie between the minimum and median values". Is he correct? Justify your answer. (2)

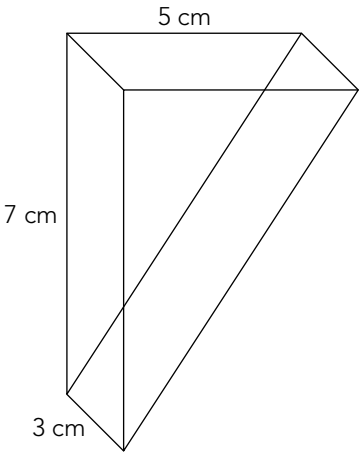
4.3 Determine the interquartile range of the data. (2)

4.4 What percentage of the learners had a first and last name less than 16 letters? (2)

[11]

QUESTION 5

Determine the surface area of this right-angled triangular prism. Give your answer correct to the nearest cm^2.



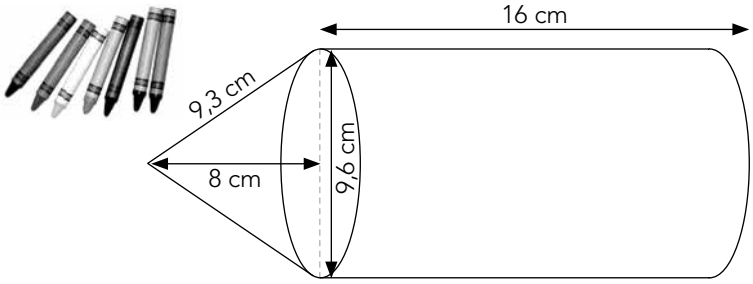
[5]

FORMULAE YOU MAY FIND USEFUL FOR QUESTIONS 6, 7 AND 8

Volume of a right cone $= \frac{1}{3}\pi r^2 \times H$ Surface area of a right cone $= \pi rs + \pi r^2$ where s is the slant height	Volume of a sphere $= \frac{4}{3}\pi r^3$ Surface area of a sphere $= 4\pi r^2$	Volume of a cylinder $= \pi r^2 \times H$ Surface area of a closed cylinder $= 2\pi r^2 + 2\pi rH$

QUESTION 6

A stationery shop has large wax crayons on display in its window. The pointed part of the crayon has a height (h) of 8 cm and a slant height (s) of 9,3 cm, the straight part of the crayon has a diameter of 9,6 cm and a height (H) of 16 cm.



6.1 Calculate the volume of wax needed to make this crayon. Leave your answer in terms of π. (4)

6.2 How much wax will be needed to make the crayon if the radius of the base is multiplied by 0,25?

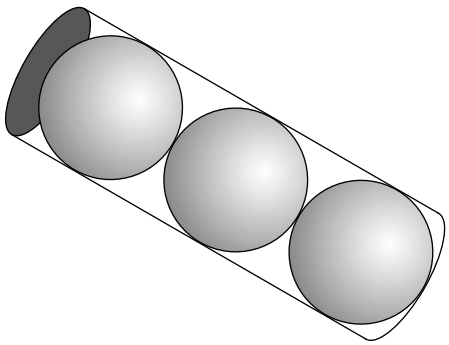
Give your answer to the nearest cm^3. (2)

6.3 Calculate the surface area of the pointed part of this wax crayon. (3)

[9]

QUESTION 7

Three tennis balls each having a diameter of 9 cm are packed into a plastic cylinder. The cylinder has a lid.



Determine the volume of air inside the cylinder when the balls are inside it.

[6]

TOTAL: 50

13. Memorandum and analysis of cognitive levels in the end-of-year test

Note: The last column in the memorandum shows the cognitive level for each question in the test. The levels are:

K	**Knowledge** – straight recall of facts
R	**Routine procedures** – well-known, simple applications and calculations
C	**Complex procedures** – procedures involving complex calculations and/or higher reasoning
P	**Problem solving** – solving problems for which higher order reasoning and processes are involved
More information about these levels can be found in the CAPS (p. 53).	

SOLUTIONS **Note:** Other methods for the solutions are acceptable (as long as they are mathematically sound)	**MARKS**	**COGNITIVE LEVELS**
QUESTION 1		
1.1 Mean = $\frac{5\,700}{21} \approx 271{,}43$ ml ✓ *mark for answer* Median = 250 ml ✓ *mark for answer* Mode = 100 ml ✓ *mark for answer*	(3)	**R**
1.2 She should buy the 100 ml cans ✓ because it is the most popular size. ✓ [Seven of the 21 surveyed (i.e. $\frac{1}{3}$ of the people surveyed) preferred the 100 ml cans]. Note for the teacher: The mean size is no use at all because there are no 271,43 ml bottles or cans. The median size may be a good size to select because there is a 250 ml bottle. However; only 5 of the 21 people want this size.	(2)	**C**
QUESTION 2		
2.1 Range of Data Set A = 76 – 30 = 46 ✓ *1 mark for answer*	(1)	**R**
2.2 Range of Data Set B = 76 – 60 = 16 ✓ *1 mark for answer*	(1)	**R**
2.3 The range of Data Set A is misleading because one value (30) is very far from the other values which are between 60 and 76 [(30) is an outlier]. ✓✓ *2 marks for Data Set A with a feasible explanation*	(2)	**K**
2.4 Data Set A has two modes: 62 km/h ✓ and 63 km/h. ✓ The mode of Data Set B is 62 km/h. ✓	(3)	**R**
2.5 No. In these two cases, the mean or the median give a better representation: Note the differences between the values of the mean and the values of the median for these data sets: Mean A = $\frac{763}{12} \approx 63{,}58$ km/h Mean A without 30 = $\frac{733}{11} \approx 66{,}64$ km/h Mean B = $\frac{817}{12} \approx 68{,}08$ km/h Median A = 63,5 km/h Median B = 68,5 km/h ✓✓ *2 marks for explanation*	(2)	**K**

SOLUTIONS **Note:** Other methods for the solutions are acceptable (as long as they are mathematically sound)	MARKS	COGNITIVE LEVELS

QUESTION 3

3.1

MIDPOINT X	FREQUENCY f	fX
5	43	215
15	35	525
25	17	425
35	5	175
		$\Sigma fX = 1\,340$

✓ *mark for midpoints*

$\bar{X} = \frac{\Sigma fX}{n}$ ✓ *mark for formula (if shown)*

$= \frac{1\,340}{100}$ =13,4 minutes ✓ *mark for answer*

OR full marks for if answer is correct and formula is not shown (3) **R**

3.2 The median lies in this interval: $10 \leq t < 20$ ✓ *correct interval* (1) **R**

3.3 The modal class of this data is $0 \leq t < 10$ ✓ *correct interval* (1) **K**

QUESTION 4

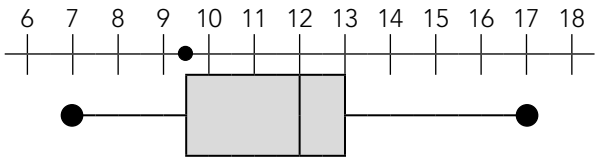
4.1 Five number summary: Minimum: 7

Q_1: 9,5 ✓ *1 mark for Q_1: 9,5*

Median: 12 ✓ *1 mark for* Median: 12

Q_3: 13 ✓ *1 mark for* Q_3: 13

Maximum: 17



✓ *1 mark for whiskers end points at 7 and 17*

✓ *1 mark for box showing median* (5) **R**

4.2 Sipho is wrong. There are 14 learners between the minimum and the median. OR

Sipho is wrong. The median is at position $14\frac{1}{2}$ so there cannot be 18 learners in this interval. ✓✓ *for answer* (2) **K**

4.3 Interquartile range: $Q_3 - Q_1 = 13 - 9,5 = 3,5$ ✓ *1 mark for answer*

✓ *1 mark for the two values* (2) **R**

4.4 Percentage of learners who had a first and last name less than 16 letters

$= \frac{26}{28} \times 100\% = 92,857 \approx 92,86\%$ ✓ *1 mark for* $\frac{26}{28}$

✓ *1 mark for 92,86% or 93%* (2) **R**

SOLUTIONS **Note:** Other methods for the solutions are acceptable (as long as they are mathematically sound)	MARKS	COGNITIVE LEVELS
QUESTION 5 The surface area of a triangular prism = 2 x area of the triangular face + area of rectangular face 1 + area of rectangular face 2 + area of rectangular face 3 = (2 x $\frac{1}{2}$ x 7 cm x 5 cm) ✓ + (3 cm x 5 cm) ✓ + (3 cm x 7 cm) ✓ + (3 cm x $\sqrt{74}$ cm) ✓ *1 mark for each substitution [cm not needed]* *Lose a mark if no addition shown* = 96,806…cm^2 ≈ 97 cm^2 ✓ *1 mark for answer and unit* Note to teacher: $\sqrt{5^2 + 7^2} = \sqrt{25 + 49} = \sqrt{74}$ (Pythagoras)	(5)	**C**
QUESTION 6 6. $r = \frac{9,6}{2}$ = 4,8cm ✓ *1 mark for radius* 6.1 Volume of composite figure = volume of cylinder + volume of cone ✓ *1 mark for recognising the 2 objects* = $\pi r^2 H + \frac{1}{3}\pi r^2 h$ = $\pi(4,8)^2 16 + \frac{1}{3}\pi(4,8)^2 8$ ✓ *1 mark for H and h values* = $\frac{10\,752}{25}\pi$ m^3 ✓ *mark for correct answer* 6.2 = $\frac{10\,752}{25}\pi$ $0,25^2$ ✓ *1 mark for x $0,25^2$* = $\frac{672}{25}\pi$ m^3 = 84, 44… ≈ 84 m^3 ✓ *1 mark for 84 m^3* 6.3 Surface area of the pointed part of this wax crayon = surface area cone with no base = πrs ✓ *1 mark for formula* = $\pi(4,8)(9,3)$ ✓ *1 mark for substitution* = 140,240…. = 140,24 m^2 ✓ *1 mark for* 140,24 m^2	(4) (2) (3)	**C** **C** **R**
QUESTION 7 Height of cylinder: H = 9 x 3 = 27 cm Volume of air inside the cylinder = πr^2 x H = $\pi\left(\frac{9}{2}\right)^2$ x 3(9) ✓ *1 mark for substitution and correct radius* = 1 717,667783 ≈ 1 717,67 cm^3 ✓ *1 mark for answer* Volume of 3 balls = $3\left(\frac{4}{3}\right)\pi r^2$ = $3\left(\frac{4}{3}\right)\pi\left(\frac{9}{2}\right)^3$ ✓ *1 mark for substitution* = 1 145,110522 ≈ 1 145,11 cm^3 ✓ *1 mark for answer* Volume of air inside the cylinder when the balls are in it = 1 717,67 – 1 145,11 ✓ *1 mark for subtracting* = 572,56 cm^3 ✓ *1 mark for answer*	(6)	**P**

14. Weighting of cognitive levels in the end-of-year test

The table below shows the weighting of marks across the cognitive levels in the exemplar test provided. As can be seen, this differs slightly from the suggested weightings in the CAPS. This is acceptable, provided the two lower cognitive levels add up to approximately 55%, while the two higher levels add up to approximately 45%. In this exemplar test, the two lower levels together account for 60% of the marks, and the two higher for 40%. Statistics is generally an easy section with most marks (73% in this case) being classified as knowledge (6%) and routine procedures (67%). This has made the ratio of lower to higher levels of the exemplar test 60 to 40.

Cognitive levels	**Mark out of 50**	**Percentage of marks in the test**	**Percentage of marks at each level prescribed by the CAPS (p. 53)**
Knowledge (K)	7	14%	≈ 20%
Routine procedures (RP)	24	48%	≈ 35%
Complex procedures (CP)	13	26%	≈ 30%
Problem solving (PS)	6	12%	≈ 15%

15. Exemplar formal assessment mark record sheets

15.1 Term 3

Grade 10 Mathematics Suggested Assessment Record Term 3							
	Test 1		Test 2		Term 3		
	Original mark	SBA weighting	Original mark	SBA weighting	Total	Term 3 %	Rating (1–7)
Mark out of:	…	/10	…	/10	/20	%	1–7
Date of assessment:							
NAME AND SURNAME							

Grade 10 Mathematics Suggested Promotion Mark Record Term 4											
	Term 1 SBA		Term 2 SBA		Term 3 SBA		Term 4 SBA	SBA	SBA	End-of-year examination	Promotion mark
	Investigation/ Project	Test	Assignment/ Test	Mid-year examination	Test 1	Test 2	Test	Total	Weighted	Weighted	Percentage
Mark out of	20	10	10	30	10	10	10	100	25	75	100
Date of assessment:											
NAME AND SURNAME											

16. Templates for tracking, reflecting on and reporting curriculum coverage

16.1 Conventional schools[1]

NAME OF TEACHER:_____ **SUBJECT/GRADE:** _____

Week no. in planner _____

Week no. in term when work planned for week started _____

Refer to the planner[2] **for details of the week's work** (or the ATP for subjects without planners)

Class (or subject for FP)				
On track by end of week? (Yes/no)				
How many learners are working confidently?[3] (Rough estimate)				
How many learners in this class?				

DAY[4]	**BRIEF NOTES ON THE DAY'S WORK: Consider such things as:** *What concepts/skills did the learners struggle with or manage well in this lesson?* *What could be the reasons for this? Did the class complete the work you had planned?* *Do you need to change your plans for the next lesson? What changes will you make?*
1	
2	
3	
4	
5	

Reflection on the week: Think about and make a note of:	
What concepts and skills for the week did learners struggle with? What could you do differently next time to better support or extend learning? What good practice could you share?	**Did you cover the curriculum for the week? If not, what were some of the challenges? What can you do to catch up? What help do you need? How will your progress this week affect your plan for next week?**
DH:	**Date:**

1 Please amend this draft template to suit the needs of your school.
2 You can use any planning document (such as the CAPS planner, the ATP or printed lesson plans) as the basis for your tracking.
3 Estimate of learners in that grade that are working confidently at Level 4 (adequate achievement) or above.
4 This can also be lessons if there are more than five lessons a week.

16.2 Multigrade schools[1]

NAME OF TEACHER:_____

Week no. in planner _____

Week no. in term when work planned for week started _____

Refer to the planner[2] **for details of the week's work** (or the ATP for subjects without planners)

Subjects							
GRADE	On track this week? [3]						
	Est. learners > Level 4 [4]						
	# learners in grade						
GRADE	On track this week?						
	Est. learners > Level 4						
	# learners in grade						
GRADE	On track this week?						
	Est. learners > Level 4						
	# learners in grade						

DAY	**BRIEF NOTES ON THE DAY'S WORK: Consider such things as:** *What concepts/skills did the learners struggle with or manage well in this lesson?* *What could be the reasons for this? Did the class complete the work you had planned?* *Do you need to change your plans for the next lesson? What changes will you make?*
1	
2	
3	
4	
5	

Reflection on the week: Think about and make a note of:		
SUBJECT	**What concepts and skills for the week did learners struggle with? What could you do differently next time to better support or extend learning? What good practice could you share?**	**Did you cover the curriculum for the week? If not, what were some of the challenges? What can you do to catch up? What help do you need? How will your progress this week affect your plan for next week?**
Principal:		**Date:**

1 Please amend this draft template to suit the needs of your school.
2 You can use any planning document (such as the CAPS planner, the ATP or printed lesson plans) as the basis for your tracking.
3 Yes/no?
4 Estimate of learners in that grade that are working confidently at Level 4 (adequate achievement) or above.

Jika iMfundo
what I do matters

Jik'iMfundo is a programme to improve learning outcomes, funded by the National Education Collaboration Trust, the KwaZulu-Natal Department of Education and others.

THE PROGRAMME TO IMPROVE LEARNING OUTCOMES

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