GR 8 MATHEMATICS
EXAM QUESTION PAPERS & MEMOS

	Exam Questions	**Exam Memos**
Paper 1	1	M1
Paper 2	3	M3
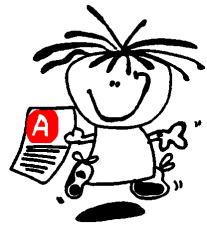
We trust that working through these exam papers and following our detailed answers and comments will help you prepare thoroughly for your final exam.

The Answer Series Maths study guides offer a key to exam success.
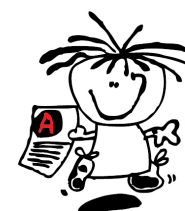
the **ANSWER** series… *your key to exam success*

GR 8 MATHS PAPER 1

1½ hours
100 marks

All necessary working must be shown in its proper place with the answer.

No calculator may be used in this paper.

Diagrams are not necessarily drawn to scale.

QUESTION 1

Complete the table below.
Put ticks in the correct places to classify each number.

	Natural	Integer	Rational	Irrational	Real	Imaginary
-3						
4π						
$\sqrt{-7}$						
$\sqrt{36}$						

[4]

QUESTION 2   Remember:

2.1   Write down the lowest common multiple of 10 and 12. (1)

2.2   Which is bigger: $13,2$ or $\sqrt{163}$? (Explain your answer.) (1)

2.3   How many whole numbers lie between $\sqrt{8}$ and $\sqrt{80}$? (1)

2.4   Consider the numbers: -7; -5; -1; 1; 3
      Using only two of the above numbers, what is the smallest product one could make? (1)

2.5   Write down the factors of 18. (2)

2.6   Simplify $\dfrac{10^7}{5 \times 10^4}$ (2)

2.7 $\diamond$ and $\triangle$ are natural numbers and $\diamond \times \triangle = 36$.
      What is the largest possible value of $\diamond - \triangle$? (2)[10]

QUESTION 3

3.1   Simplify:

   3.1.1 $1\frac{1}{2} + 3\frac{2}{3}$ 3.1.2 $1\frac{5}{16} \div 2\frac{11}{12}$ (3)(3)

3.2 $n^{\boxed{?}}$ means the reciprocal of n.

   So, $5^{\boxed{?}} = \frac{1}{5}$, for example.

   Which of the following are true? Write down the letter(s) that correspond to all the correct statements.

   A $3^{\boxed{?}} + 6^{\boxed{?}} = 9^{\boxed{?}}$

   B $6^{\boxed{?}} - 4^{\boxed{?}} = 2^{\boxed{?}}$

   C $2^{\boxed{?}} \times 6^{\boxed{?}} = 12^{\boxed{?}}$

   D $10^{\boxed{?}} \div 5^{\boxed{?}} = 2^{\boxed{?}}$ (2)[8]

QUESTION 4

4.1   A pet shop sells only dogs, cats and mice in the ratio 2 : 3 : 30. If there are 385 animals in total, how many cats are there in the shop? (2)

4.2   Matthew began peeling a pile of 44 potatoes at a rate of 3 potatoes per minute. Four minutes later Charles joined him and peeled at a rate of 5 potatoes per minute.

   When they finished, how many potatoes had Charles peeled? (3)

4.3   If $\dfrac{x}{y} = \dfrac{2}{3}$ and $\dfrac{y}{z} = \dfrac{7}{5}$ find the value of $\dfrac{z}{x}$. (3)[8]
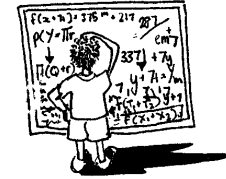
QUESTION 5

Given: $3x - 4x^2 + 2x^3 - 1$

5.1   What is the degree of the expression? (1)

5.2   What is the coefficient of x^3? (1)

5.3   Write down the constant term. (1)

5.4   What is the value of the expression if $x = 1$? (1)

5.5   Rearrange the expression in descending powers of x. (1)[5]

QUESTION 6

Simplify:

6.1 $-4x + 6x - x$ (1)

6.2 $-6x^2 - (-x^2)$ (1)

6.3 $-4(x + 2y)$ (2)

6.4 $\sqrt[3]{27x^{27}}$ (2)

6.5 $-3x^2y \times 4xy^3$ (2)

6.6 $-(2x^2)^3$ (2)

6.7 $\dfrac{4x^4}{16x^{16}}$ (2)

6.8 $3x - x(2x + 1)$ (2)

6.9 $\dfrac{6x^3 \times (-4x^2)}{-12x} - (2x)^4$ (4)[18]

QUESTION 7

7.1   If $a = -2$, which is the largest number in the set
   $\left\{ -3a; \ 4a; \ \dfrac{24}{a}; \ a^2; \ 1 \right\}$? (2)

7.2   Subtract: $3x - 4y - z$
                $\underline{-x - 3y + z}$ (3)

7.3   Multiply: $-5xy^2(4x^3 - xy^3)$ (2)

7.4   Divide: $\dfrac{9x^3y^2 - 27xy^4}{-9xy^2}$ (2)[9]

QUESTION 8

8.1 Solve for x:
(first try and solve by inspection where possible)

8.1.1 $-\dfrac{12}{x} = -3$ (1)

8.1.2 $x^2 = 25$ (2)

8.1.3 $2x - 3 = 5$ (2)

8.1.4 $-3(2x + 3) = 4x - 4$ (3)

8.2.1 Solve for x: $x - 5 + 2x = -14$ (2)

8.2.2 Hence solve for y:

$\sqrt[3]{2y + 1} - 5 + 2\sqrt[3]{2y + 1} = -14$ (4)

8.3 Jonathan can't quite read the board in his Maths class. He writes down the equation he reads on the board as $3x - 7 = 38$.
He correctly solves the equation he wrote down, but is surprised to hear the teacher say the answer is 6 less than the answer he found.
When he asks the teacher to check his work, the teacher says that Jonathan copied the coefficient of x incorrectly (but copied everything else correctly).

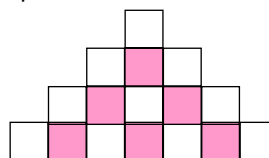Showing some working, what should the coefficient of x have been? (5)[19]

QUESTION 9

9.1 Write down the next term in the patterns below:

9.1.1 $11 ; 8 ; 5 ; 2 ; \ldots$ (1)

9.1.2 $3 ; 6 ; 12 ; 24 ; \ldots$ (1)

9.1.3 $4 ; 1 ; 6 ; 2 ; 8 ; 4 ; 10 ; 8 ; \ldots$ (1)

9.2 A 'stair-step' figure is made up of alternating black and white squares in each row.

Rows 1 to 4 are shown. All rows begin and end with a white square.

How many black squares are in the 37th row? (2)

9.3 Given the pattern $5 ; 11 ; 17 ; 23 ; 29 ; \ldots$

Find the difference between the 201st term and the first term. (2)[7]

QUESTION 10

Alan left school at 15h00. He walked home.
On the way home, he stopped to talk to a friend.

His brother, Barry, left the same school at 15h15. He cycled home using the same route as Alan.

Here are the distance-time graphs for Alan's and Barry's complete journeys.
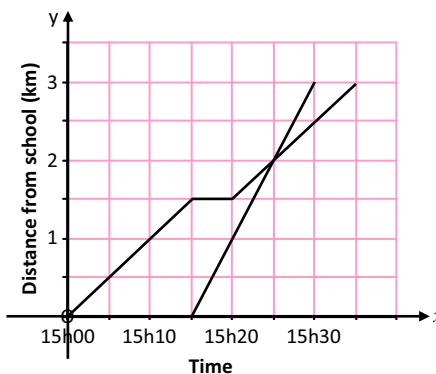
10.1 How far did Alan walk during the first ten minutes of his journey? (1)
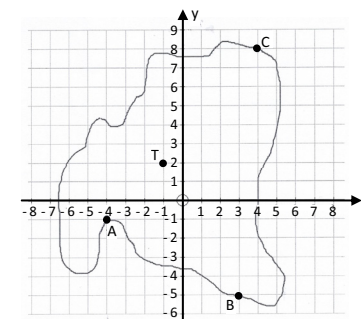
10.2 How long did Alan spend talking to his friend? (1)

10.3 At what time did Barry pass Alan? (1)

10.4 What was Barry's speed in kilometres per hour? (2)[5]

QUESTION 11

An island has treasure buried on it at the point T(-1; 2).

Three contestants arrive at different points on the island.

A arrives at (-4; -1), B arrives at (3; -5) and C arrives at (4; 8).

They each find a spade with a note attached to it.

Instructions for A:
• Start at (-4; -1)
• Translate 5 units right and 2 units down.
• Reflect the new point in the x-axis.

Instructions for B:
• Start at (3; -5)
• Rotate 90° clockwise about the origin.
• Translate the new point 3 units right and 5 units up.

Instructions for C:
• Start at (4; 8)
• Enlarge by a scale factor of $\dfrac{1}{4}$ about the origin.
• Reflect the new point in the y-axis.

Complete the table below to determine which person, A, B or C reaches the treasure.

	Start	After first transformation	After second transformation
A	(-4; -1)		
B	(3; -5)		
C	(4; 8)		

Congratulations! _____ reaches the treasure!
(Fill in A, B or C). [7]

TOTAL: 100

GR 8 MATHS PAPER 2

1½ hours
100 marks

All necessary working must be shown in its proper place with the answer.

Calculators are allowed to be used.

*Give answers to two decimal places, unless instructed otherwise.*

QUESTION 1

A travel bureau found that the price of a bus ticket to a certain town has an influence on the number of passengers who make use of the service.

The table below shows the price of a bus ticket against the number of passengers:

Price of ticket (Rand)	Number of passengers
250	25
180	50
190	45
220	38
200	44
210	40
240	31

1.1   Draw a scatter plot to represent this data.   (4)
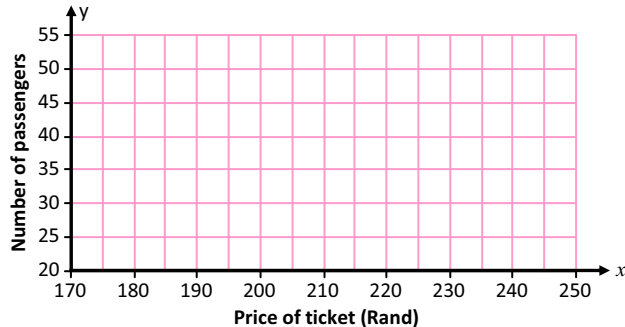
1.2   Draw a line of best fit.   (1)

1.3   Estimate the number of passengers if the price of a ticket is R230.   (2)[7]

QUESTION 2

2.1   Given below is a bar graph that displays the number of days Grade 8 boys are absent from school during the month of February.
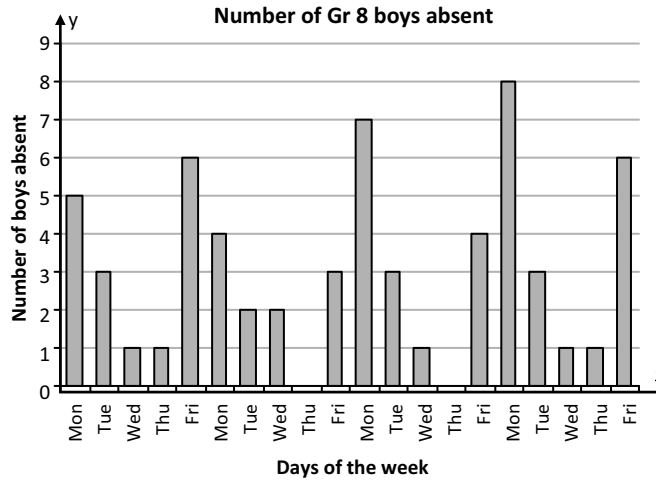
2.1.1   Determine the range.   (1)

2.1.2   Determine the mean.   (3)
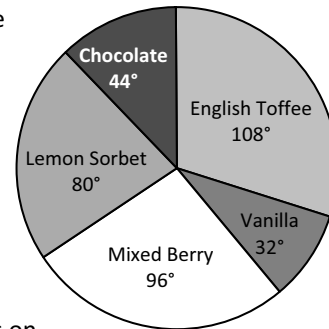
2.1.3   Determine the median.   (2)

2.1.4   Determine the mode.   (1)

2.1.5   Which day of the week were the least amount of Grade 8 boys absent?   (1)

2.2   The pie chart alongside shows the breakdown, **in degrees**, of the different flavours of frozen yoghurt that Diego sold on the first day in November.

Chocolate 44°
English Toffee 108°
Lemon Sorbet 80°
Vanilla 32°
Mixed Berry 96°

If Diego sold 180 units on the first day of November, how **many units** of the English Toffee flavour did he sell?   (3)
[11]

QUESTION 3

Luke wants to attend the 2015 MTV's Video Music Awards (VMAs) which will be held in Los Angeles, California.

3.1   He wants to buy a VIP Limo Pass for $900 to get dropped off at the red carpet. The exchange rate is R10,93 to the US dollar ($). How much will he pay for the ticket in South African rand?   (2)

Q3.2 below requires the knowledge and application of the simple interest formula (using A, P, i and n) and should therefore be treated as extension beyond the Gr 8 Maths Curriculum.

3.2   Bolnick Travel Agency is offering a package deal for South Africans who want to attend the VMAs which includes your flight tickets with United Airlines and 5 nights at the Double Tree Hilton Hotel for only R18 500. How much money must Luke invest at 17% per annum simple interest for 2,5 years to get this amount?   (4)[6]

QUESTION 4

4.1   'The Script' will be performing at the Grand Arena. A Golden Ticket costs R520, inclusive of VAT. Calculate the price of the ticket before VAT is added.   (2)

4.2   Sony is offering a Triple Pack PS4 bundle which includes three PS4 games with a standard 500GB black console for R5 170.

The Hire Purchase agreement is as follows: you must pay a deposit of 10% and pay the balance off at 9% per annum simple interest over 3 years.
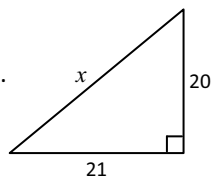
4.2.1   Calculate the deposit you need to put down.   (1)

4.2.2   Calculate the **total amount paid** for the Triple Pack PS4, including interest, after the deposit has been paid.   (4)
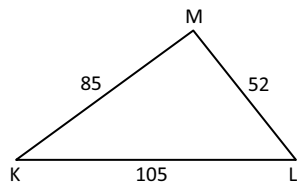
4.2.3   Calculate the amount of each monthly instalment.   (2)[9]

QUESTION 5

5.1 Find the size of x in the following triangle.

(2)

5.2 State **clearly** what kind of $\triangle$KLM is, **be specific**.
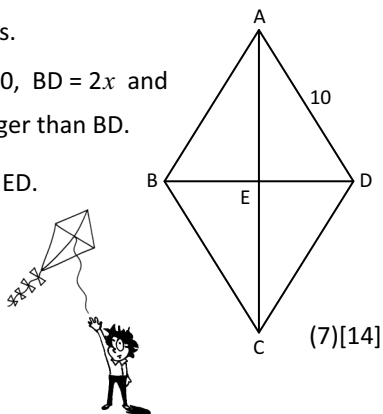
Show all working.

(5)

5.3 ABCD is a rhombus.

Given that AD = 10, BD = $2x$ and AC is $\dfrac{4}{3}$ times longer than BD.

Find the length of ED.

Show all working.

(7)[14]

QUESTION 6

6.1 Complete each of the following statements:

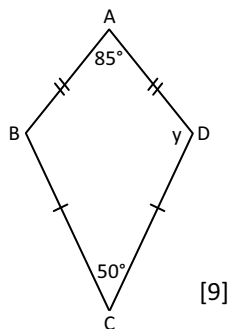6.1.1 A quadrilateral with both pairs of opposite sides parallel and a pair of adjacent sides equal is a _____ . (1)

6.1.2 A quadrilateral with one pair of opposite sides parallel is a _____ . (1)

6.2 ABCD is a kite with

$\hat{A} = 85°$; $\hat{C} = 50°$;
$\hat{D} = y$; AD = 5 cm.

Find with **reasons**, the:

6.2.1 length of AB. (2)

6.2.2 the value of y. (5)

[9]

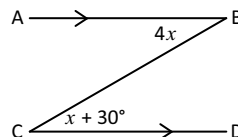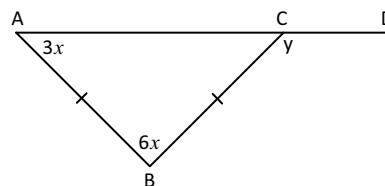## QUESTION 7

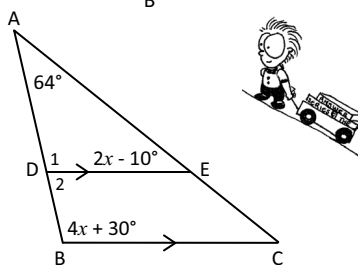7.1 Find with **reasons**, the value of a, b and c in **alphabetical order**.

(6)
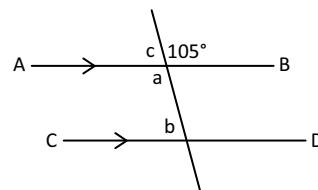
7.2 Find with **reason(s)**, the value of x.

(4)
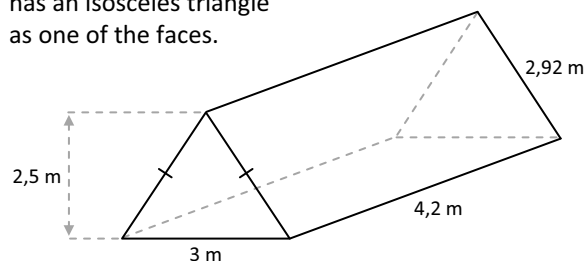
7.3 Find with **reasons**, the value of x and y.

(7)

7.4 Find with **reasons**, the value of x.

(6)[23]

QUESTION 8

8.1 A tent in the form of a triangular prism has an isosceles triangle as one of the faces.
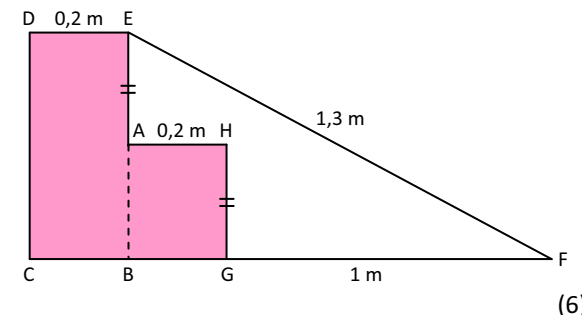

8.1.1 Calculate the total surface area of this prism. (4)

8.1.2 Calculate the volume of this prism. (3)

8.2 Wally wants to construct a ramp (EF) from the top of the staircase (E) to the ground (F) at the clock tower entrance of the school.
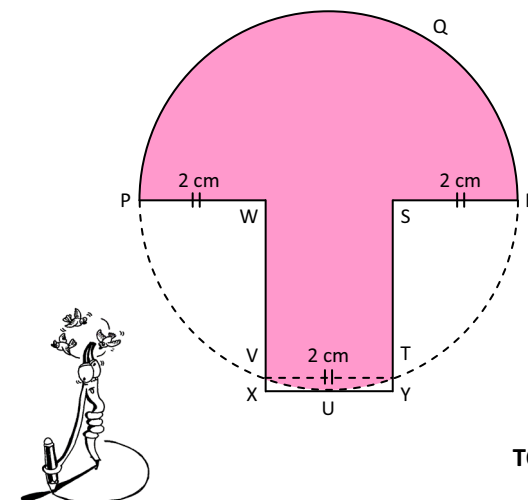
EF = 1,3 m ; DE = AH = 0,2 m ; GF = 1 m and EA = HG.

Calculate the area of the shaded part of the diagram.

(6)

8.3 The cross-section of a screw is given. It is made up of rectangle STVW, semi-circle PQR and a segment TUV.

If PW = VT = SR = 2 cm and it is given that the area of the non-shaded shape VXUYT is $\dfrac{1}{282}$ of the area of the semi-circle, calculate the area of the shaded part of the diagram.

(8)[21]

TOTAL : 100