Mathematics Strategy – 2017/2019

Grade 8 Revision Exemplar Papers

GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

SCI-BONO DISCOVERY CENTRE

GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

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Grade 8 Examination Exemplar 1

GAUTENG PROVINCE
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INSTRUCTIONS AND INFORMATION

1. This Question Paper has two Compulsory sections, Section A (Multiple Choice) and Section B.

2. There are ten multiple choice questions in Section A. For each question four possible answers are given and only one is correct. For question 1 to 10 in Section A select an answer and indicate your choice by means of a circle around the corresponding letter on the answer sheet. (ANNEXURE A)

3. Section B has seven questions. Show all calculations.

4. Read through the questions carefully and make sure that you allocate enough time for each question.

5. All sketches and diagrams are NOT DRAWN TO SCALE!

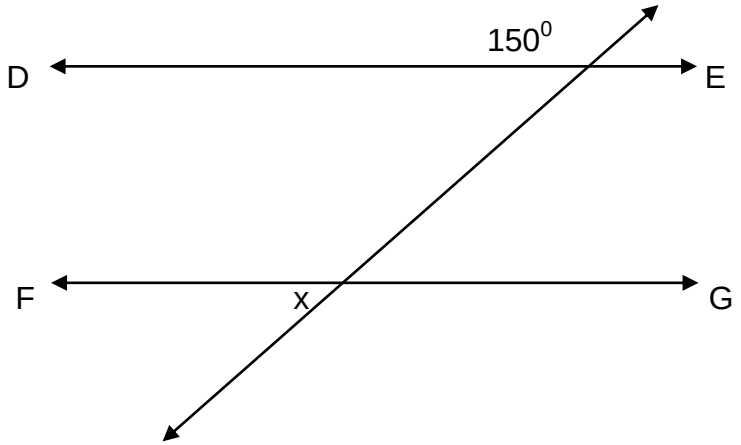
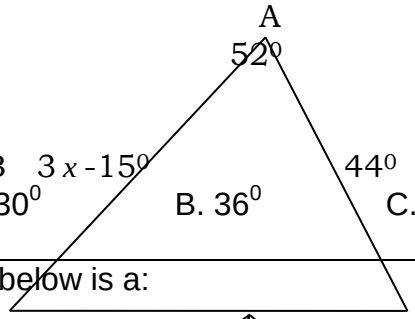
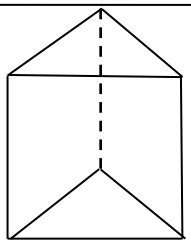
6. A non-programmable calculator may be used unless otherwise stated.

7. You are going to need:
   - Answer book
   - Pen, pencil, eraser, ruler and a calculator

8. Answer sheets for Section A and Question 4.3.2 are given.(See the attached Annexures). Write your name, surname, grade and division on these annexures and hand them in with your answer book.

9. A formula sheet is provided as ANNEXURE C

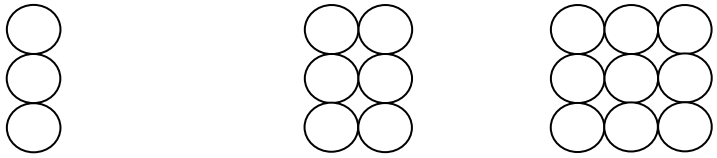
Section A			
1.	Calculate $\sqrt[3]{125} + \sqrt{81}$ A. 2 B. 16 C. 14 D. 164		(2)
2.	Simplify : $12(3 + \frac{1}{3}) \div (1,30 + 0,70)$ A. $0,25$ B. $\frac{1}{3}$ C. $0,5$ D. 20		(2)
3.	The HCF of $12x^2y$; $42x^3y^2$; $27xy$ is: A. $630x^3y^2$ B. $24x^2y$ C. $3xy$ D. $3x^2$		(2)
4.	A car travels for 300 km at an average speed of 65 km/h. How long does it take the car to cover the distance? A. 4 hrs B. 3,2 hrs C. 4,6 hrs D. 6 hrs		(2)
5.	Subtract $-4x+8y+6$ from $2x+3y-1$ A. $x+8$ B. $6x-5y-7$ C. $-x^2+3x-2$ D. x^2-5y+8		(2)
6.	Solve for x if $\frac{3x+1}{2} = 5$ A. $x=10$ B. $x=4$ C. $x=4\frac{1}{2}$ D. $x=3$		(2)
7.	The mean of 9 , 15 , 9 , 15 , 17, 17 , 11 , 18 , 15 , 19 is		(2)

	A. 9 B. 15 C. 10 D. 14,5		
8.	If DE // FG, then the value of x is:  A. 30^0 B. 120^0 C. 40^0 D. 60^0		(2)
9.	Find the value of x.  A. 30^0 B. 36^0 C. 37^0 D. 33^0		(2)
10	The solid below is a:  A. Square pyramid B. Cube C. Triangular prism D. Cuboid		(2) **Total [20]**

Section B			
Question 1			
1.1	Simplify. -3 + 8 - 1 - 7 + 12 + 1		(2)
1.2	Write 0,00125 in Scientific Notation		(2)
1.3	A recipe for 20 rolls requires/needs 5 tablespoons of butter. How many tablespoons of butter are needed for 30 rolls?		(5)
1.4	A selling price of a bicycle that had sold for R550,00 last year was increased by 15%. What is the new price?		(4)
1.5	Calculate the amount that will be in the bank after 5 years if R4 700 is invested at 5% p.a. simple interest.		(4)
			Total [17]

Question 2

2.1 Study the patterns below and answer the questions that follow.



Pattern 1 Pattern 2 Pattern 3

2.1.1 Write down the first five numbers in the sequence. (5)

2.1.2 Complete the table.

Pattern Number	1	2	3	4	5		8	10	12	22
Number of dots										

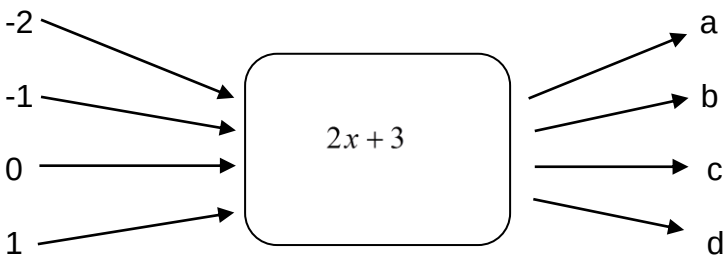
(4)

2.1.3 Work out the rule (formula) to find the 22^{nd} term. (4)

Total **[13]**

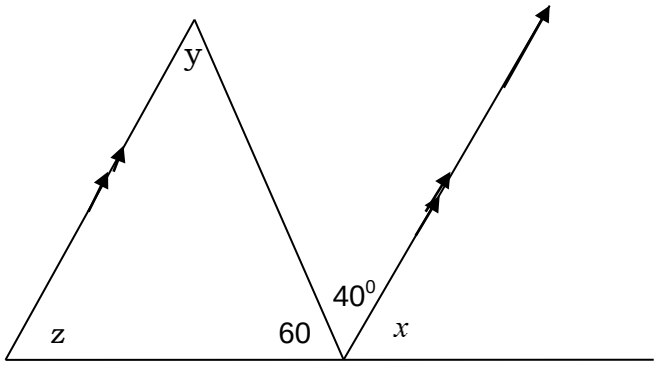
Question 3				
3.1	If $x = -3$ and $y = 4$ find the value of: $x(3x+4y)$			(3)
3.2	Simplify			
	3.2.1	$\frac{6x^3+2x^2+4x}{2x}$		(4)
	3.2.2	$2x(3x+1)-x(x+3)$		(6)
				Total [13]

Question 4

4.1	Solve for x			
	4.1.1	$3x-6=9$		(4)
	4.1.2	$2(x+4)+2=5x+1$		(4)
4.2	Aisha is three years older than Mpho. Together their ages add up to 17 years. How old is Aisha.			(4)
4.3	Study the flow diagram and answer the questions that follow. **Input Values** **Output Values**  			
	4.3.1	Determine the numerical values of the output values. Write the values in the table below. x -2 -1 0 1 y a b c d		(4)
	4.3.2	Draw the graph using the table in 4.3.1 above. **See ANNEXURE B**		(3)
				Total [19]

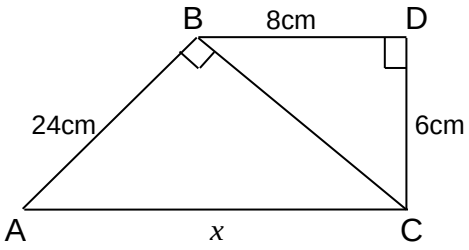
Question 5

5.1 Calculate the value of x,y and z in the diagram below. Provide reasons for your answers.



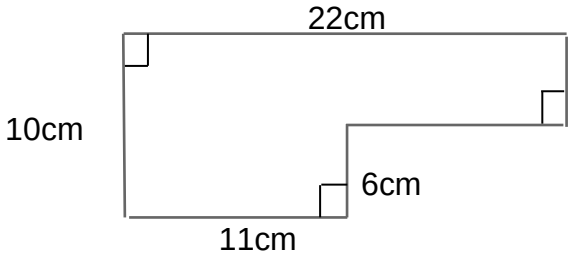
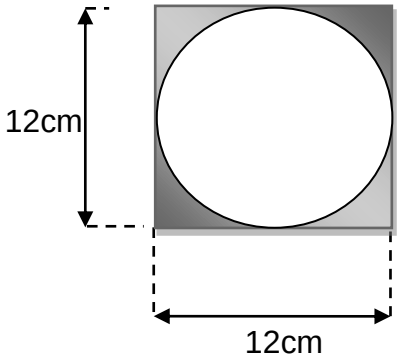
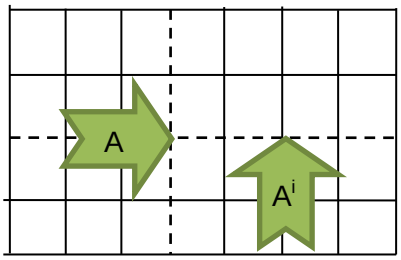
(6)

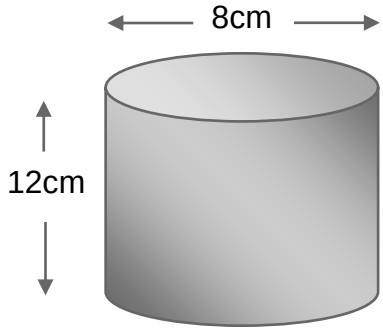
5.2 Study the diagram below and answer the questions that follow.



	5.2.1	Calculate the length of BC.	(3)
	5.2.2	Calculate the length marked x.	(3)
			Total [12]

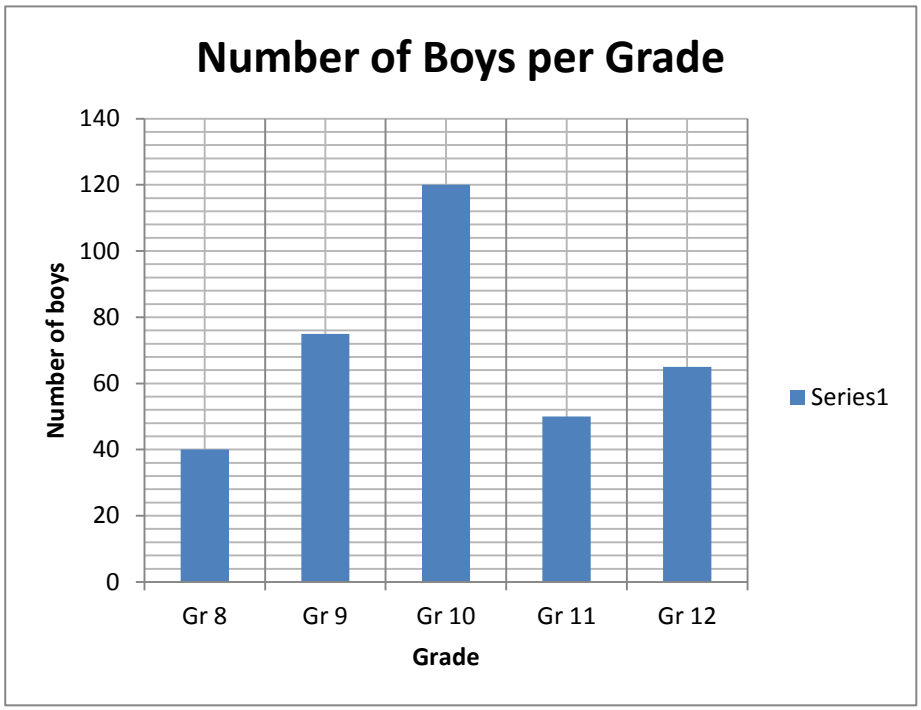
Question 6

6.1	Calculate the perimeter of the diagram.  		(4)
6.2	Calculate the area of the shaded region. Round off your answer to two decimal places.  		(5)
6.3	A is a transformed object to image A^{i}. Mention two types of transformation that took place.  		(2)

6.4	Calculate the volume of the cylinder.  		(3)
			Total [14]

Question 7

7.1 Study the graph below and answer the questions that follow.



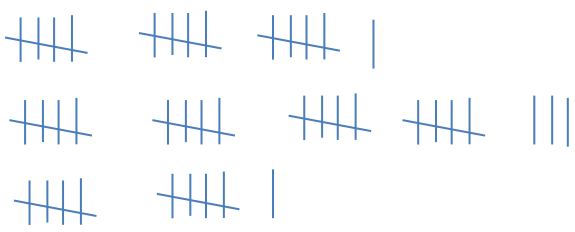
	7.1.1	Which grade has the least number of boys?		(1)
	7.1.2	Which grade has the biggest number of boys?		(1)
	7.1.3	In your opinion what makes this grade in 7.1.2 above to have a biggest number of boys than the other grades?		(2)

7.2 Fifty golf balls, some white, some green and some yellow, are put into a barrel. As they are drawn out, their colours are tallied. Using the tally shown, answer the following:

Green

White

Yellow



	7.2.1	What is the probability that the next ball drawn will be green?		(2)
	7.2.2	What is the probability that the next ball drawn will be white?		(2)
	7.2.3	What is the probability that the next ball drawn will be yellow?		(2)
	7.2.4	Of the 50 golf balls described above, about how many are white?		(2)
				Total [12]

Total : 120

ANNEXURE C

FORMULA SHEET

Simple Interest: $I = \frac{Prn}{100}$ $A = P(1 + in)$ $A = P(1 + \frac{rn}{100})$	Compound Interest: $A = P(1 + i)^n$ $A = P(1 + \frac{r}{100})^n$
Area: 1. $A = l \times b$ 2. $A = \frac{1}{2}bh$ 3. $A = \pi r^2$	Volume: 1. $V = l \times b \times h$ 2. $V = \frac{1}{2}\ bh \times H$ 3. $V = \pi r^2 h$
Perimeter : P= 2*l* + 2*b*	Circumference= 2 πr

ANNEXURE A

Section A

Name: _____ Class: _____

Marks: (2 × 10) = 20

Circle the letter of the correct answer. **Submit this with your answer sheet.**

Question	Answer			
1.	A	B	C	D
2.	A	B	C	D
3.	A	B	C	D
4.	A	B	C	D
5.	A	B	C	D
6.	A	B	C	D
7.	A	B	C	D
8.	A	B	C	D
9.	A	B	C	D
10.	A	B	C	D

ANNEXURE B

Section B

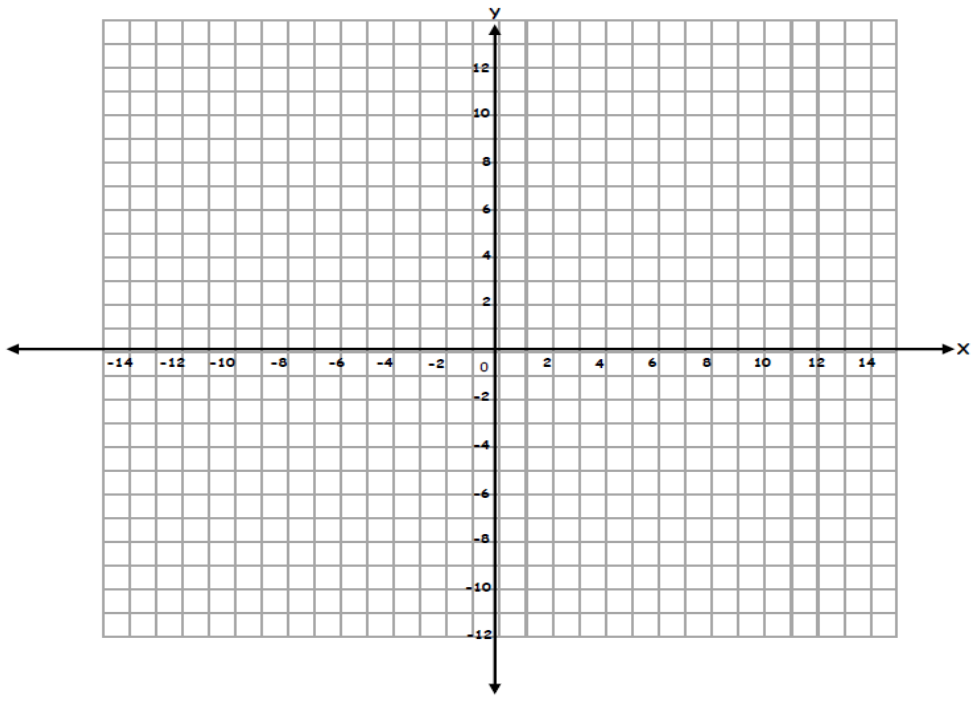
Name: _____ Class: _____

Submit this with your answer sheet

4.3.1

x	-2	-1	0	1
y				

4.3.2



Grade 8 Examination Exemplar 1 Memo

GAUTENG PROVINCE
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Section A

1.	C	✓✓
2.	D	✓✓
3.	C	✓✓
4.	C	✓✓
5.	B	✓✓
6.	D	✓✓
7.	D	✓✓
8.	A	✓✓
9	D	✓✓
10	C	✓✓

TOTAL **20**

Section B

Question 1

1.1

-3 + 8 – 1 - 7 + 12 + 1
= 21-11 ✓
=1 0 ✓

(2)

1.2

0,00125 = 1, 25✓ × 10^{-3} ✓

(2)

1.3

$\frac{x}{30} = \frac{5}{20}$ ✓

$20x = 30 \times 5$ ✓

$20x = 150$ ✓

$x = 7,5$ ✓✓

OR

10 rolls = 5 ÷ 2 = 2,5 ✓✓

10 + 10 + 10

= 2,5 + 2,5 + 2,5 ✓

= 7,5 tablespoons ✓✓

(5)

1.4

New Price = R550,00 × $\frac{115}{100}$ ✓✓

= R550,00 × 1, 15 ✓

= R632, 50 ✓

OR

15% × 550✓ = R82, 50 ✓

New price = 550 + 82,50✓

= R632, 50✓

(4)

1.5

$A = P(1 + in)$ ✓

$= 4700(1 + 0,05 \times 5)$ ✓✓

$= R5\ 875, 00$ ✓

(4)

Total **[17]**

Question 2

2.1.1

3✓ ; 6✓ ; 9✓ ; 12✓ ; 15✓

(5)

2.1.2

Pattern Number	1	2	3	4	5		8	10	12	22
Number of dots	3	6	9	12	15		24✓	30✓	36✓	66✓

(4)

2.1.3

$T_1 = 3 = 3(1)$
$T_2 = 6 = 3(2)$
$T_3 = 9 = 3(3)$ ✓ *(method)*
$T_n = 3n$ ✓
$T_{22} = 3(22)$ ✓
$= 66$ ✓

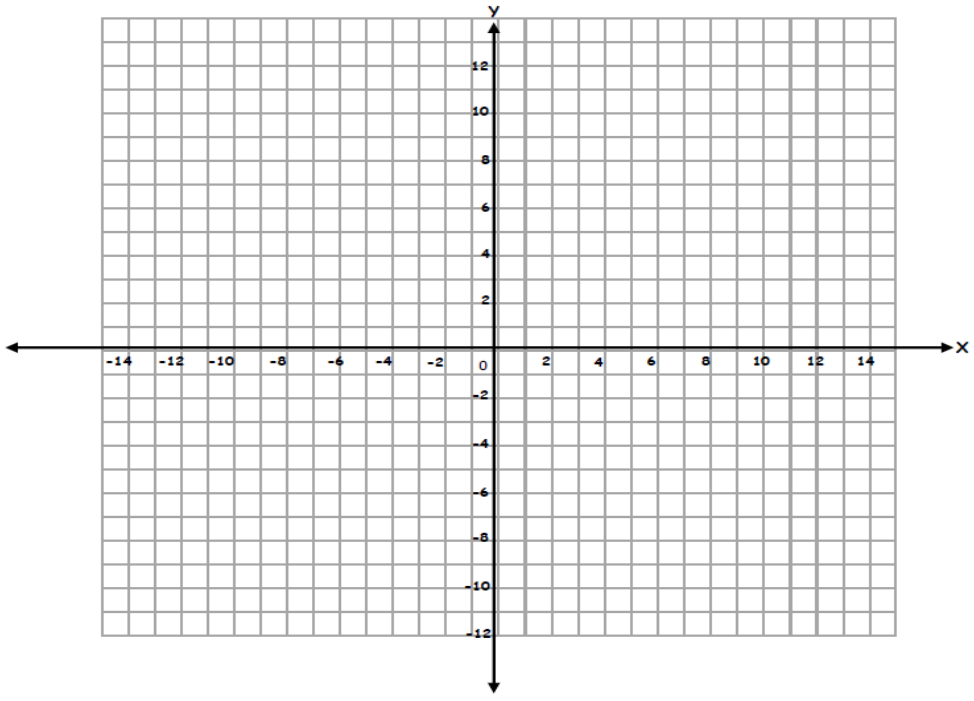
(4)

		Total		**[13]**
Question 3				
3.1		$x(3x + 4y)$ = -3(3 × -3 + 4 × 4) ✓ = -3(-9 + 16) ✓ = -3(7) = -21 ✓		(3)
3.2	3.2.1	$\frac{6x^3 + 2x^2 + 4x}{2x}$ $= \frac{6x^3}{2x} + \frac{2x^2}{2x} + \frac{4x}{2x}$ ✓ = $3x^2$✓ + x✓ + 2✓		(4)
	3.2.2	$2x(3x+1) - x(x+3)$ = $6x^2$ ✓ + $2x$✓ – x^2✓ – $3x$✓ = $5x^2$✓ - x✓		(6)
		Total		**[13]**

Question 4				
	4.1.1	3x – 6 = 9 ✓ 3x = 9 + 6 ✓ 3x = 15 ✓ x = 5 ✓		(4)
	4.1.2	$2(x+4) + 2 = 5x + 1$ 2x + 8 + 2 = 5x + 1✓ 2x – 5x = 1 – 10✓		(4)

		$-3x = -9$ ✓ $x = 3$ ✓		
4.2	Let Aisha's age be x then Mpho will be x - 3 $x + x - 3 = 17$ ✓ $2x = 17 + 3$ ✓ $2x = 20$ $x = 10$ ✓ Aisha is 10 years old.✓			(4)
	4.3.1			(4)

x	-2	-1	0	1
y	-1✓	1✓	3✓	5✓

	4.3.2	 ✓ x-intercept ; ✓ y-1ntercept ; ✓ straight line graph		(3)
			Total	**[19]**

Question 5

5.1

$x + 40^0 + 60^0 = 180^0$ angles on a straight line✓

$x = 180^0 - 100^0$

$x = 80^0$✓

$y = 40^0$✓ alternate angles✓

$z = x = 80^0$✓ corresponding angles ✓ (6)

5.2

5.2.1

$BC^2 = BD^2 + DC^2$✓

$= (8cm)^2 + (6cm)^2$

$= 64\ cm^2 + 36cm^2$✓

$= 100cm^2$

$BC = 10cm$✓ (3)

5.2.2

$x^2 = AB^2 + BC^2$ the theorem of Pythagoras✓✓

$= (24cm)^2 + (10cm)^2$ ✓

$= 576\ cm^2 + 100cm^2$

$= 676\ cm^2$

$x = 26$ cm ✓ (3)

Total [17]

Question 6

6.1

P = 22cm + 10cm + 11cm + 6cm + 11cm✓ + 4cm✓

= 64cm✓✓ (4)

6.2

A = Area of square – Area of circle ✓

$= l^2 - \pi r^2$ ✓

$= 12cm \times 12cm - \frac{22}{7} \times (6cm)^2$ ✓

$= 144cm^2 - \frac{22}{7} \times 36cm^2$ ✓

$= 113,14\ cm^2$ ✓ (5)

6.3 . Translation✓ and rotation✓. (2)

6.4	$V = \pi r^2 h$ ✓ $= \frac{22}{7} \times (4\text{cm})^2 \times 12\text{cm}$ ✓ $= \frac{22}{7} \times 16\text{cm}^2 \times 12\text{cm}$ $= 603{,}43\ \text{cm}^3$ ✓		(3)
	Total		**[14]**

Question 7				
7.1				
	7.1.1	Grade 8. ✓		(1)
	7.1.2	Grade 10. ✓		(1)
	7.1.3	Failure rate.✓✓ Or any reasonable answer in relation to the data as reflected on the graph.		(2)
7.2				
	7.2.1	$P(G) = \frac{16}{50}$ or 0, 32 ✓✓		(2)
	7.2.2	$P(W) = \frac{23}{50}$ or 0, 46 ✓✓		(2)
	7.2.3	$P(Y) = \frac{11}{50}$ or 0, 22 ✓✓		(2)
	7.2.4	Number of White = $\frac{23}{50} \times 50$ ✓ = 23 ✓		(2)
		Total		**[12]**

Total : 120

Grade 8 Examination Exemplar 2

INSTRUCTIONS

1. This Question Paper has two sections, Section A and Section B.

2. Section A has ten multiple choice questions. Answer this section on the answer sheet provided. Four possible answers are given. Circle the letter (A - D) of the correct answer.

3. Section B has 6 Questions. Answer ALL Questions.

4. Read through the questions carefully and make sure that you allocate enough time for each question.
5. A non-programmable scientific calculator may be used unless otherwise stated.

SECTION A

This section has 10 multiple choice questions. Four possible answers are given. Circle the letter (A - D) next to the correct answer. Answer this section on the answer sheet provided.

1. Simplify (2)

$\sqrt[3]{27} + 3^2$

A. 19692 B. 9 C. 12 D. 15

2. Write 0,00045 in scientific notation (2)
A. 45×10^{-4} B. $4{,}5 \times 10^{4}$ C. $4{,}5 \times 10^{-5}$ D. $4{,}5 \times 10^{-4}$

3. Simplify (2)
$7x + 4y - 2y + 3x$

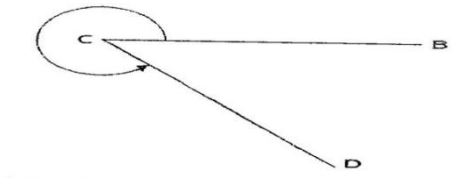
A. $11xy - xy$ B. $12xy$ C. $10x + 2y$ D. $10xy + 2xy$

4. Simplify (2)
$2a^4 \times 3a^5 + 4a^9$
A. $6a^{20} + 4a^9$ B. $10a^9$ C. $9a^9$ D. $24a^9$

5. A car travels for 300 *km* at an average speed of 120*km/h*. If the trip started at 09:00 what time will the car reach the destination? (2)

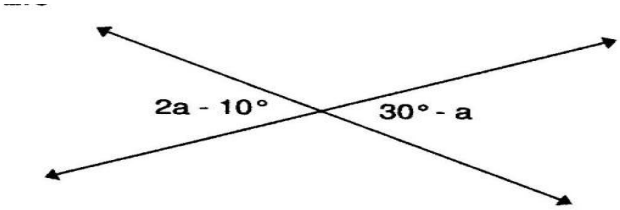
A. 10:30 B. 12:00 C.13:00 D. 11:30

6. $\hat{C}$ is … angle. (2)



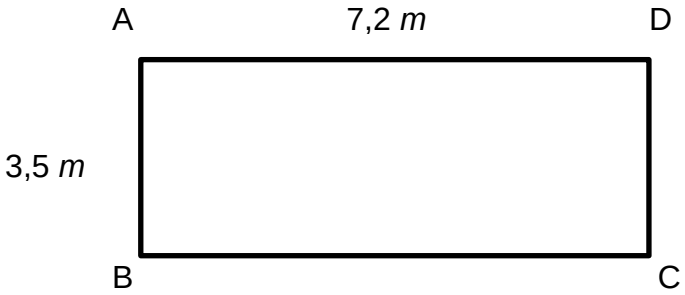
A. an acute B. an obtuse C. a revolution D. a reflex

7. Find the value of a. (2)



A. $13{,}3^0$ B. 15^0 C. 40^0 D. 10^0

8. The area of rectangle ABCD is … (2)



A. 31 m^2 B. 22,0m^2 C. 25,2 m^2 D. 21,0 m^2

9. Calculate the mean score. (2)

Test 1	Test 2	Test 3	Test 4
30	**45**	**23**	**32**

A. 32 B. 31 C. 32,5 D. 30

10. The probability of getting tails when a coin is tossed once is … (2)

A. $\frac{1}{3}$ B. $\frac{1}{2}$ C. $\frac{1}{4}$ D. 1

Total [20]

SECTION B

Question 1

1.1 Simplify. (1)

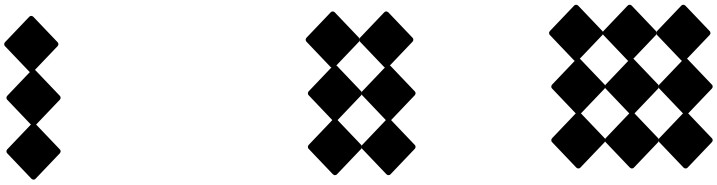
$$-2 + 3(1 - 4) - 2$$

1.2 Divide R120-00 in the ratio 3 : 2 (4)

1.3 A pair of jeans marked at R450-00 is sold at a discount of 25%.
Determine the selling price. (2)

1.4 Calculate the amount that will be in the bank after 4 years if
R3 500 was invested at 9% p.a. simple interest. (3)

1.5 Study the patterns below and answer the questions that follows.



Pattern 1 Pattern 2 Pattern 3

1.5.1 How many black squares will be in the fourth and fifth pattern? (2)

1.5.2 Work out the rule to find the number of black squares in any pattern. (2)

1.5.3 Use you rule to find the number of black squares in the 15^{th} pattern. (2)

[16]

Question 2

2.1 If x = -2 and y = -3 find the value of: (3)

$$-2(x-1)-2y$$

2.2 Simplify

2.2.1 $(15a+24b-13c)-(12a-18b+11c)$ (4)

2.2.2 $\dfrac{6x^3-15x}{3x}$ (2)

2.2.3 $3x^2(x+2)+2x(x^2+3x)$ (6)

[15]

Question 3

3.1 Solve for x

3.1.1 $7-3x = 2x-3$ (3)

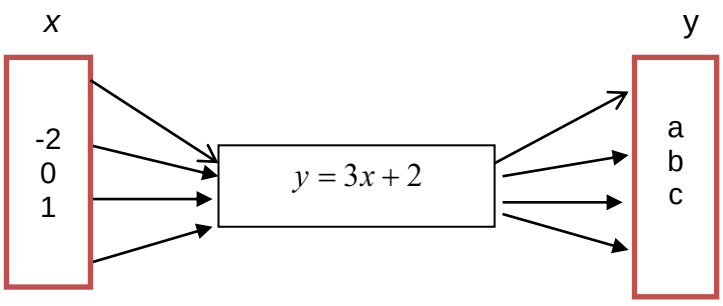
3.1.2 $10-4(2x-1) = -2(3-x)$ (4)

3.1.3 $\dfrac{3x-1}{2}=4$ (4)

3.2 Poppy is 5 years older than Cairo. Their ages in years added up to 25. How old is Poppy and Cairo? (5)

3.3 Study the flow diagram and answer the questions that follow.

Input Values **Output Values**



3.3.1 Copy and complete the output values in the tables. (3)

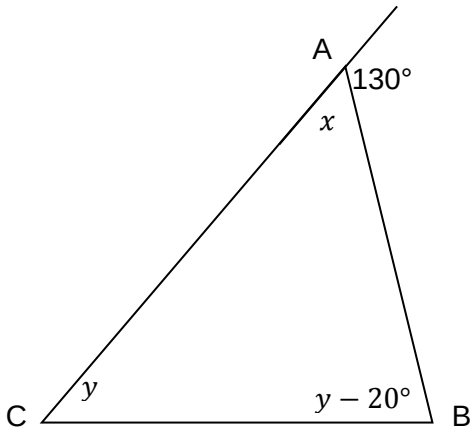
x	-2	0	1
y	a	b	c

3.3.2 Draw the graph using the table in 3.3.1 above. Use **Annexure A** provided. (3)

[22]

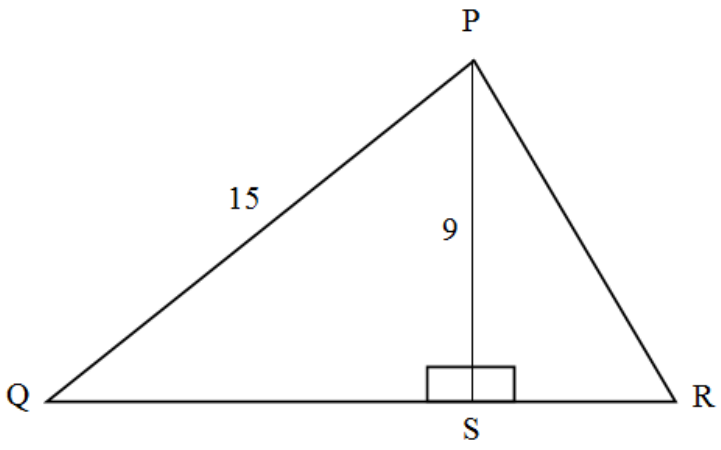
Question 4

4.1 Calculate, with reasons, the angles marked x and y.



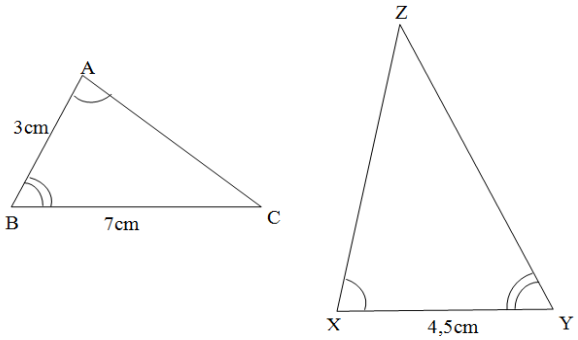
(5)

4.2 In the diagram below, PQ = QR. Calculate the length of PR.



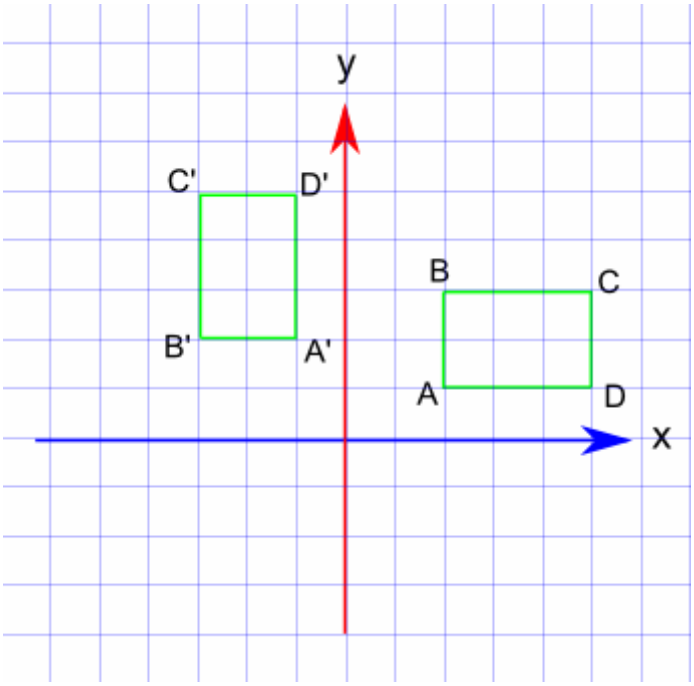
(5)

4.3 Given that ΔABC is similar to ΔXYZ, calculate the length of side YZ.



(4)

4.4 The diagram illustrates rotation of rectangle ABCD.



4.4.1 Describe the rotation in words. (2)

[16]

Question 5

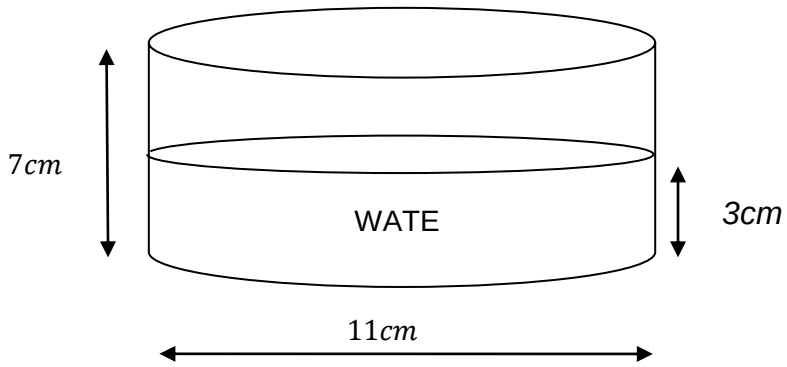
5.1 The diagram below represents a doughnut. The radius of the smaller circle is 5*cm* and the radius of the larger circle is 7*cm*.

5.1.1 Determine the area of the smaller circle. (3)

5.1.2 Determine the area of the larger circle. (2)

5.1.3 Hence determine the area of the shaded area. (1)

5.2 The diagram below represents a container with water in it. The diameter of the container below is 11*cm* and the height of the container is 7*cm*.

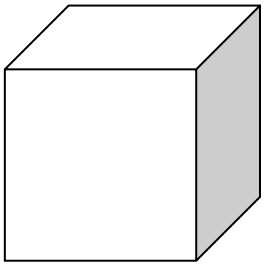


5.2.1 Calculate the volume of the container. (3)

5.2.2 What is the capacity of the container? (i.e., how much liquid could it hold if it were filled to the brim.) (2)

5.2.3 How much water is in the container? (2)

5.3 Drawn below is a cube. The length of the base is 3*cm*.



5.3.1 Determine the surface area of this cube. (3)

[16]

Question 6

6.1 The following are the ages of 25 people who took part in a fun run race:

10	12	15	30	27
16	20	14	17	37
47	48	37	32	19
25	49	46	17	18
29	31	43	48	40

Age	Tally	Frequency
10 – 19		
20 – 29		
30 – 39		
40 – 49		

6.1.1 Complete the frequency table using the given class intervals on the diagram sheet provided. Use **Annexure B** provided. (4)

6.1.2 Draw a histogram, on the diagram sheet provided, to represent the data. Use **Annexure C** (5)

6.2 Write down the probability of getting an odd number when you roll a six sided die. (2)

6.3 One face of a cube is painted blue, two faces are painted green and three faces are painted orange. What is the probability that when you roll the cube the following will be on top when it lands?

6.3.1 Blue (1)

6.3.2 Green (1)

6.3.3 Not blue (2)

[15]

Total : 120

FORMULA SHEET

Simple Interest:	Compound Interest:
$I = \frac{Prn}{100}$ $A = P(1 + in)$ $A = P(1 + \frac{rn}{100})$	$A = P(1 + i)^n$ $A = P(1 + \frac{r}{100})^n$ $CI = A - P$
Area: 1. $A = l \times b$ 2. $A = \frac{1}{2}bh$ 3. $A = \pi r^2$	Volume: 1. $V = l \times b \times h$ 2. $V = \frac{1}{2}bh \times H$ 3. $V = \pi r^2 h$

SECTION A

Name: _____ Class: _____

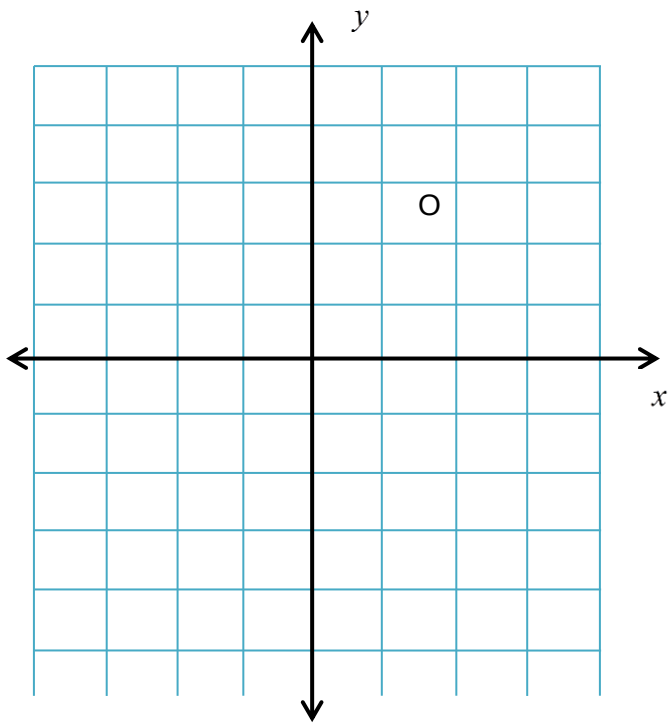
Marks: (2 × 10) = 20

Circle the letter of the correct answer. **Submit this with your answer sheet.**

Question	Answer			
1.	A	B	C	D
2.	A	B	C	D
3.	A	B	C	D
4.	A	B	C	D
5.	A	B	C	D
6.	A	B	C	D
7.	A	B	C	D
8.	A	B	C	D
9.	A	B	C	D
10.	A	B	C	D

Annexure A

Name: _____ Class: _____

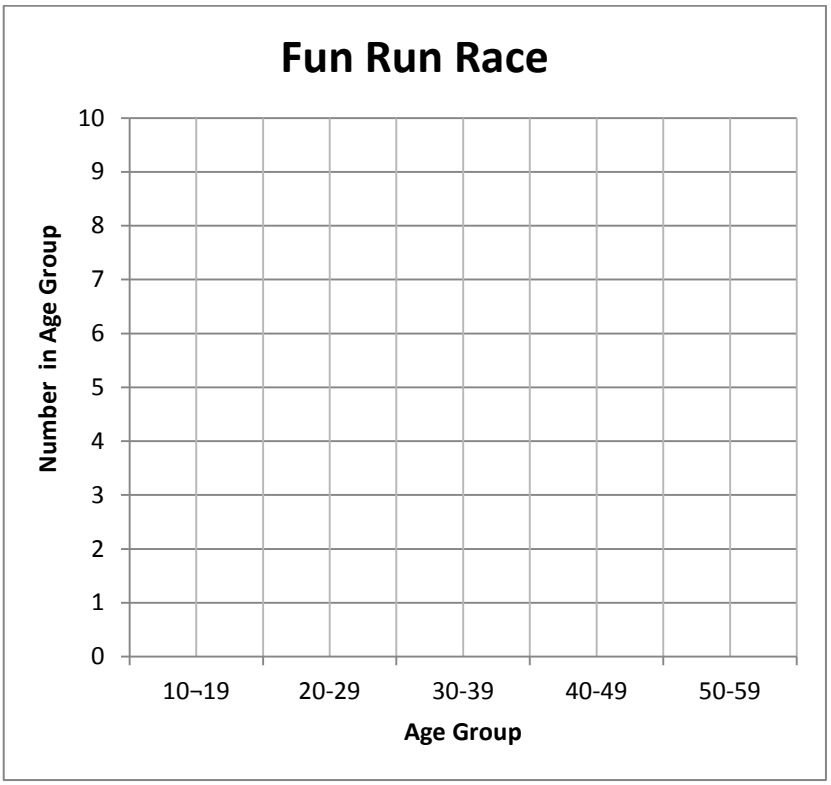


Annexure B

Name: _____ Class: _____

Age	Tally	Frequency
10 – 19		
20 – 29		
30 – 39		
40 – 49		
50 – 59		

Annexure C


Fun Run Race
Number in Age Group
10
9
8
7
6
5
4
3
2
1
0
10¬19
20-29
30-39
40-49
50-59
Age Group

Grade 8 Examination Exemplar 2 Memo

GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

SECTION A

1.	C✓✓
2.	**D✓✓**
3.	**C✓✓**
4.	**B✓✓**
5.	**D✓✓**
6.	**D✓✓**
7.	**A✓✓**
8.	**C✓✓**
9.	**C✓✓**
10.	**B✓✓**
TOTAL	**20**

SECTION B

Question 1

1.1 $-2 + 3(1 - 4) - 2$
$= -4 - 9$
$= -13$✓ (1)

1.2 $3 + 2 = 5$✓

$\frac{3}{5} \times 120$✓

= R72✓

$\frac{2}{5} \times 120$

= R48✓ (4)

1.3 New Price = R450,00 × $\frac{75}{100}$✓

= R450,00 × 0, 75

= R337, 50 ✓

25% × 450 = R112, 50 ✓

OR New price = R450 - R112,50

= R337, 50✓ (2)

1.4 $A = P(1 + in)$✓

$=3\,500(1 + 0{,}09 \times 4)$✓

$=$R4760, 00✓ (3)

1.5 1.5.1 12 and 15 (2)

1.5.2

$T_1 = 3 = 3(1)$
$T_2 = 6 = 3(2)$
$T_3 = 9 = 3(3)$ ✓*(method)*
$T_n = 3n$ ✓ (2)

1.5.3

$T_{15} = 3(15)$ ✓
$= 45$ ✓ (2)

[16]

Question 2

2.1
$-2(x-1)-2y$ ☐
$=-2(-2-1)-2(-3)$ ☐ ✓
$= 6 + 6$ ✓
$= 12$ ✓ (3)

2.2.1 $(15a+24b-13c)-(12a-18b+11c)$
$= 15a+24b-13c-12a+18b-11c$ ✓
$=3a$ ✓ $+42b$ ✓ $-24c$ ✓ (4)

2.2.2 $\dfrac{6x^3-15x}{3x}$
$=\dfrac{6x^3}{3x}-\dfrac{15x}{3x}$
$= 2x^2$ ✓ $- 5$ ✓ (2)

2.2.3 $3x^2(x+2)+2x(x^2+3x)$
$3x^3$ ✓ $+ 6x^2$ ✓ $+ 2x^3$ ✓ $+ 6x^2$ ✓
$5x^3$ ✓ $+12x^2$ ✓ (6)

[15]

Question 3

3.1 Solve for x

3.1.1 $7-3x=2x-3$
$-3x-2x=-3-7$ ✓
$-5x=-10$ ✓
$x = 2$ ✓ (3)

3.1.2 $10-4(2x-1)=-2(3-x)$
$10-8x+4$ ✓ $=-6+2x$ ✓
$-8x-2x=-6-10-4$ ✓
$-10x=-20$
$x=2$ ✓ (4)

3.1.3 $\dfrac{3x-1}{2}=4$ (4)

$\frac{3x-1}{2} \times 2 = 4 \times 2$ ✓

$3x - 1 = 8$ ✓

$3x = 9$ ✓

$x = 3$ ✓

3.2 $x = y + 5$ ✓ **OR** Cairo : a ✓

$x + y = 25$ ✓ Poppie: a + 5 ✓

$y + 5 + y = 25$ ✓ Together: a + a + 5 = 25 ✓

$2y + 5 = 25$ 2a = 20

$2y = 20$ a = 10 ✓

$y = 10$ ✓ Cairo is 10 and Poppy is 15 years ✓

$x = 10 + 5$

$x = 15$ ✓

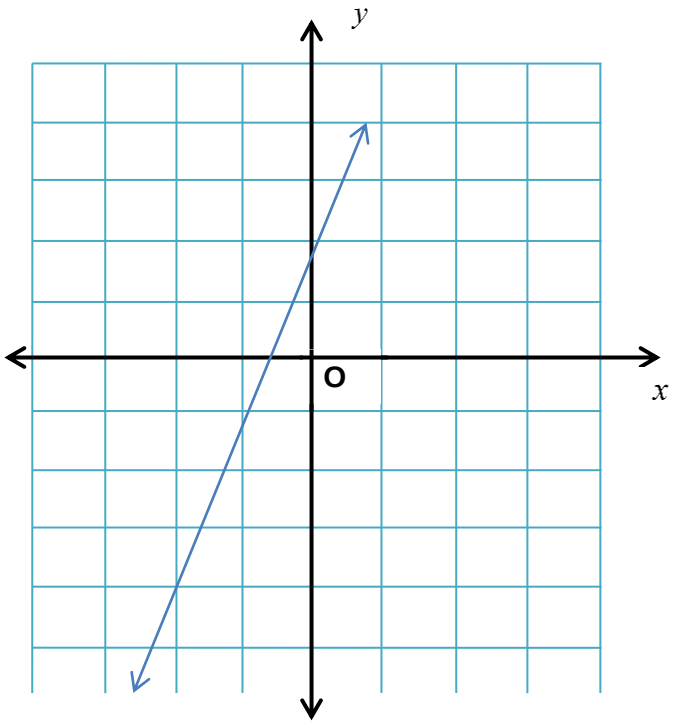
(5)

3.3.1

x	-2	0	1
y	-4 ✓	2 ✓	5 ✓

(3)

3.3.2



2✓

shape✓

$-^2I_3$✓

(3)

[22]

Question 4

4.1 $x + 130^0 = 180^0$[Adj. angles on straight line]✓

$x = 180^0 - 130^0$

$x = 50^0$✓

$y + y - 20^0 = 130^0$ [Ext. angle = two opp. int. angles]✓

$2y = 130^0 + 20^0$

$2y = 150^0$✓

$y = 75^0$✓ (5)

4.2 $QS^2 = 15^2 - 9^2$✓

$QS^2 = 144$

$QS = 12$✓

$SR = 3$✓

$PR^2 = 9^2 + 3^2$✓

$PR^2 = 90$

$PR = 3\sqrt{10}$ / 9,49✓ (5)

4.3 $\frac{YZ}{BC} = \frac{XY}{AB}$

✓✓

$\frac{YZ}{7} = \frac{4,5}{3}$

$YZ = 10,5$✓

(4)

4.4.1 ABCD is rotated 90^0✓ counter-clockwise ✓ (2)

[16]

Question 5

5.1.1 $Area = \pi r^2$✓

$= \frac{22}{7} \times (5\text{cm})^2$✓

$= \frac{22}{7} \times 25\text{cm}^2$

$= 78,6\ \text{cm}^2$ ✓OR $25\pi\ \text{cm}^2$ (3)

5.1.2 $Area = \pi r^2$

$= \frac{22}{7} \times (7\text{cm})^2$✓

$= \frac{22}{7} \times 49\text{cm}^2$

$= 154\ \text{cm}^2$ ✓OR $49\pi\ \text{cm}^2$ (2)

5.1.3 $154\ \text{cm}^2 - 78,6\ \text{cm}^2$

$= 75,5\ \text{cm}^2$ ✓ (1)

5.2 5.2.1 $V = \pi r^2 h$✓

$= \frac{22}{7} \times (5,5\text{cm})^2 \times 7\text{cm}$ ✓

$= \frac{22}{7} \times 30,25\text{cm}^2 \times 7\text{cm}$

$= 665,5\ \text{cm}^3$✓ (3)

5.2.2 Capacity = $\frac{665,5}{1000}$ ✓

= 0,7 ℓ ✓ OR 700 mℓ (2)

5.2.3 $V = \pi r^2 h$

$= \frac{22}{7} \times (5{,}5\text{cm})^2 \times 3\text{cm}$

$= \frac{22}{7} \times 30{,}25\text{cm}^2 \times 3\text{cm}$

$= 285.2\text{cm}^3$✓

Capacity = 0.3 ℓ✓ **OR** 300 mℓ

(2)

5.2.4 Surface Area = $6(3\text{cm})^2$✓

$= 6 \times 9\text{cm}^2$✓

$= 54\text{cm}^2$✓

(3)

[16]

Question 6

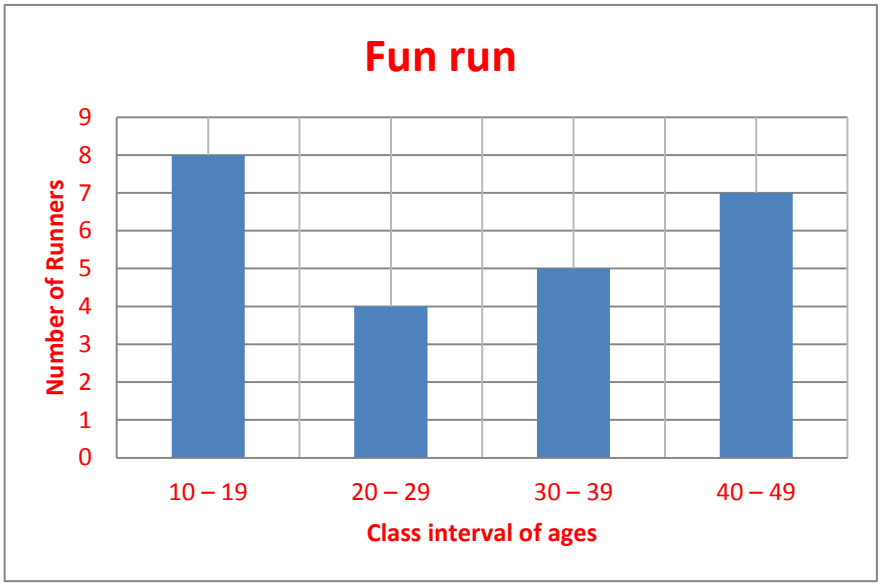
6.1 6.1.1

Age	Tally	Frequency
10 – 19	𝍸 //	✓ 9
20 – 29	////	✓ 4
30 – 39	𝍸	✓ 5
40 – 49	𝍸 //	✓ 7
Total		25

(4)

6.1.2

✓✓✓✓✓ **(**1 mark for each bar and 1 mark for titles)



(5)

6.2 P(Odd Number) = $\frac{1}{2}$ ✓✓ (2)

6.3 6.3.1 P(Blue) = $\frac{1}{6}$ ✓ (1)

6.3.2 P(Green) = $\frac{2}{6} = \frac{1}{3}$ ✓ (1)

6.3.3 P(Not blue) = $\frac{5}{6}$ ✓✓ (2)

[15]

Total: 120

Grade 8 Examination Exemplar 3

MATHEMATICS

INSTRUCTIONS

1. This Question Paper has two sections, Section A and Section B.
2. Section A has 10 multiple choice questions each with 4 possible answers.
3. Answer Section A on the mark-sheet provided by circling the letter of the correct answer (**A – D**).
4. Section B has 9 questions. Answer ALL questions.
5. Read through the questions carefully and make sure that you allocate enough time for each question.
6. Show all working unless otherwise stated.
7. Round off your answers to two decimal places unless otherwise stated.
8. A non-programmable calculator may be used unless otherwise stated.
9. Write as neatly and clearly as possible.
10. Tear off the answer sheet (**Section A**) and the grid (**Question 5.1.2**) from your question paper and submit them with your answer book.
11. Write your name on each sheet of paper submitted.

SECTION A

QUESTION 1

1. Circle the letter of the correct answer from the four possible answers.

1.1 The HCF of 18 ; 30 and 48 is: (1)

A 3 B 4 C 6 D 8

1.2 $\frac{3}{6}+\frac{2}{8}+\frac{1}{4}=\ldots$ (1)

A $\frac{6}{18}$ B $\frac{6}{24}$ C $\frac{2}{7}$ D 1

1.3 $4{,}8-2{,}042=\ldots$ (1)

A 2,38 B 2,420 C 2,756 D 2,758

1.4 $\sqrt{49\times121}=\ldots$ (1)

A 18 B 77 C 170 D 17

1.5 If the temperature is $-7\ ^0C$ and then it rises by $15\ ^0C$, what will the temperature be? (1)

A $-22\ ^0C$ B $22\ ^0C$ C $8\ ^0C$ D $-8\ ^0C$

1.6 If $\frac{3}{4}$ of the 4 500 000 people in a city are between the ages of 15 and 40, how many people is this? (1)

A 3 375 000 B 281 250 C 337 500 D 33 750 000

1.7 The number of terms in the expression $2(x+y)+xy-39$ is … (1)

A 4 B 5 C 2 D 3

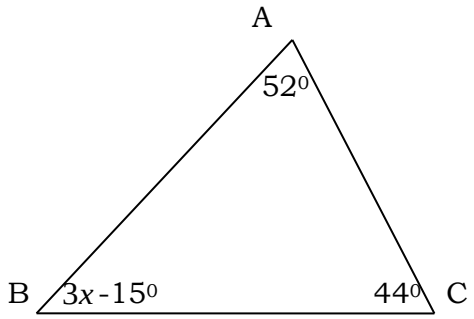
1.8 Which equation best expresses the statement: (1)

"The sum of the squares of t and p is 25".

A $2t+2p=25$ B $\sqrt{t^2}+\sqrt{p^2}=25$ C $(t+p)^2=25$

D $t^2+p^2=25$

1.9 In ΔABC below $x = ...$ (1)



A. 30^0 B. 36^0 C. 37^0 D. 33^0

1.10 Six counters in a bag are numbered **3 4 7 9 10 11**. (1)
One counter is drawn at random from the bag. The probability that the number drawn is a prime number is ….

A $\frac{1}{6}$ B $\frac{1}{2}$ C $\frac{1}{3}$ D $\frac{4}{6}$

[10]

SECTION B

QUESTION 2

2.1 Simplify

2.1.1 $\sqrt[3]{125} - \sqrt{\frac{1}{4}}$ (3)

2.1.2 $\frac{1}{2} + \frac{1}{4} \div (\frac{1}{3} - \frac{1}{4})$ (4)

2.1.3 $(-5) - (-8) - (-7) - (+2)$ (3)

[10]

QUESTION 3

3.1 Write 3 540 000 in scientific notation. (2)

3.2 A mix of peanuts and raisins contains five peanuts for every two raisins.

3.2.1 Write down the ratio of the peanuts to raisins. (1)

3.2.2 If the total number of peanuts and raisins in a mix is 84, calculate the number of peanuts and the number of raisins in the mix. (4)

3.3 A car travels a distance of 300 km at an average speed of 65 km/h.
How long does it take the car to cover the distance? (3)

[10]

QUESTION 4

4.1 Mr Catch saves money for his intended relocation to Britain. He keeps himself updated with the exchange rates by watching the daily business news on TV. On a particular day the Rand/ Pound exchange rate was £1= R18, 40. How many pounds will he get in exchange for his savings of R500 000? (2)

4.2 A pair of jeans priced at R550 is put on sale for 25 % discount. How much is the new price? (2)

4.3 Mrs Tate saves a lump sum of R50 000 for her daughter's university fees. If her money is invested for five years on simple interest option of 5 % per annum, how much pay-out will she receive at the end of five years? (3)

4.4 The first four terms of a number pattern is 2 ; 7 ; 12 ; 17 ; …

4.4.1 Find the next three terms of the pattern. (3)

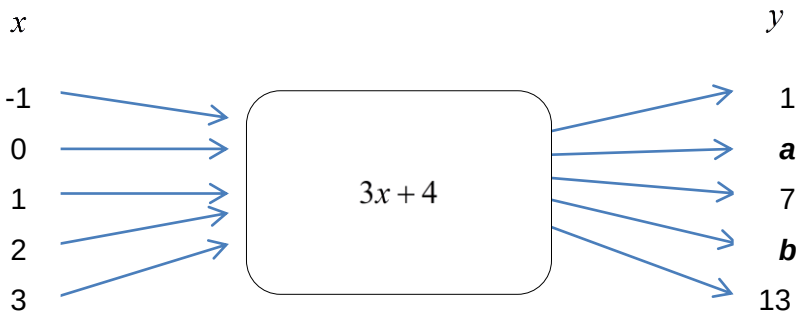
4.4.2 Find the general term of the pattern in the form $\mathbf{T_n = \ldots}$ (3)

4.4.3 Use your formula in 4.4.2 to find the 11^{th} term in the pattern. (2)

[15]

QUESTION 5

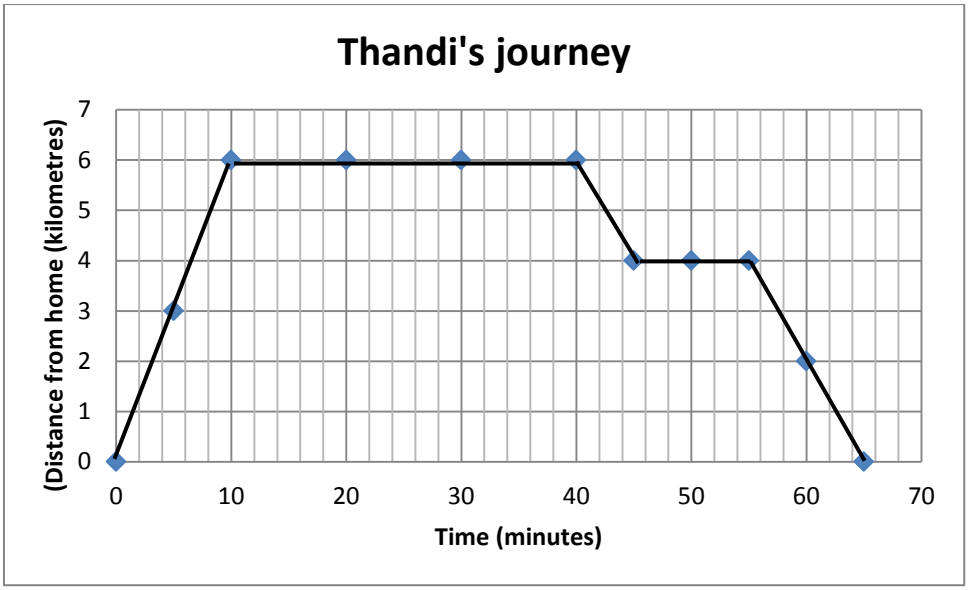
5.1 Study the flow diagram below and answer the questions that follow.



5.1.1 Calculate the output values ***a*** and ***b***. (4)

5.1.2 Draw a graphical representation of the relation. (3)

5.2 Thandi cycled from her home to town and back for shopping. On her way back she stops at the filling station to have her bicycle wheels checked. Below is a graphical representation of her journey.



5.2.1 How far is Thandi's home from town? (1)

5.2.2 How long was she away from home? (1)

5.2.3 How long did she stay at the filling station? (1)

[10]

QUESTION 6

6.1 Add $3x-7x^2+4$ and $3+2x-x^2$ (3)

6.2 Simplify

6.2.1 $2x(1-x+y)-x(y-3+2x)$ (3)

6.2.2 $\dfrac{(4a^2)(-3a^3)}{-6a^4}$ (3)

6.2.3 $\dfrac{12x^2-4x}{4x}-\dfrac{10x^2-15x}{5x}$ (3)

6.3 Find the value of $\dfrac{x}{2}+\dfrac{y}{6}$ if $x=2$ and $y=-3$ (3)

[15]

QUESTION 7

7.1 Solve for x

7.1.1 $2x-1=-5$ (3)

7.1.2 $3x-2=x+4$ (3)

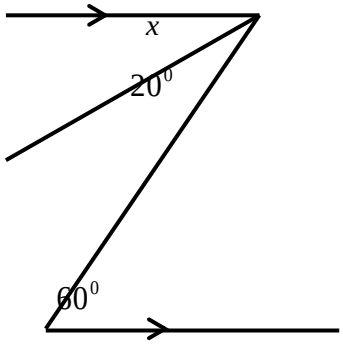
7.1.3 $\frac{x}{-3}+2=-2$ (3)

7.2 The sum of two numbers is 165 and their difference is 27. Find the numbers. (4)

[13]

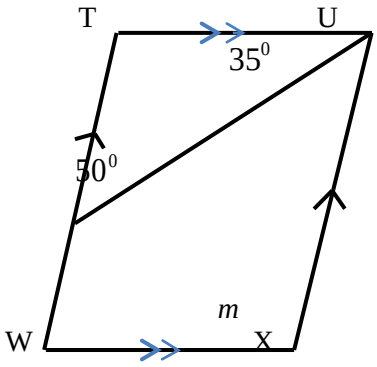
QUESTION 8

8.1 In the diagram below calculate the size of x.



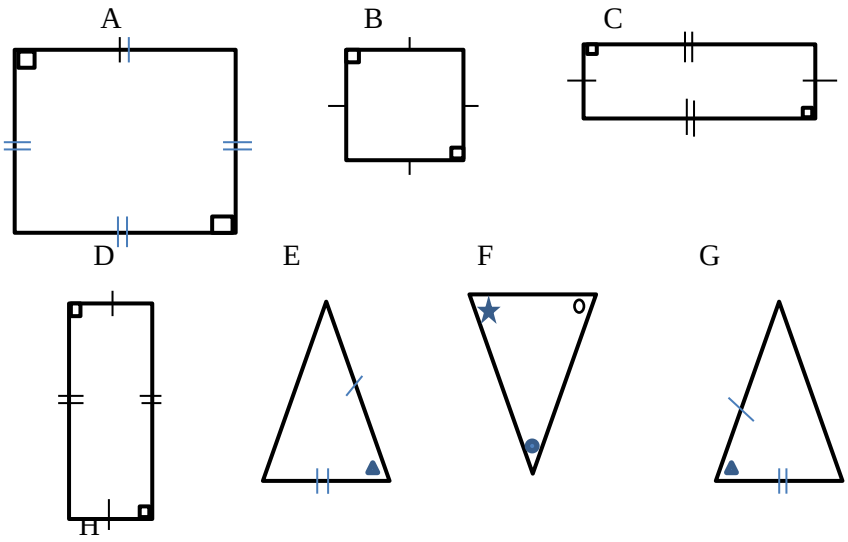
(3)

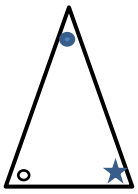
8.2 Calculate the size of m.



(4)

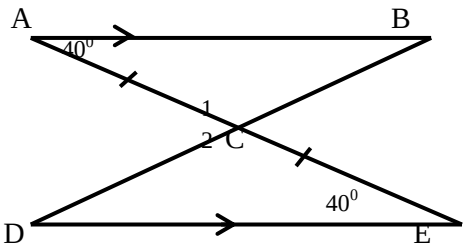
8.3 Which of the shapes below are similar and which ones are congruent?





(4)

8.4 Complete the prove that $\Delta ABC \equiv \Delta EDC$



$\hat{A}$ = …….. = 40^0 [……..]

$\hat{C}_1$ = …….. [Vertically opp. angles]

$\hat{B}$ = …….. [Remaining angles]

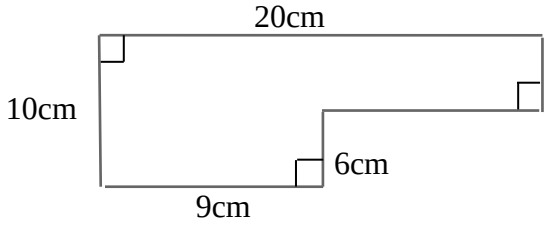
∴ …… [……]

(6)

[17]

QUESTION 9

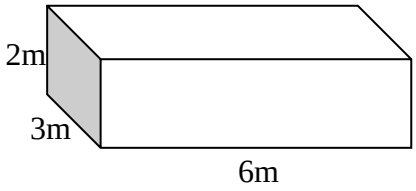
9.1 Study the shape below and answer the questions that follow.



9.1.1 Calculate the perimeter of the shape. (3)

9.1.2 Calculate the area of the shape. (3)

9.2 Below is a closed rectangular box.



9.2.1 Calculate the volume of the box. (2)

9.2.2 Draw a net of the box. (1)

9.2.3 Calculate the surface area of the box. (3)

[12]

QUESTION 10

10.1 Below are marks of a grade 9 class after writing a mathematics test out of 40. Answer the questions that follow based on the data. All answers must be rounded off to one decimal place.

27 25 27 29 31 24 25 27 28 29 24 26 30

28 31 25 25 27 28 28 28 26 28 31 24 30

10.1.1 Calculate the mean. (2)

10.1.2 Find the median. (2)

10.1.3 What is the mode of the data? (1)

10.1.4 Calculate the range. (2)

10.2 If the same test could be given to another grade 9 class taught the same way by the same teacher what mark do you think most learners will get? (1)

[8]

Total [120]

SECTION A

QUESTION 1

Name: _____ Class: _____

Marks: 10

Circle the letter of the correct answer. **Submit this with your answer sheets.**

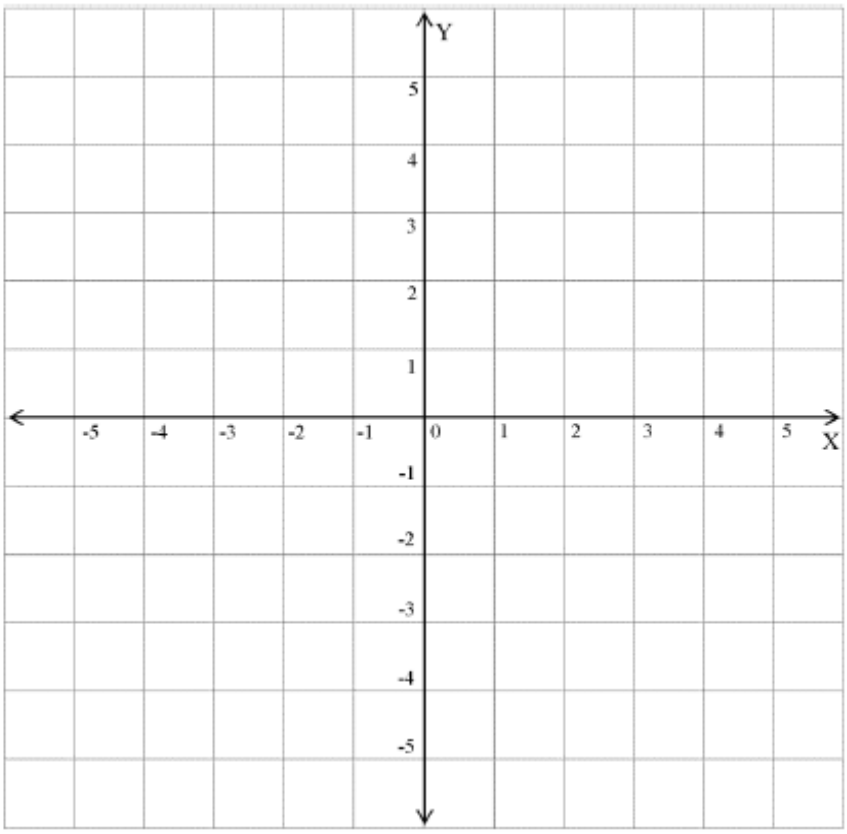
Question	Answer			
1.	A	B	C	D
2.	A	B	C	D
3.	A	B	C	D
4.	A	B	C	D
5.	A	B	C	D
6.	A	B	C	D
7.	A	B	C	D
8.	A	B	C	D
9.	A	B	C	D
10.	A	B	C	D

Name: _____ Class: _____

QUESTION 5

5.1.2

Submit this with your answer sheets.



Grade 8 Examination Exemplar 3 Memo

GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

SECTION A
QUESTION 1

1.1	C	✓
1.2	D	✓
1.3	D	✓
1.4	B	✓
1.5	C	✓
1.6	A	✓
1.7	D	✓
1.8	D	✓
1.9	D	✓
1.10	B	✓

[10]

SECTION B

QUESTION 2

2.1 Simplify

2.1.1 $\sqrt[3]{125} - \sqrt{\frac{1}{4}}$

$= 5\checkmark - \frac{1}{2}\checkmark$

$= 4\frac{1}{2}\checkmark$ (3)

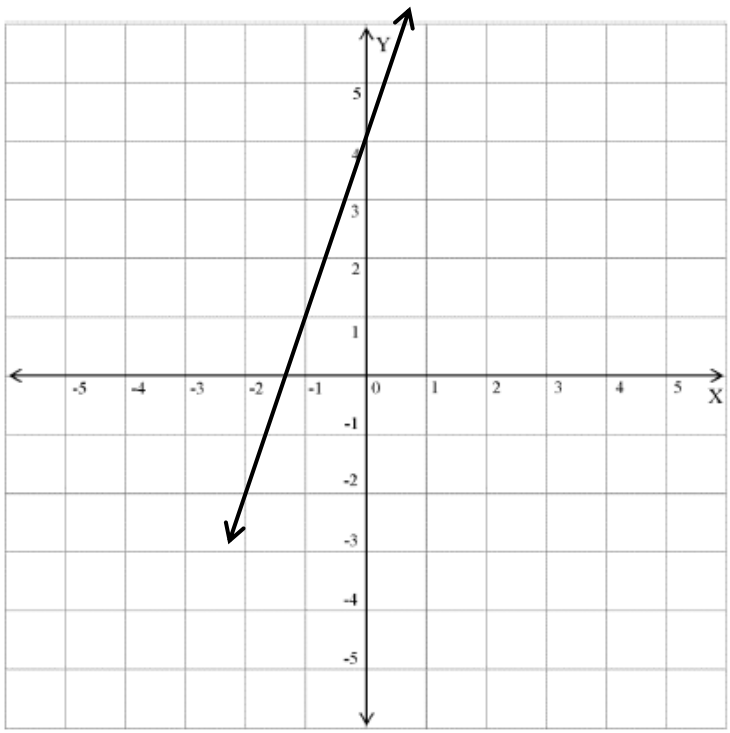
2.1.2 $\frac{1}{2} + \frac{1}{4} \div (\frac{1}{3} - \frac{1}{4})$

$= \frac{2+1}{4} \div (\frac{4-3}{12})\checkmark$

$= \frac{3}{4} \div (\frac{1}{12})\checkmark$

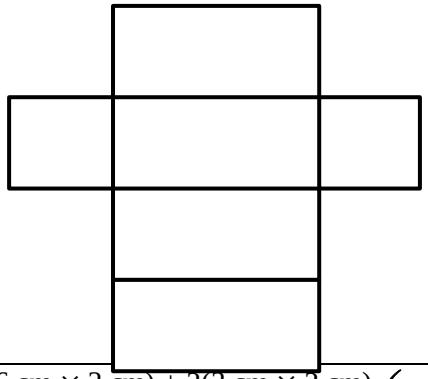
		$= \frac{3}{4} \times (\frac{12}{1})$ ✓ $= 9$ ✓	(4)
	2.1.3	(–5) – (–8) – (–7) – (+2) = –5 + 8✓ + 7 –2✓ = 8✓	(3)
			[10]

QUESTION 3			
3.1	3 540 000 = 3,54✓×10^5✓		(2)
	3.2.1	5 : 2 ✓	(1)
	3.2.2	5 +2= 7 $= \frac{5}{7} \times 84$ ✓ = 60 Peanuts ✓ $= \frac{2}{7} \times 84$ ✓ = 24 Raisins ✓	(4)
3.3	$speed = \frac{distance}{time}$ $time = \frac{distance}{speed}$ ✓ $= \frac{300km}{65km/h}$ ✓ = 4 hours 37 minutes✓		(3)
			[10]
QUESTION 4			
4.1	He will get $\frac{500000}{18,40}$ ✓ = £ 27 173, 91 ✓		(2)
4.2	New price = R550 $\times \frac{75}{100}$ ✓ = R412,50 ✓		(2)
4.3	$A = P(1+in)$ ✓ = 50 000(1 + 0,05 × 5) ✓		(3)

	= R62 500 ✓		
	4.4.1	22✓ ; 27✓ ; 32✓	(3)
	4.4.2	Find the general term of the pattern in the form $\mathbf{T_n = \ldots}$ d = 5 $T_1 = 2 = 5(1) - 3$ $T_2 = 7 = 5(2) - 3$ $T_3 = 12 = 5(3) - 3$ ✓✓ ***(method)*** $T_n = 5n - 3$ ✓	(3)
	4.4.3	$T_{11} = 5(11) - 3$ ✓ = 52 ✓	(2)
			[15]
QUESTION 5			
	5.1.1	$a = 3(0) + 4$ ✓ = 4 ✓ $b = 3(2) + 4$ ✓ = 10 ✓	(4)
	5.1.2		✓ ***(y-int)*** ✓ ***(x-int)*** ✓ ***(line)*** (3)

5.2			
	5.2.1	6 *km* ✓	(1)
	5.2.2	*1 Hour 5 minutes/ 65 minutes* ✓	(1)
	5.2.3	*10 minutes* ✓	(1)
			[10]
QUESTION 6			
6.1	$-7x^2+3x+4$ $+(-x^2+2x+3)$ $-8x^2$ ✓$+\ 5x$ ✓$+\ 7$ ✓		(3)
6.2	Simplify		
	6.2.1	$2x(1-x+y)-x(y-3+2x)$ $=2x-2x^2+2xy$ ✓$-xy+3x-2x^2$ ✓ $=-4x^2+xy+5x$ ✓	(3)
	6.2.2	$\frac{(4a^2)(-3a^3)}{-6a^4}$ $=\frac{-12a^5}{-6a^4}$ ✓ $=2a$ ✓✓	(3)
	6.2.3	$\frac{12x^2-4x}{4x}-\frac{10x^2-15x}{5x}$ $=3x-1$ ✓$-2x-3$ ✓ $=x-4$ ✓	(3)
6.3	$\frac{x}{2}+\frac{y}{6}=\frac{2}{2}+\frac{-3}{6}$ ✓ $=\frac{2}{2}-\frac{1}{2}$ ✓ $=\frac{1}{2}$ ✓		(3)
			[15]
QUESTION 7			

7.1			
	7.1.1	$2x-1=-5$ $2x=-5+1$ ✓ $2x=-4$ ✓ $x=-2$ ✓	(3)
	7.1.2	$3x-2=x+4$ $3x-x=4+2$ ✓ $2x=6$ ✓ $x=3$ ✓	(3)
	7.1.3	$\frac{x}{-3}+2=-2$ $\frac{x}{-3}\times-3+2\times-3=-2\times-3$ ✓ $x-6=6$ ✓ $x=12$ ✓	(3)
7.2		$x+y=165$ $+(x-y=27)$ $2x=192$ ✓ $x=96$ ✓ $y=165-96$ ✓ $y=69$ ✓	(4)
			[13]
QUESTION 8			
8.1		$x+20^0=60^0$ ✓ $x=60^0-20^0$ ✓ $x=40^0$ ✓	(3)
8.2		$\hat{T}+50^0+35^0=180^0$ ✓ $\hat{T}=180^0-85^0$ ✓ $=95^0$ ✓ $\hat{T}=m=95^0$ ✓	(4)
8.3		A ||| B ✓ and F ||| H C ≡ D ✓ and F ≡ H ✓	(4)

8.4	$\hat{A} = \hat{E}$ ✓ $= 40^0$ [Alternate Ls, AB ∥ DE] ✓ $\hat{C}_1 = \hat{C}_2$ ✓ [Vertically opp. angles] $\hat{B} = \hat{B}$ ✓ [Remaining angles] $\therefore \Delta ABC \equiv \Delta EDC$ ✓ [AAA] ✓		(6)
			[17]
QUESTION 9			
9.1			
	9.1.1	Perimeter = 10 cm + 9 cm + 6 cm + 11cm✓ + 4 cm+20 cm ✓ = 60 cm ✓	(3)
	9.1.2	Area = 10 cm × 9 cm + 4 cm × 11 cm ✓ = 90 cm^2 + 44 cm^2 ✓ = 134 cm^2 ✓	(3)
9.2			
	9.2.1	$V = lbh$ = 6 m × 3 m × 2 m ✓ = 36 m^3 ✓	(2)
	9.2.2		(1)
	9.2.3	Surface Area = 4(6 cm × 3 cm) + 2(3 cm × 2 cm) ✓ = 72 cm^2 +12 cm^2 ✓ = 84 cm^2 ✓	(3)
			[12]
QUESTION 10			
10.1	Below are marks of a grade 9 class after writing a mathematics test out of 40. Answer the questions that follow based on the data. All answers must be rounded off to one decimal place. 27 25 27 29 31 24 25 27 28 29 24 26 30		

	28 31 25 25 27 28 28 28 26 28 31 24 30		
	10.1.1	Mean = $\frac{sum\ of\ scores}{number\ of\ scores}$ = $\frac{711}{26}$ ✓ = 27,35 ✓	(2)
	10.1.2	24 24 24 25 25 25 25 26 26 27 27 27 27 28 28 28 28 28 28 29 29 30 30 31 31 31 Median = $\frac{27+28}{2}$ ✓ = 27,5 ✓	(2)
	10.1.3	Mode = 28 ✓	(1)
	10.1.4	Range = 31 – 24 ✓ = 9 ✓	(2)
	10.2	27,5 ✓	(1)
			[8]
		Total	**[121]**

Grade 8 Examination Exemplar 4

INSTRUCTIONS AND INFORMATION

1. This question paper consists of 10 questions.
2. Answer ALL the questions.
3. Use **ANNEXURE A** provided to answer **QUESTION 1**
4. Use **ANNEXURE B** provided to answer **QUESTION 10.2.2**
5. Use **ANNEXURE C** provided to answer **QUESTION 10.4**
6. Ensure that you write your name and class on both ANNEXURE A, B and C tear them from the question paper and submit it with your answer sheet.
7. Clearly show ALL calculations, diagrams, graphs, et cetera which you have used in determining the answers.
8. Answers only will NOT necessarily be awarded full marks.
9. If necessary round off your answers to TWO decimal places, unless stated otherwise.
10. Diagrams are not necessarily drawn to scale.
11. You may use an approved scientific calculator (non-programmable and non-graphical) unless stated otherwise.
12. An information sheet with formulae is included at the end of the question paper.
13. Write neatly and legibly.

QUESTION 1

In this question, **circle** only the correct letter (A–D) next to the corresponding number use **ANNEXURE A** provided to answer this multiple choice question.

1.1 Which ONE of the following numbers is a composite number? (1)

A 23

B 37

C 21

D 31

1.2 270 as the product of its prime factors is: (1)

A $2 \times 3 \times 5 \times 9$

B $5 \times 5 \times 5 \times 2 + 2 \times 10$

C $2 \times 3 \times 3 \times 3 \times 5$

D $2 \times 2 \times 5 \times 5 \times 2 + 20 + 50$

1.3 How much VAT is included in $R249$? (1)

A $R\ 34{,}86$

B $R30{,}58$

C $R30{,}57$

D $R31{,}57$

1.4 $4 - \{2 \times 30 \div 5 + 3(-12 \div 4)\}$ (1)

A -8

B 1

C 11

D -7.5

1.5 In scientific notation 150 THOUSAND will be written as: (1)

A 15×10^5

B $0{,}15 \times 10^7$

C $1{,}5 \times 10^5$

D $1{,}5 \times 10^{-5}$

1.6 Increase 24 in the ratio $2:3$ (1)

A 40

B 36

C 60

D 144

1.7 How many terms in $2x^2 - \left(\frac{1}{2}x + 3y\right) + \frac{2x^3 - y}{x}$: (1)

A 3

B 5

C 6

D 7

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

A Parallelogram

B Rhombus

C Kite

D Triangle

1.9 $\sqrt[3]{\frac{64}{125}} \div \sqrt{\frac{64}{36}}$ (1)

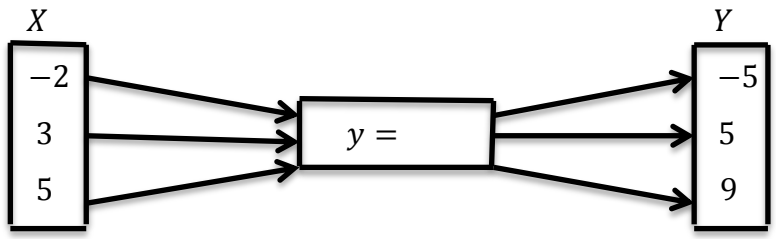
A $3{,}5$

B $\frac{3}{5}$

C $\frac{16}{15}$

D $\frac{24}{41}$

1.10 Write the equation defining the relationship between the input x and output y. (1)



A $y = 2x + 1$

B $y = 2x - 1$

C $y = 3x - 2$

D $y = x - 2$

[10]

QUESTION 2

2.1 Find the following:

2.1.1 The HCF of 160 and 400 (3)

2.1.2 Sarah gives $R2$, Mpho gives $R4$ and Jabu gives $R6$ to buy a packet of sweets.

If there are 24 sweets in the packet, how many sweets should each of the get? (3)

2.1.3 Simplify the ratio $200g : 4kg$ (2)

2.2 Dineo buys a dining room table and chairs costing $R4500$. She pays 10% deposit and then makes monthly repayments for 2 years to pay for the dining room table and chairs. The shopkeeper charges him 15% p.a. interest.

2.2.3 Calculate the cost of the dining room chairs and table after the deposit has been paid. (2)

2.2.2. Calculate the simple interest charged. (2)

2.2.4 How much will she pay every month (2)

[14]

QUESTION 3

Simplify the following:

3.1 $3^{18} \div 3^{15}$ (1)

3.2 $4^2 \times 4^1 \times 4^0$ (1)

3.3 $(x^3y)^4 \times 2x^3$ (3)

3.4 $\sqrt{16a^2b^6c^8}$ (2)

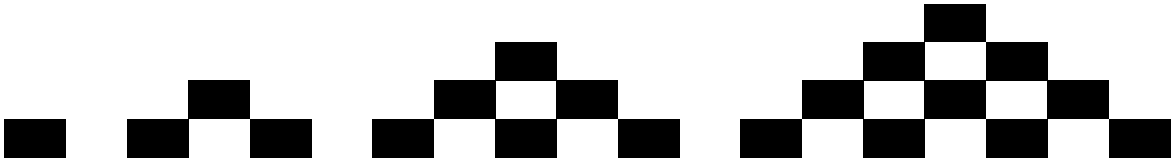
[7]

QUESTION 4

4.1 Consider the pattern: $9;\ 14;\ 19;\ 24;\ldots..$

Determine the rule the n^{th} term to describe the above pattern. (2)

4.2



Pattern 1 Pattern 2 Pattern 3 Pattern 4

4.2.1 Draw the next pattern in the sequence. (1)

4.2.2 Use the pattern to complete the table below. (2)

Pattern number	1	2	3	4	9
Number of dots	1	3	6		

[5]

QUESTION 5

5.1 In the expression $-3x^3 + 12x - 25$

5.1.1 Write down the coefficient of x^3 (1)

5.1.2 What is the value of the constant term? (1)

5.2 Simplify:

5.2.1 $3y^2 - 10y^2$ (1)

5.2.2 $\frac{10m^6n - 6m^2n + 4m^4n}{2m^4n^2}$ (2)

5.2.3 $(-4x^2 + 7x + 8) - (-3x^2 - 8x - 9)$ (2)

[7]

QUESTION 6

Solve for the unknown in the following equation

6.1 $15 + a = 28$ (1)

6.2 $2f - 10 = 40$ (2)

6.3 $2(x + 1) = 10$ (2)

6.4 $2^x = 32$ (2)

6.5 John has 50c and R1 coins in his pocket. Together he has 20 coins. In total the amount of money in his pocket is R12,00

Write an algebraic equation and determine the number of 50c and R1 coins that John has in his pocket. (3)

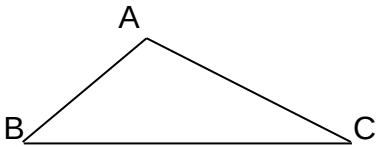
[10]

QUESTION 7

7.1 Construct a 90^0 angle and bisect the constructed angle (2)

7.2 Calculate the size of the missing angles with reasons.

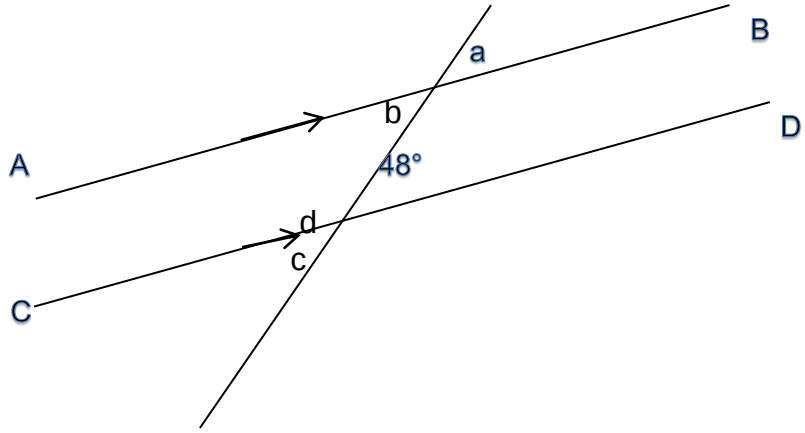
7.2.1



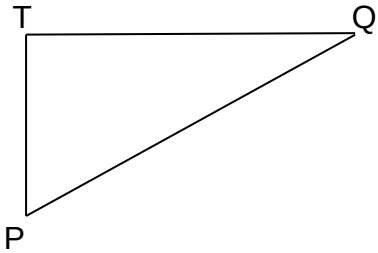
Angle A = 83º

Angle C = 38º (2)

7.3 Calculate the sizes of angles a, b, c and d with reasons (4)



7.5 ΔPQT is a right-angled triangle with angle T = 90°. Find with reasons PT if PQ = 50cm and TQ = 40cm.

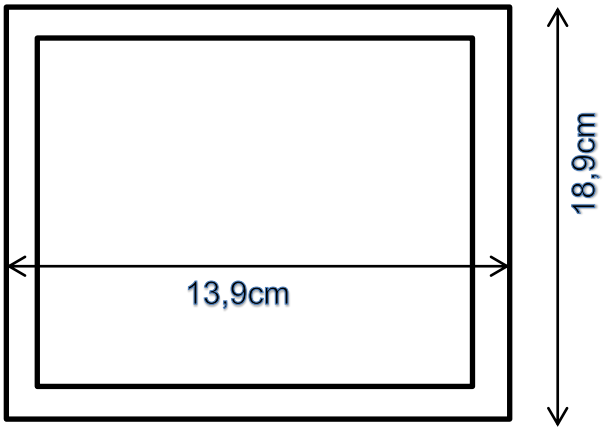


(3)

[11]

QUESTION 8

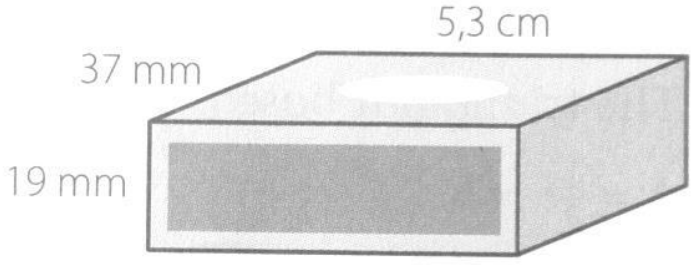
8.1 Find the area of a rectangular picture frame with outer dimensions $18{,}9\ cm$ by $13{,}9\ cm$ and the perimeter of inner dimensions $15\ cm$ by $10\ cm$.



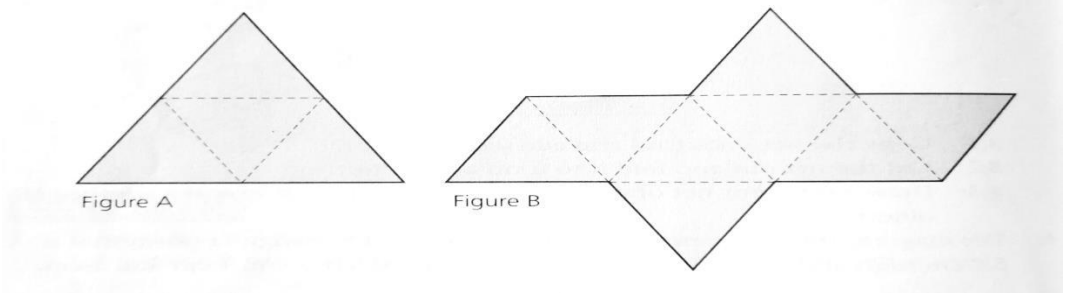
(4)

8.2 A medicine measuring cup has a capacity of $5ml$. How much medicine measures of cough medicine are there in a bottle that contains $0{,}5$ litres? (2)

8.3 Calculate the surface area of this matchbox. (3)



8.4



8.4.1 Name the solid in Figure 1 (1)

8.4.2 Name the solid in Figure 2 (1)

8.4.3 Write down the number of faces for the solid in Figure 1 (1)

8.4.4 Write down the number of edges for the solid in Figure 2 (1)

[13]

QUESTION 9

The heights of 40 grade 8 learners are shown below

160	170	156	151	165	168	166	163	155	180
164	170	162	160	177	171	182	168	158	160
168	165	152	150	178	181	162	175	174	172
161	173	172	165	162	160	164	166	165	169

9.1 Draw a stem and leave display to show these heights. (3)

9.2 Complete a frequency table to show the heights (2)

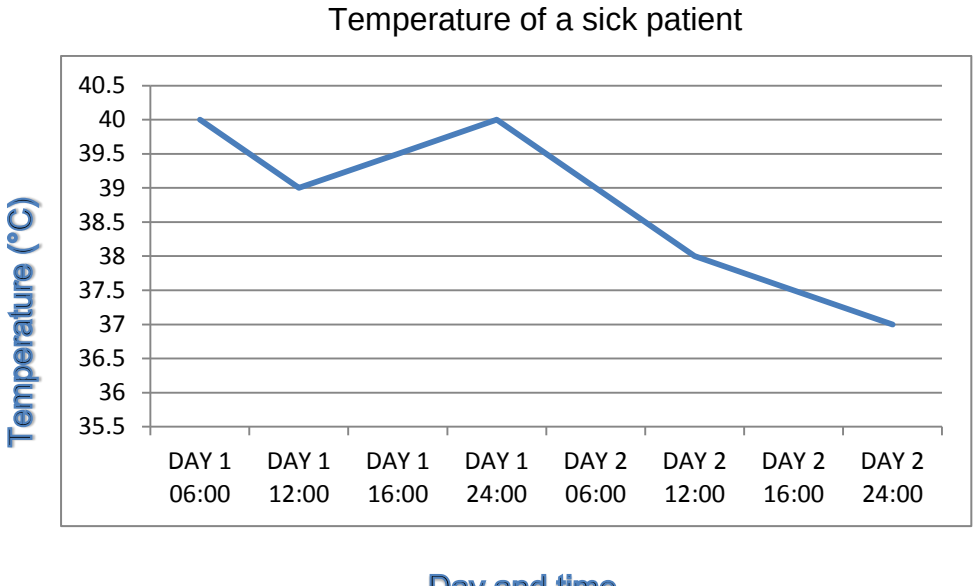
9.3 What is the mean of the set of data (1)

9.4 What is the median of the set of data (1)

9.5 What is the mode of the set of data (1)

[8]

QUESTION 10



A nurse recorded patient's temperature at different times of the day. Her measurements are shown in the graph above

10.1.1 How many times a day was the patient's temperature taken? (1)

10.1.2 What is the difference between the highest and the lowest temperatures? (1)

10.1.3 The normal human body temperature is 37 °C, on what day was the patient's temperature normal? (1)

10.2 Use the equation $y = x + 4$ to answer the questions that follow.

10.2.1

x	-2	-1	0	1	2
y					

(1)

10.2.2 Plot the ordered pairs on the Cartesian plane and join the points.

(Use the Cartesian plane provided **Annexure B**) (2)

10.3 Simoné conducted a survey among learners in her grade to find out their favorite colour. She summarized her findings in this table

Favorite colour	Red	Blue	Green	Orange	Yellow	Purple	Black
Number of learners	14	18	11	6	8	4	3

10.3.1 Represent Simoné's findings in a pie chart. (4)

10.3.2 What is the probability that the favorite colour of a learner, chosen at random, is one of the following:

10.3.2.1 Yellow (1)

10.3.2.2 Orange or purple (1)

10.4 Plot points M(5 ; 2) and N (-2 ; 4) on a coordinate plane.
(Use the Cartesian plane provided **ANNEXURE C**) (2)

10.4.1 Reflect point M in the y-axis to map onto M´ (1)

10.4.2 Translate point N 5 places right and 6 places down, to map N´´ (1)

[16]

ANNEXURE A

QUESTION 1

NAME:……...CLASS……

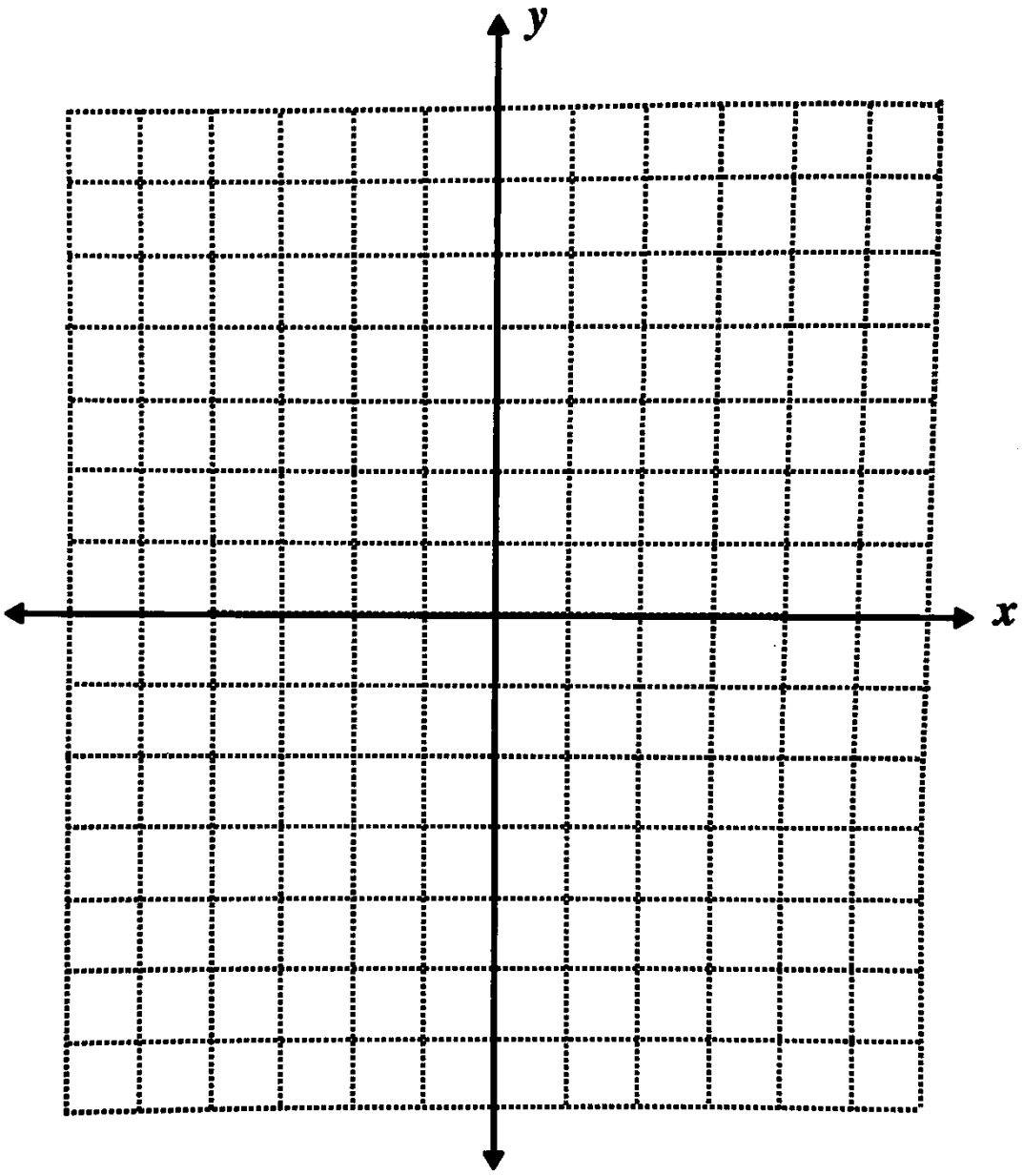
Circle the letter of the correct answer: **submit this with your answer sheet**

Question				
1.1	A	B	C	D
1.2	A	B	C	D
1.3	A	B	C	D
1.4	A	B	C	D
1.5	A	B	C	D
1.6	A	B	C	D
1.7	A	B	C	D
1.8	A	B	C	D
1.9	A	B	C	D
1.10	A	B	C	D

ANNEXURE B

QUESTION 10.2.2

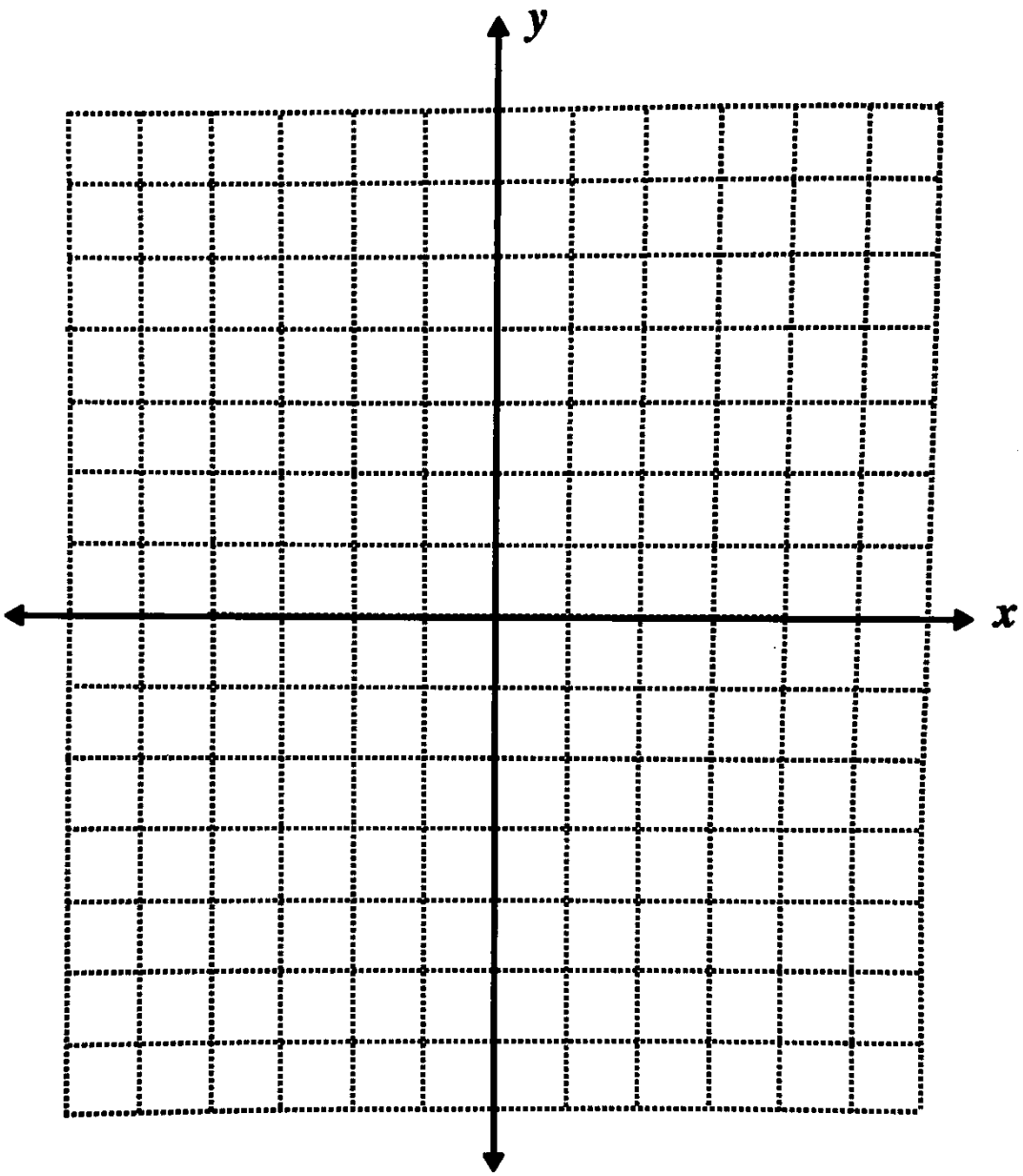
NAME:……...CLASS……



ANNEXURE C

QUESTION 10.4

NAME:……...CLASS……



Grade 8 Examination Exemplar 4 Memo

GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GRADE 8 COMMON EXAMINATION MEMORANDUM

VRAAG 1 / QUESTION 1

1.1	C√	(1)
1.2	C√	(1)
1.3	A√	(1)
1.4	B√	(1)
1.5	C√	(1)
1.6	A√	(1)
1.7	A√	(1)
1.8	C√	(1)
1.9	B√	(1)
1.10	B√	(1)

[10]

VRAAG 2/ QUESTION 2

2.1

2.1.1 $160 = 2 \times 2 \times 2 \times 2 \times 2 \times 5$√ (3)
$400 = 2 \times 2 \times 2 \times 2 \times 5 \times 5$√
$\therefore GGF \quad HCF = 8$√

2.1.2 $2 + 4 + 6 = 12$ (3)
Sarah $\frac{2}{12} \times 24 = 4$√
Mpho $\frac{4}{12} \times 24 = 8$√
Jabu $\frac{6}{12} \times 24 = 12$√

2.1.3 $200g : 4kg$ (2)
$200g : 4000g$√
$1 : 20$√

2.2

2.2.1 $R4500 \times \frac{10}{100} = R450$√ (2)
$R4500 - R450 = R4050$√

2.2.2 $A = P(1 + i\,x\,n)$ (2)
$A = R4050(1 + 0{,}15 \times 2)$ √
$A = R5265$
$SI = R5265 - R4050$
$SI = R1215$√

2.2.3 $\frac{5265}{24\ √} = R219{,}38$ p/m√ (2)

[14]

VRAAG 3/ QUESTION 3

3.1 $\frac{3^{18}}{3^{15}} = 3^3$√ (1)

3.2 $4^2 \times 4^1 \times 4^0 = 4^3$√ (1)

3.3 $(x^3y)^4 \times 2x^3$ (3)

$x^{12}y^4$√√$\times 2x^3$

$2x^4y^4$√

3.4 $\sqrt{16a^2b^6c^8}$ (2)

$4ab^3c^4$√√

[7]

VRAAG 4/ QUESTION 4

4.1 9; 14; 19; 24; … … .. (2)

5 5 5

$5(1) + 4 = 9$ T_1

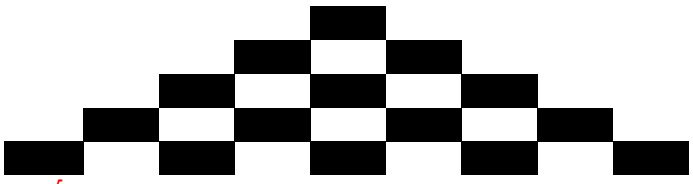
$5(2) + 4 = 14$ T_2

$5(3) + 4 = 19$ T_3

$T_n = 5n + 4$√√

4.2

4.2.1 √ (1)



4.2.2 10√ (2)

19√

[5]

VRAAG 5/ QUESTION 5

5.1

5.1.1 -3√ (1)

5.1.2 -25√ (1)

5.2

5.2.1 $3y^2 - 10y^2$ (1)

$-7y^2$√

5.2.2 $\frac{10m^6n}{2m^4n^2} - \frac{6m^2n}{2m^4n^2} + \frac{4m^4n}{2m^4n^2}$ (2)

$\frac{5m^2}{n} - \frac{3}{m^2n} + 2$√√

5.2.3 $(-4x^2 + 7x + 8) - (-3x^2 - 8x - 9)$ (2)

$-4x^2 + 7x + 8 + 3x^2 + 8x + 9$√

$-x^2 + 15x + 17$√

[7]

VRAAG 6/ QUESTION 6

6.1 $15 + a = 28$ (1)

$a = 28 - 15$

$a = 13\surd$

6.2 $2f - 10 = 40$ (2)

$2f = 40 + 10\surd$

$2f = 50$

$\frac{2f}{2} = \frac{50}{2}$

$f = 25\surd$

6.3 $2(x + 1) = 10$ OR $2(x + 1) = 10$ (2)

$2x + 2 = 10\ \surd$ $\frac{2(x+1)}{2} = \frac{10}{2}$

$2x = 10 - 2$ $x + 1 = 5$

$2x = 8$ $x = 5 - 1$

$\frac{2x}{2} = \frac{8}{2}$ $x = 4$

$x = 4\surd$

6.4 $2^x = 32$ (2)

$2^x = 2^5\surd$

$x = 5\surd$

6.5 $0{,}5x + 20 = 12 + x\surd$ (3)

$0{,}5x - x = 12 - 20$

$\frac{-0{,}5x}{-0{,}5} = \frac{-8}{-0{,}5}$

$x = 16$

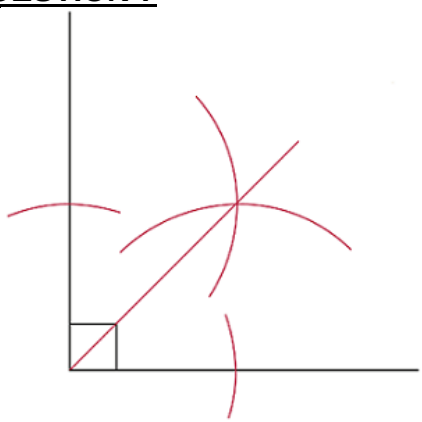
$\therefore 50c\ coins = 16\surd$

$R1\ coins = 4\surd$

[10]

VRAAG 7/ QUESTION 7

7.1 √√ (2)



7.2 $\hat{A} + \hat{B} + \hat{C} = 180^0$ sum of $<'s$ of a Δ/ som van binne $<'s$ van (2)

$\surd_{1/2}$

$83^0 + \hat{B} + 38^0 = 180^0\surd_{1/2}$

7.3

$\hat{B} = 180^0 - 83^0 - 38^0$
$\hat{B} = 59^0$ √
$\hat{a} = 48^0$ √½ corresponding $<'s$ / ooreenkomstige $<'s AB//C$ (4)
√½

$\hat{b} = 180^0 - \hat{a}$ $<'s$ on a straight line/ supplementary $<'s$/ hoeke
$\hat{b} = 180^0 - 48^0$ op reguitlyn/ aanvullend $<'s$
$\hat{b} = 132^0$
OR
$\hat{b} = 180^0 - 48^0$ Co-interior/mede-interieur $<'s\ AB//CD$ / √½
$\hat{b} = 132^0$√½

$\hat{c} = \hat{b}$ Alternate/alternatiewe $<'s\ AB//CD$ /
$\hat{c} = 132^0$
OR
$\hat{c} + 48^0 = 180^0$ $<'s$ on a straight line/ hoeke op reguitlyn √½
$\hat{c} = 180^0 - 48^0$
$\hat{c} = 132^0$ √½

$\hat{d} = 48^0$ Vertically opposite $<'s$ /vertikaal teenoorgesteld $<'s$
OR
$\hat{d} + \hat{c} = 180^0$ $<'s$ on a straight line/ supplementary $<'s$/ hoeke
$\hat{d} + 132^0 = 180^0$ op reguitlyn/ aanvullend $<'s$ √½
$\hat{d} = 180^0 - 132^0$
$\hat{d} = 48^0$√½

7.4 $PT^2 = PQ^2 - TQ^2$√ (3)
$PT^2 = 50^2 - 40^2$
$PT^2 = 2500 - 1600$√
$PT^2 = 900$
$PT = 30$√

[11]

VRAAG 8/ QUESTION 8

8.1 $A = l \times b$ (4)
$A = 18{,}9cm \times 13{,}9cm$√
$A = 262{,}71cm^2$√

$P = l + l + b + b$
$P = 15cm + 15cm + 10cm + 10cm$√
$P = 50cm$√

8.2 $0{,}5l = 500ml$√ (2)

$\frac{500ml}{5ml}$

$100\ medicine\ measure/medisyne\ maatreëls$√

8.3 $5{,}3cm \times 10 = 53mm$√ (3)

$SA = 2(l \times b) + 2(b \times h) + 2(h \times l)$

$SA = 2(53 \times 37) + 2(53 \times 19) + 2(37 \times 19)$ √

$SA = 7342mm^2$√

8.4

8.4.1 Triangular pyramid/Driehoekige piramiede/tetrahedron/viervlak√ (1)

8.4.2 Octahedron/Oktaëder√ (1)

8.4.3 4√ (1)

8.4.4 12√ (1)

[13]

VRAAG 9/ QUESTION 9

9.1 √√√

																						(3)
15	0	1	2	5	6	8																
16	0	0	0	0	1	2	2	2	3	4	4	5	5	5	5	6	6	8	8	8	9	
17	0	0	1	2	2	3	4	5	7	8												
18	0	1	2																			

9.2 √√ (2)

HEIGHT/HOOGTE	FREQUENCY/FREKWENSIE
$150 \geq 155$	4
$156 \geq 160$	6
$161 \geq 165$	11
$166 \geq 170$	8
$171 \geq 175$	6
$176 \geq 180$	3
$181 \geq 185$	2
	40

Note: accept any interval learners use to complete the frequency table/

9.3 $mean = \frac{6640}{40}$ (1)

$mean = 166$√

9.4 $median = \frac{165 + 165}{2}$ (1)

$median = 165$√

9.5 $mode = 160\ and\ 165$√ (1)

[8]

VRAAG 10/ QUESTION 10

10.1

10.1.1 $4\surd$ (1)

10.1.2 $40 - 37 = 3\surd$ (1)

10.1.3 On day two/ op die tweede dag$\surd$ (1)

10.2

10.2.1

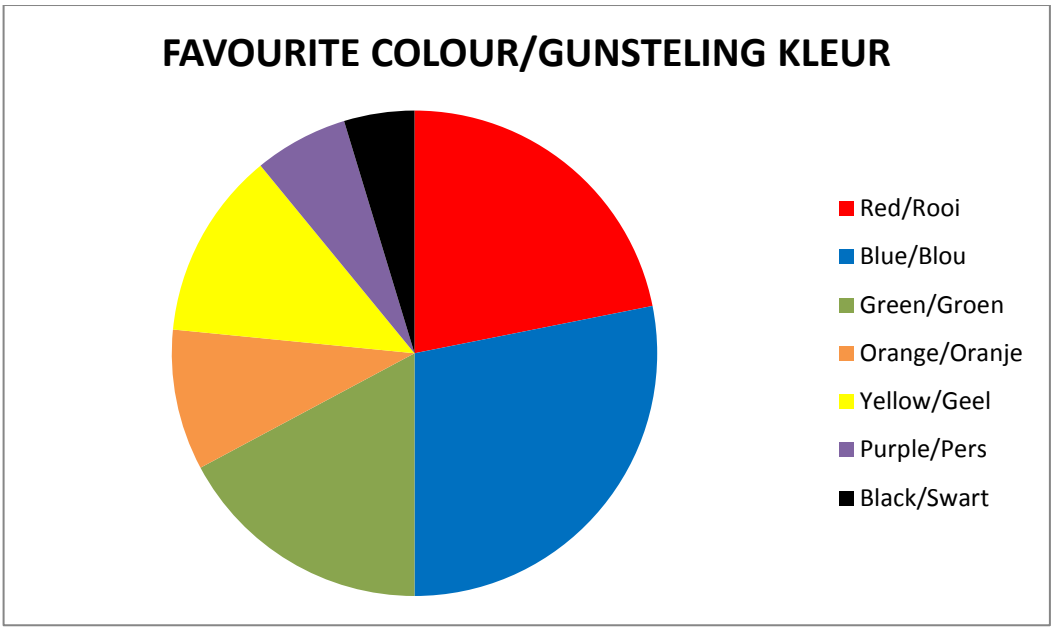
x	-2	-1	0	1	2
y	2	3	4	5	6

$\surd$ (1)

10.2.2 On the cartesian plane/op die cartesiese vlak (2)

10.3

10.3.1



$\surd\surd$ (4)

Red/Rooi = $\frac{14}{64} \times 360^0 = 78{,}75^0$

Blue/Blou = $\frac{18}{64} \times 360^0 = 101{,}25^0$

Green/Groen = $\frac{11}{64} \times 360^0 = 61{,}875^0$

Orange/Oranje = $\frac{6}{64} \times 360^0 = 33{,}75^0$

Yellow/Geel = $\frac{8}{64} \times 360^0 = 45^0$ $\surd\surd$

Purple/Pers = $\frac{4}{64} \times 360^0 = 22{,}5^0$

Black/Swart = $\frac{3}{64} \times 360^0 = 16{,}875^0$

10.3.2 $P\left(\frac{yellow}{geel}\right) = \frac{8}{64} = \frac{1}{8}\surd$

10.4

10.4.1 On the cartesian plane/op die cartesiese vlak (1)

10.4.2 On the cartesian plane/op die cartesiese vlak (1)

15

Grade 8 Examination Exemplar 5

GAUTENG PROVINCE
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QUESTION 1: [8 marks]

State whether the following are **TRUE** or **FALSE**

1.1 The first three multiples of 20 are: 20; 40; 60 ANS: _____

1.2 $\sqrt{64+36} > \sqrt[3]{27}$ ANS: _____

1.3 $ab = ba$ ANS: _____

1.4 The values have been written in descending order:

0,3 ; $\sqrt[3]{0,001}$; $(0,2)^3$ ANS: _____

1.5 $\frac{c}{d} < \frac{d}{c}$ ANS: _____

1.6 $2^3 + 2^2 = 4^5$ ANS: _____

1.7 $3x^5 . 4x^2 = 12x^{10}$ ANS: _____

1.8 $(3ab)^2 = 6a^2b^2$ ANS: _____

QUESTION 2: [8 marks]

For each question four possible answers are given and only one is correct. Select an answer and indicate your choice by writing the corresponding letter in the space provided.

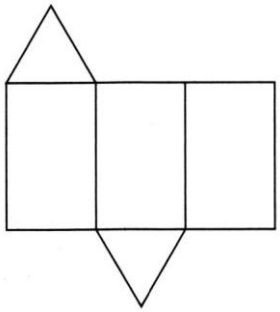
2.1 What is the sum of all the factors of 15?

a) 9
b) 15
c) 23
d) 24 ANS:_____

2.2 David spent about R26 on lunch. What was the actual price most likely to be?

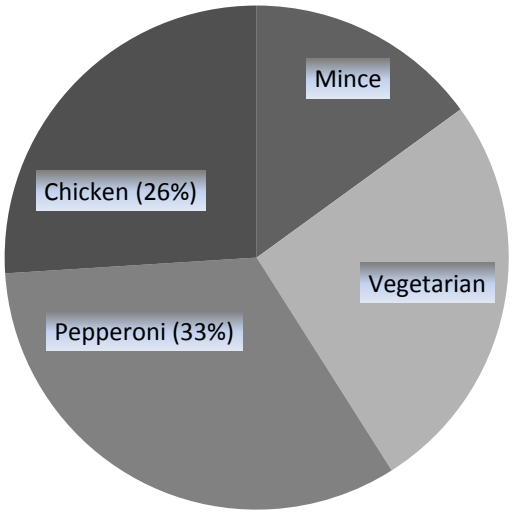
a) R25, 75
b) R25, 48
c) R26, 50
d) R26, 99 ANS:_____

2.3 The figure below shows the net of a solid. What is the name of the solid?



a) cuboid
b) triangular prism
c) cylinder
d) triangular pyramid ANS:_____

2.4 The grade 8s were asked to name their favourite pizza topping. The pie chart represents their choices. The same number of pupils like vegetarian and chicken on their pizzas.



What percentage of pupils like mince?
a) 15%
b) 8%
c) 20%
d) 12% ANS:_____

2.5 Siphe makes 6 paper flowers in $\frac{2}{3}$ of an hour. If she spent the same amount of time on each flower, how long does it take her to make one flower?

a) $\frac{1}{9}$ of an hour

b) $\frac{1}{4}$ of an hour

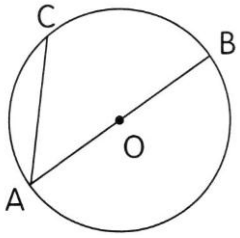
c) $\frac{1}{6}$ of an hour

d) $\frac{1}{3}$ of an hour ANS:_____

2.6 The ratio of Daniela's age to her brother's age is 2 : 3. If Daniela is 12 years old now, how old was her brother 4 years ago?

a) 14 years old
b) 16 years old
c) 18 years old
d) 20 years old ANS:_____

2.7 Which one of the following is the diameter?

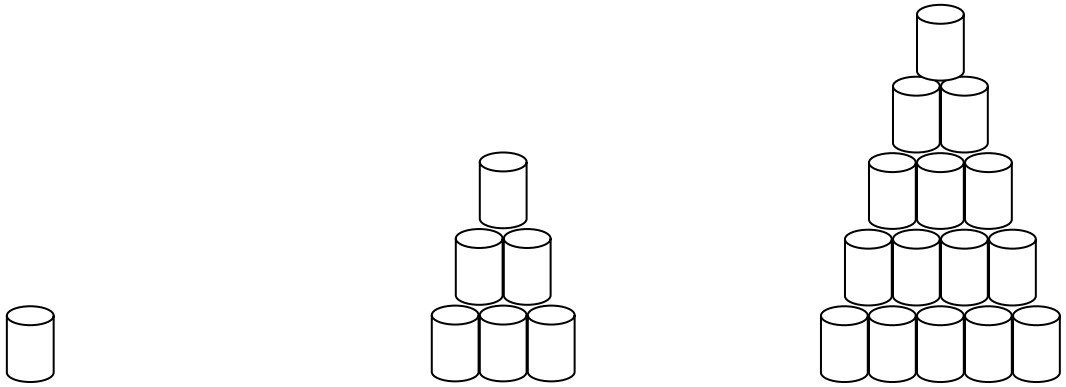


a) OA
b) OB
c) AC
d) AB ANS:_____

2.8 A cube has a volume of 64 cm^3, what is the length of one of its sides?

a) 4 cm
b) 8 cm
c) 16 cm
d) 64 cm ANS:_____

QUESTION 3: [7 marks]



a) b) c)

3.1 How many cans will there be in figure: e) _____ f) _____ (2)

3.2 How many rows are there in: a) _____ b) _____ c) _____ (3)

3.3 How many cans will there be in the nth row? (1)

_____

3.4 How does the number of rows relate to the number of cans in the base (bottom) row? (1)

_____

QUESTION 4: [12 marks]

Simplify fully.

4.1 $a^3 \times a^2$ (1)

4.2 $(x^3 + 1)^0$ (1)

4.3 $\frac{x^3}{x^5}$ (1)

4.4 $\frac{2x^3y \times 3x^2y}{12x^6y^3}$ (2)

4.5 $p \div p$ (1)

4.6 $\sqrt{25y^{16}}$ (1)

4.7 $(3d^5e^2f^3)^3 \times 9d^8ef^4g$ (3)

4.8 $\frac{3x^2 10y^3}{12xy^4}$ (2)

QUESTION 5: [6 marks]

Consider the expression below when answering the questions that follow:

$$-2x^2 + 7x^3 + 6x^2 - 2x^3 + 7 - x^3 - x + 2x$$

5.1 Simplify the above expression, and write your answer in descending powers of x. (3)

5.2 Write down the constant term. (1)

5.3 If x = - 1, evaluate the expression. (2)

QUESTION 6: [11 marks]

Solve the following equations:

6.1 $72 = 6(x + 1)$ (3)

6.2 $\frac{2x}{3} - 1 = 15$ (3)

6.3 $\frac{2}{3}^{x} = \frac{2}{3}^{5}$ (1)

6.4 $\sqrt[3]{x} = 2$ (1)

6.5 Three friends, Janet, Kerry and Simone, go out for dinner. Janet spends twice the amount Kerry spends. Simone spends R60 less than Kerry. The total amount they spent was R 740. How much did Kerry spend? (3)

_____

_____

_____

_____

QUESTION 7: [3 marks]

Fill in the values in the boxes.

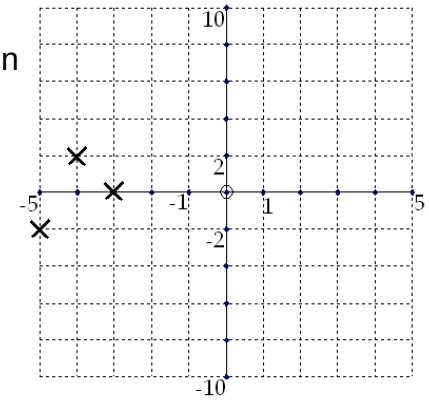
7.1	– 2	$4 - x$		(1)
7.2		$x^2 + 1$	5	(1)
7.3	0,1	$10 \div x$		(1)

QUESTION 8: [5 marks]

Joe plotted the equation $y = 4x + 18$ by using substitution and a table.

The table shows his answers.

x	– 2	-4	-3
y	– 5	2	6



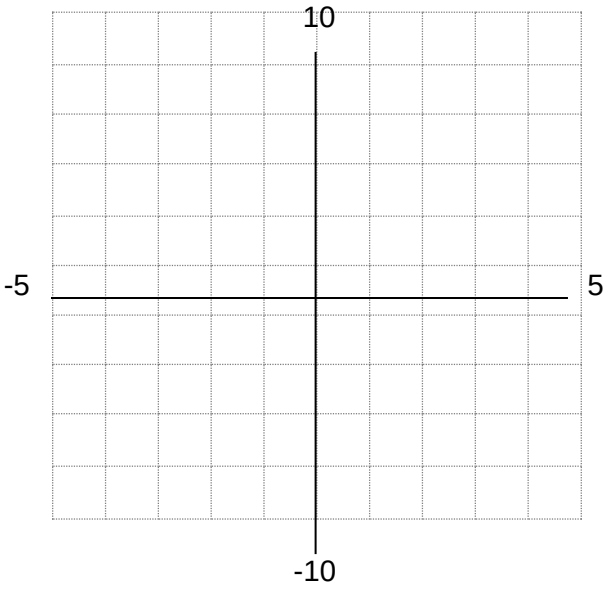
8.1 How can we tell he did something wrong just by looking at the graph? (1)

_____

_____

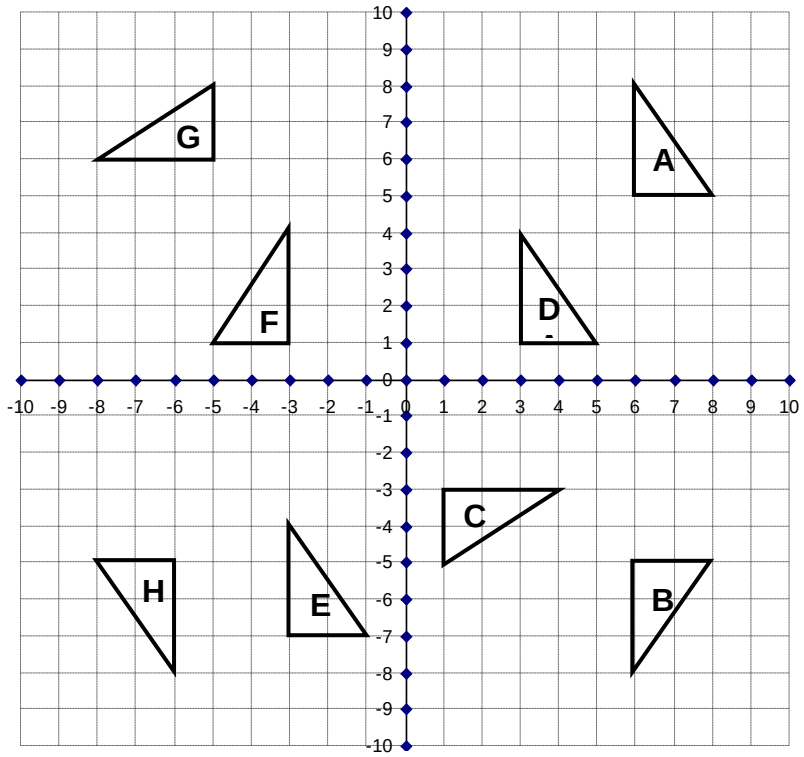
8.2 Joe has made mistakes in the table and on the graph. Locate, and correct them by filling in the table below, and by plotting and connecting the correct points to create the graph on the Cartesian plane provided. (4)

x	-5	-4	-3
y			



QUESTION 9: [7 marks]

Study the figure and answer the questions that follow:



9.1 Use the graph to help fill in the table: (4)

From	To	Describe transformation
A	B	
D		Translation 3 units right and 4 units up
F		Reflection over the y-axis
A	G	

9.2 Enlarge Triangle **D** by a scale factor of 2, through the origin. Label your new triangle **D'**. (2)

9.3 The area of Triangle **D** is 3 units^2 .Without doing any working out, predict the area of Triangle **D'**. (1)

QUESTION 10: [10 marks]

Calculate the value of the variables marked with the small letters a-d. Write your answers in the columns provided. Show all calculations.

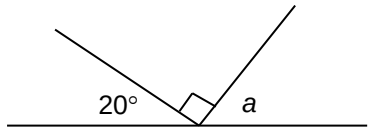
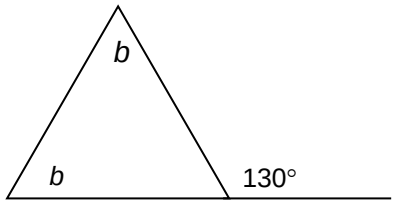
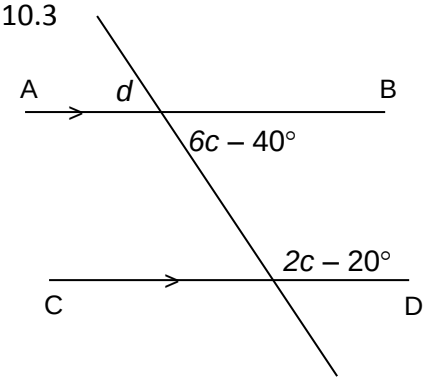
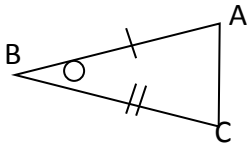
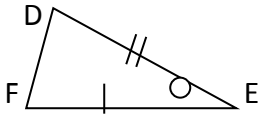
DIAGRAM	**STATEMENT**	**REASON**
10.1  (3)		
10.2  (2)		

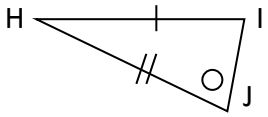
DIAGRAM	**STATEMENT**	**REASON**
10.3  (5)		

QUESTION 11: [12 marks]

11.1 Which two triangles are congruent?

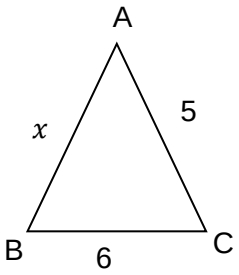


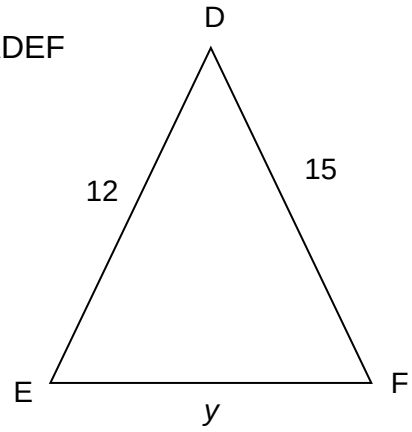




Δ_____ ≡ Δ_____ (2)

11.2 Consider the diagram below. $\Delta ABC|||\Delta DEF$





a) By what scale factor (ratio) is ΔABC enlarged to get ΔDEF? (1)

_____

b) Determine the values of x and y (4)

_____

_____

_____

_____

_____

11.3 For each of the statements below select the option that is true by writing the **LETTER** that corresponds to the correct answer in the space provided.

OPTION A:	**OPTION B:**	**OPTION C:**	**OPTION D:**
SQUARE	PARALLELOGRAM	KITE	TRAPEZIUM

a) Shape has 2 pairs of parallel sides and corners of 90°. Answer: _____ (1)

b) Shape has 1 pair of parallel sides. Answer: _____ (1)

c) Shape has one pair of opposite angles equal. Answer: _____ (1)

d) Only one diagonal is bisected Answer: _____ (1)

e) All four sides are equal. Answer: _____ (1)

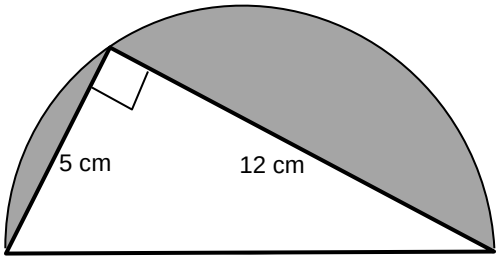
QUESTION 12: [10 marks]

12.1 Write down the formula for the area of a circle. _____ (1)

12.2 Write down the formula for the area of a triangle. _____ (1)

12.3 What is the value of $\frac{\text{circumference}}{2 \times radius}$? _____ (1)

12.4 Use the rule of Pythagoras to find the diameter of the circle. (3)



_____

_____

_____

_____

12.5 Calculate the area of the triangle. (2)

_____

_____

_____

_____

12.6 Find the shaded area, to 1 decimal place. (3)

_____

_____

_____

_____

_____

_____

QUESTION 13: [7 marks]

Give a *possible* seven data points that have the following characteristics:

- The minimum is 34
- The range is 120
- The median is 70
- The mode 81
- The maximum value is an outlier

Write your data points in ranked order. (7)

QUESTION 14: [4 marks]

On a popular television show, contestants are asked to pick one ball from a bag of balls. These balls correspond to various prizes. There are **10 balls** in the bag:

4 balls are **BLUE** and they win you a cell phone
3 balls are **GREEN** and they win you a Fridge
2 balls are **BLACK** and they win you World Cup Tickets
1 ball is **WHITE** and it wins you a car.

14.1 Which prize would a contestant win if he/she got a black ball? (1)

_____

14.2 Which prize is a contestant **most** likely to win? (1)

_____

14.3 What percentage of the balls are green? (1)

_____

14.4 What is the probability of winning a car? (1)

_____

Grade 8 Examination Exemplar 5 Memo

GAUTENG PROVINCE
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REPUBLIC OF SOUTH AFRICA

QUESTION 1: [8 marks]

State whether the following are **TRUE** or **FALSE**

1.1 The first three multiples of 20 are: 20; 40; 60 ANS: **TRUE**✓

1.2 $\sqrt{\mathbf{64+36}} > \sqrt[3]{\mathbf{27}}$ ANS: **TRUE**✓

1.3 $\boldsymbol{ab = ba}$ ANS: **TRUE**✓

1.4 The values have been written in descending order:

0,3 ; $\sqrt[3]{\mathbf{0,001}}$; $(0,2)^3$ ANS: **FALSE**✓

1.5 $\frac{\boldsymbol{c}}{\boldsymbol{d}} < \frac{\boldsymbol{d}}{\boldsymbol{c}}$ ANS: **FALSE**✓

1.6 $\mathbf{2^3 + 2^2 = 4^5}$ ANS: **FALSE**✓

1.7 $\mathbf{3x^5 . 4x^2 = 12x^{10}}$ ANS: **FALSE**✓

1.8 $(3ab)^2 = 6a^2b^2$ ANS: **FALSE**✓

QUESTION 2: [8 marks]

For each question four possible answers are given and only one is correct. Select an answer and indicate your choice by writing the corresponding letter in the space provided.

2.1 What is the sum of all the factors of 15?

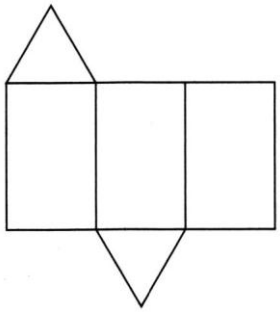
a) 9
b) 15
c) 23
d) 24 ANS: **d**✓

2.2 David spent about R26 on lunch. What was the actual price most likely to be?

a) R25, 75
b) R25, 48
c) R26, 50

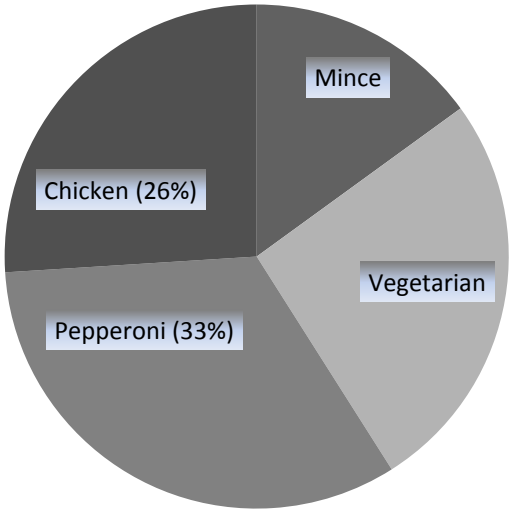
d) R26, 99 ANS: **a**✓

2.3 The figure below shows the net of a solid. What is the name of the solid?



a) cuboid
b) triangular prism
c) cylinder
d) triangular pyramid ANS: **b**✓

2.4 The grade 8s were asked to name their favourite pizza topping. The pie chart represents their choices. The same number of pupils like vegetarian and chicken on their pizzas.



What percentage of pupils like mince?
a) 15%
b) 8%
c) 20%
d) 12% ANS: **a**✓

2.5 Siphe makes 6 paper flowers in $\frac{2}{3}$ of an hour. If she spent the same amount of time on each flower, how long does it take her to make one flower?

a) $\frac{1}{9}$ of an hour

b) $\frac{1}{4}$ of an hour

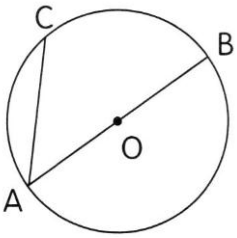
c) $\frac{1}{6}$ of an hour

d) $\frac{1}{3}$ of an hour ANS: **a**✓

2.6 The ratio of Daniela's age to her brother's age is 2 : 3. If Daniela is 12 years old now, how old was her brother 4 years ago?

a) 14 years old
b) 16 years old
c) 18 years old
d) 20 years old ANS: **a**✓

2.7 Which one of the following is the diameter?

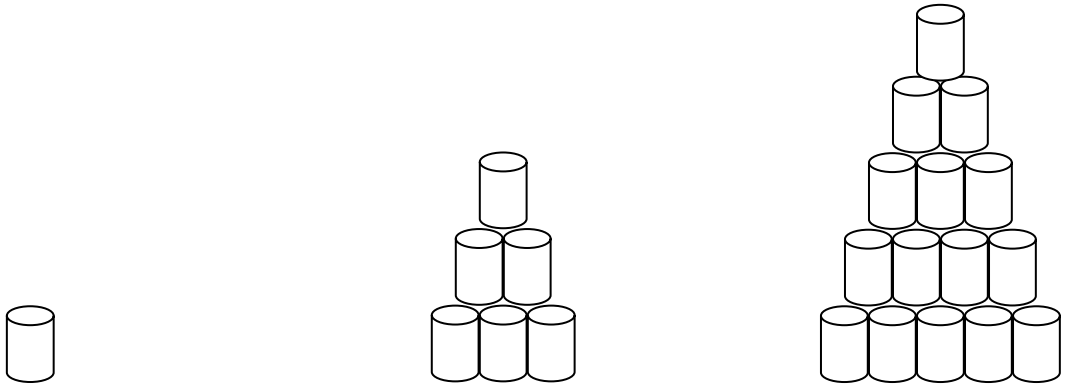


a) OA
b) OB
c) AC
d) AB ANS: **d**✓

2.8 A cube has a volume of 64 cm^3, what is the length of one of its sides?

a) 4 cm
b) 8 cm
c) 16 cm
d) 64 cm ANS: **a**✓

QUESTION 3: [7 marks]



a) b) c)

3.1 How many cans will there be in figure: e) **28**✓ f) **45**✓ (2)

3.2 How many rows are there in: a) **1**✓ b) **3**✓ c) **5**✓ (3)

3.3 How many cans will there be in the nth row? (1)

Tn = -1 + 2n/ Tn = 2n - 1✓

3.4 How does the number of rows relate to the number of cans in the base (bottom) row? (1)

Number of rows = number of cans in the base✓

QUESTION 4: [12 marks]

Simplify fully.

4.1 $a^3 \times a^2$ (1)

a^5✓

4.2 $(x^3 + 1)^0$ (1)

1✓

4.3 $\frac{x^3}{x^5}$ (1)

$\frac{\mathbf{1}}{\mathbf{x^2}}$✓

4.4 $\frac{2x^3y \times 3x^2y}{12x^6y^3}$ (2)

$\frac{\mathbf{6x^5y^2}}{\mathbf{12x^6y^3}}$✓

$\frac{\mathbf{1}}{\mathbf{2xy}}$✓

4.5 $p \div p$ (1)

1✓

4.6 $\sqrt{25y^{16}}$ (1)

$5y^8$✓

4.7 $(3d^5e^2f^3)^3 \times 9d^8ef^4g$ (3)

$27\,d^{15}e^6f^9$✓ $\times$ $9\,d^8\,e\,f^4\,g$

$243\,d^{23}\,e^7$✓ $f^{13}\,g$✓

4.8 $\frac{3x^2 10y^3}{12xy^4}$ (2)

$\frac{30x^2y^3}{12xy^4}$✓

$\frac{5x}{2y}$✓

QUESTION 5: [6 marks]

Consider the expression below when answering the questions that follow:

$$-2x^2 + 7x^3 + 6x^2 - 2x^3 + 7 - x^3 - x + 2x$$

5.1 Simplify the above expression, and write your answer in descending powers of x. (3)

$4x^3$✓ $+ 4x^2$✓ $+ x$✓ $+ 7$

5.2 Write down the constant term. (1)

7✓

5.3 If x = - 1, evaluate the expression. (2)

$4(-1)^3 + 4(-1)^2 + (-1) + 7$✓

6✓

QUESTION 6: [11 marks]

Solve the following equations:

6.1 $72 = 6(x + 1)$ (3)

$\mathbf{72 = 6x\checkmark + 6\checkmark}$

$\mathbf{66 = 6x}$

$\mathbf{x = 11\checkmark}$

6.2 $\frac{2x}{3} - 1 = 15$ (3)

$\frac{\mathbf{2x}}{\mathbf{3}} \mathbf{= 16\checkmark}$

$\mathbf{2x = 48\checkmark}$

$\mathbf{x = 24\checkmark}$

6.3 $\frac{2}{3}^{x} = \frac{2}{3}^{5}$ (1)

$\mathbf{x = 5\checkmark}$

6.4 $\sqrt[3]{x} = 2$ (1)

$\mathbf{x = 8\checkmark}$

6.5 Three friends, Janet, Kerry and Simone, go out for dinner. Janet spends twice the amount Kerry spends. Simone spends R60 less than Kerry. The total amount they spent was R 740. How much did Kerry spend? (3)

Kerry spent x, Janet $2x$, Simone $x - 60$

$x + 2x\checkmark + x - 60\checkmark = 740$

$4x = 800$

$x = R200$ **Kerry spent R200✓**

QUESTION 7: [3 marks]

Fill in the values in the boxes.

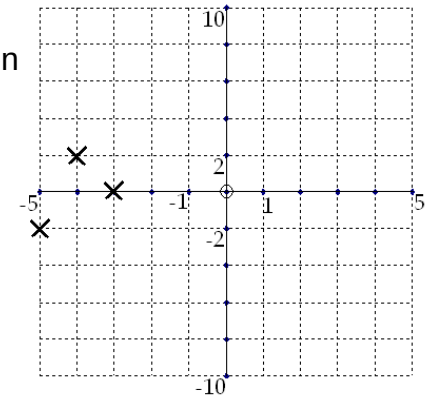
7.1	– 2	$4 - x$	**6✓**	(1)
7.2	**1✓**	$x^2 + 1$	5	(1)
7.3	0,1	$10 \div x$	**100✓**	(1)

QUESTION 8: [5 marks]

Joe plotted the equation $y = 4x + 18$ by using substitution and a table.

The table shows his answers.

x	**– 2**	**-4**	**-3**
y	**– 5**	**2**	**6**

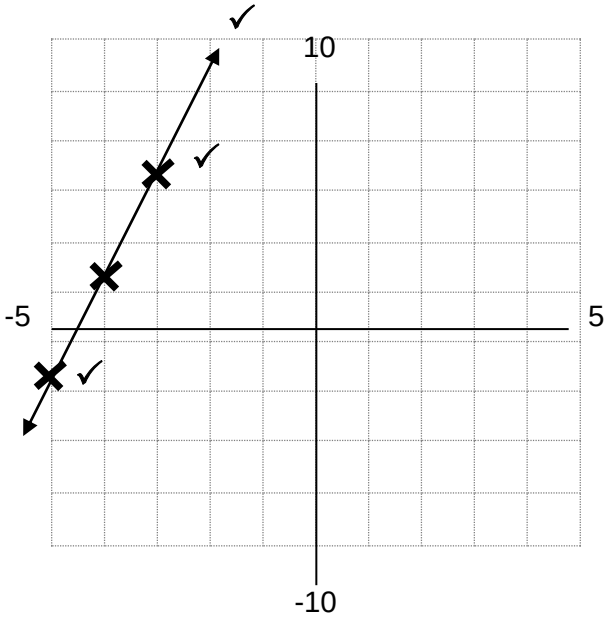


8.1 How can we tell he did something wrong just by looking at the graph? (1)

Points won't create a straight line when connected✓

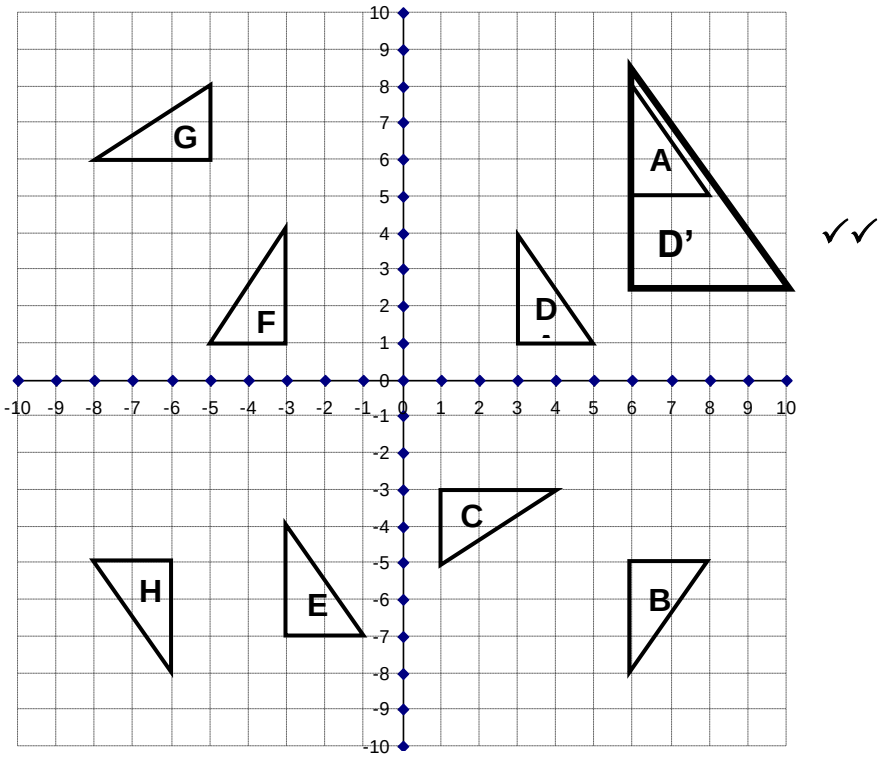
8.2 Joe has made mistakes in the table and on the graph. Locate, and correct them by filling in the table below, and by plotting and connecting the correct points to create the graph on the Cartesian plane provided. (4)

x	-5	-4	-3
y	**-2✓**	**2**	**6**



QUESTION 9: **[7 marks]**

Study the figure and answer the questions that follow:



9.1 Use the graph to help fill in the table: (4)

From	To	Describe transformation
A	B	**Reflection over x axis✓**
D	**A✓**	Translation 3 units right and 4 units up
F	**D✓**	Reflection over the y-axis
A	G	**90° anticlockwise rotation about the origin✓**

9.2 Enlarge Triangle **D** by a scale factor of 2, through the origin. Label your new triangle **D'**. (2)

9.3 The area of Triangle **D** is 3 units^2 .Without doing any working out, predict the area of Triangle **D'**. (1)

12units^2✓

QUESTION 10: [10 marks]

Calculate the value of the variables marked with the small letters a-d. Write your answers in the columns provided. Show all calculations.

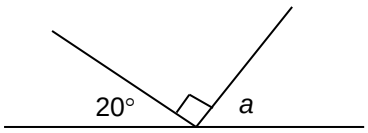
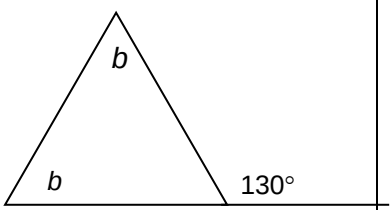
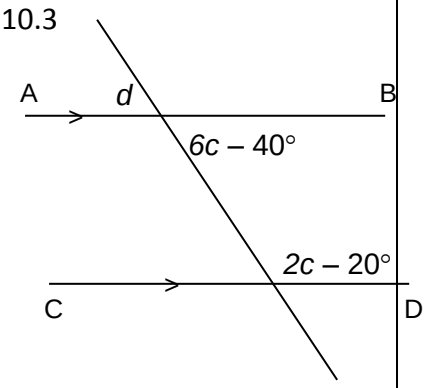
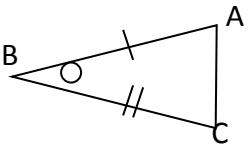
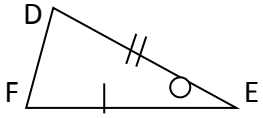
DIAGRAM	STATEMENT	REASON
10.1  (3)	**a = 70°✓✓**	**Angles on Straight Line✓**
10.2  (2)	**b + b = 130°** **b = 65°✓**	**Exterior Angles of a Triangles✓**

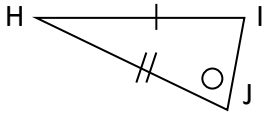
DIAGRAM	**STATEMENT**	**REASON**
10.3  (5)	$6c - 40° + 2c - 20° = 180°$✓ $8c - 60° = 180°$ $c = 30°$✓ $d = 3(30°) - 40°$ $d = 50°$✓	**Co-interior angles; AB//CD**✓ **Vertically opposite**✓

QUESTION 11: [12 marks]

11.1 Which two triangles are congruent?

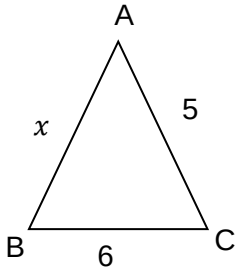


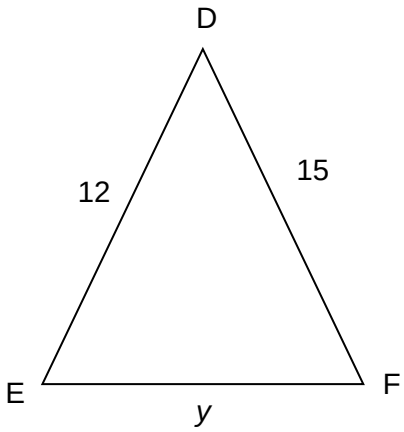




Δ **ABC** ≡ Δ **FED** ✓✓ (2)

11.2 Consider the diagram below. $\Delta ABC|||\Delta DEF$





c) By what scale factor (ratio) is ΔABC enlarged to get ΔDEF? (1)

3✓

d) Determine the values of x and y (4)

$x \times 3 = 12$✓

$x = 4$✓

$6 \times 3 = y$✓

$y = 18$✓

11.3 For each of the statements below select the option that is true by writing the **LETTER** that corresponds to the correct answer in the space provided.

OPTION A:	**OPTION B:**	**OPTION C:**	**OPTION D:**
SQUARE	PARALLELOGRAM	KITE	TRAPEZIUM

a) Shape has 2 pairs of parallel sides and corners of 90°. Answer: **A**✓ (1)

b) Shape has 1 pair of parallel sides. Answer: **D**✓ (1)

c) Shape has one pair of opposite angles equal. Answer: **C**✓ (1)

d) Only one diagonal is bisected Answer: **C**✓ (1)

e) All four sides are equal. Answer: **A**✓ (1)

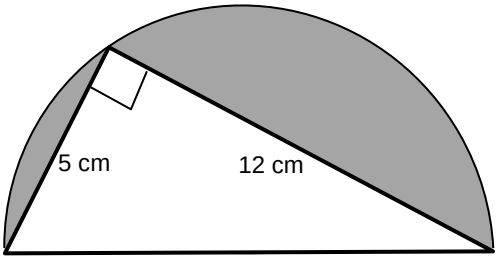
QUESTION 12: [10 marks]

12.1 Write down the formula for the area of a circle. πr^2 ✓ (1)

12.2 Write down the formula for the area of a triangle. $\frac{1}{2} base \times \perp h$✓ (1)

12.3 What is the value of $\frac{\text{circumference}}{2 \times radius}$? π✓ (1)

12.4 Use the rule of Pythagoras to find the diameter of the circle. (3)



$\mathbf{5^2 + 12^2 = r^2}$✓

$\mathbf{r^2 = 169}$✓

$\mathbf{r = 13}$✓

12.5 Calculate the area of the triangle. (2)

$\mathbf{\frac{1}{2}(12cm) \times 5cm}$✓

$\mathbf{30\ cm^2}$✓

12.6 Find the shaded area, to 1 decimal place. (3)

$\mathbf{\pi(\frac{13}{2}cm)^2}$✓ $\mathbf{- 30cm^2}$✓

$\mathbf{102,7\ cm^2}$✓

QUESTION 13: [7 marks]

Give a *possible* seven data points that have the following characteristics:

- The minimum is 34
- The range is 120
- The median is 70
- The mode 81
- The maximum value is an outlier

Write your data points in ranked order. (7)

34✓	**any value between 34 and next value✓**	**any value between previous value and 70✓**	**70✓**	**81✓**	**81✓**	**154✓**

QUESTION 14: [4 marks]

On a popular television show, contestants are asked to pick one ball from a bag of balls. These balls correspond to various prizes. There are **10 balls** in the bag:

4 balls are **BLUE** and they win you a cell phone
3 balls are **GREEN** and they win you a Fridge
2 balls are **BLACK** and they win you World Cup Tickets
1 ball is **WHITE** and it wins you a car.

14.1 Which prize would a contestant win if he/she got a black ball? (1)

World Cup Tickets✓

14.2 Which prize is a contestant **most** likely to win? (1)

Cell Phone✓

14.3 What percentage of the balls are green? (1)

30%✓

14.4 What is the probability of winning a car? (1)

$\frac{1}{10}$ **or 10% or 0,1✓**