



GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GAUTENG DEPARTMENT OF EDUCATION

GRADE 8

NOVEMBER EXAM 2020

SUBJECT	:	MATHEMATICS
TASK	:	COMMON EXAM
TIME	:	2 HOURS
MARKS	:	100

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 $3x^5 \cdot 4x^2 = 12x^{10}$ 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

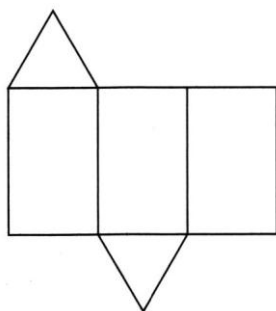
ANS: _____

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: _____

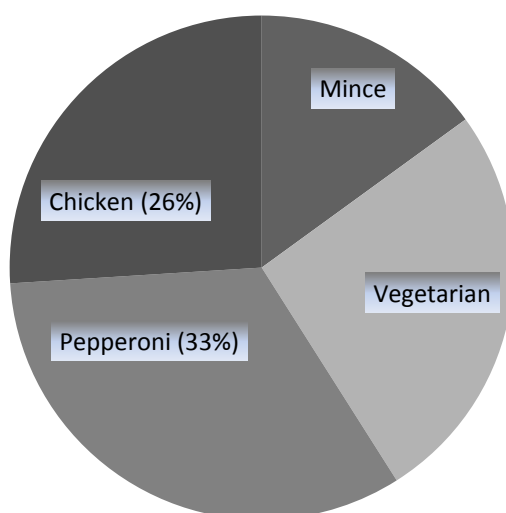
2.3 The figure below shows the net of a solid. What is the name of the solid?



- 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

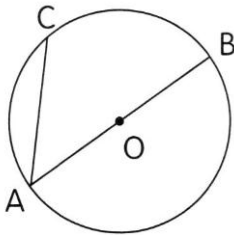
ANS: _____

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?

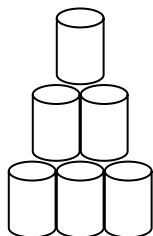
- a) 4 cm
- b) 8 cm
- c) 16 cm
- d) 64 cm

ANS: _____

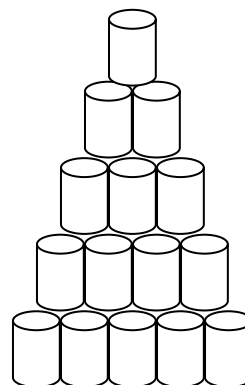
QUESTION 3: [7 marks]



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 n th 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

$\frac{3x^210y^3}{12xy^4}$

(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)

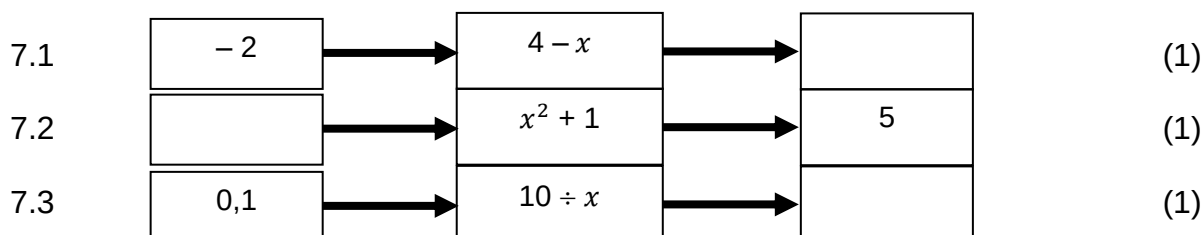
6.3 $\frac{2^x}{3} = \frac{2^5}{3}$ (1)

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.

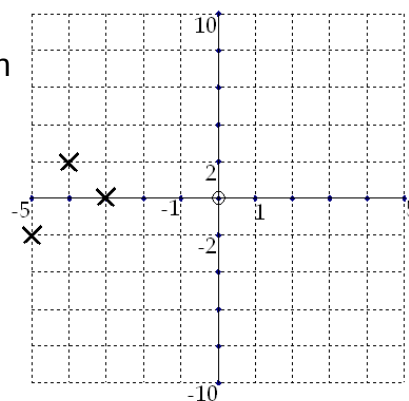


QUESTION 8: [5 marks]

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

The table shows his answers.

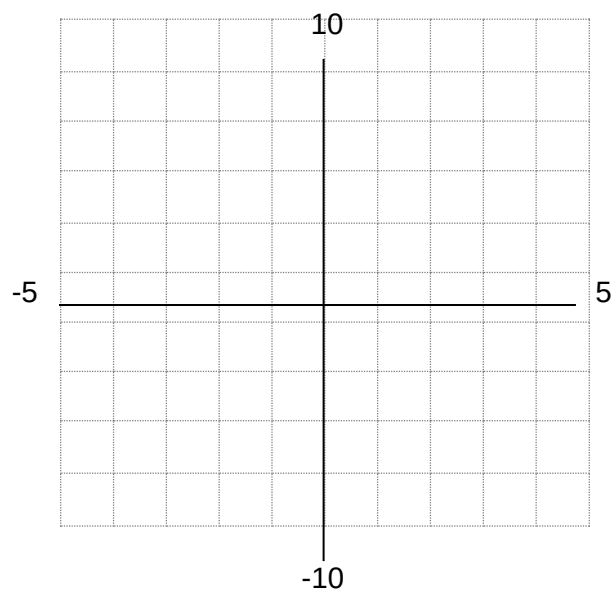
x	- 2	-4	-3
y	- 5	2	6



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

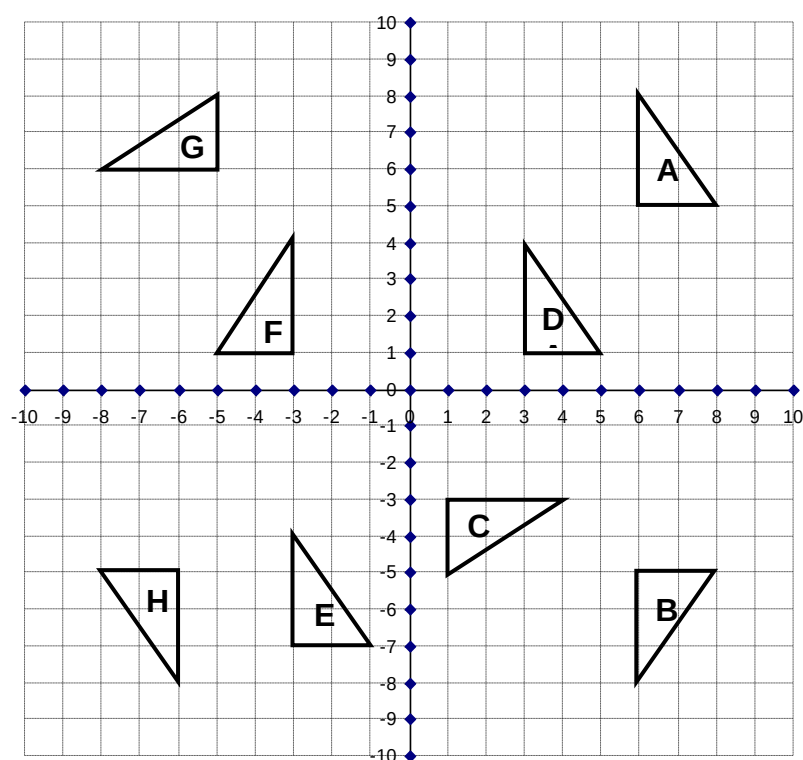
- 8.2 Joe has made mistakes in the table and on the graph. Locate, and correct them by filling in the table below, and by plotting and connecting the correct points to create the graph on the Cartesian plane provided. (4)

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 units². 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.

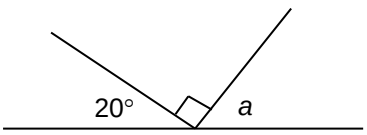
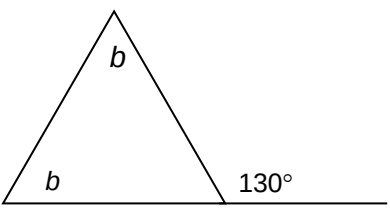
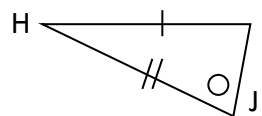
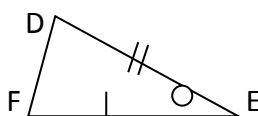
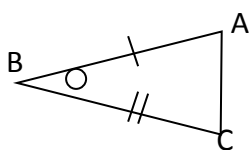
DIAGRAM	STATEMENT	REASON
10.1  (3)		
10.2  (2)		

DIAGRAM	STATEMENT	REASON
10.3 (5)		

QUESTION 11: [12 marks]

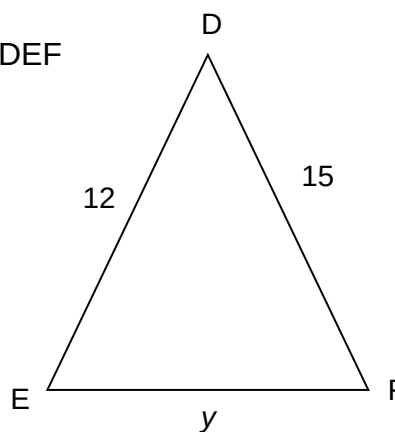
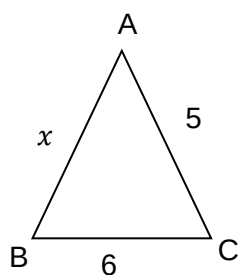
11.1 Which two triangles are congruent?



Δ _____ $\equiv$ Δ _____

(2)

11.2 Consider the diagram below. $\triangle ABC \sim \triangle DEF$



a) By what scale factor (ratio) is $\triangle ABC$ enlarged to get $\triangle DEF$?

(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:
SQUARE

OPTION B:
PARALLELOGRAM

OPTION C:
KITE

OPTION D:
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)

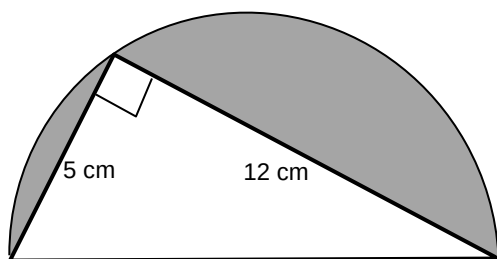
QUESTION 12: [10 marks]

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 $\frac{\text{circumference}}{2 \times \text{radius}}$? _____ (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)

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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



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

1.3 $ab = ba$ ANS: **TRUE**✓

1.4 The values have been written in descending order:

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

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

1.6 $2^3 + 2^2 = 4^5$ ANS: **FALSE**✓

1.7 $3x^5 \cdot 4x^2 = 12x^{10}$ 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**✓

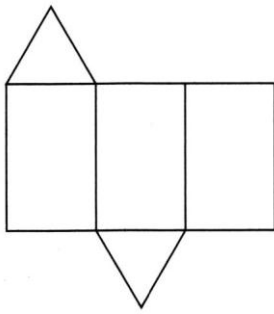
2.2 David spent about R26 on lunch. What was the actual price most likely to be?

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

d) R26, 99

ANS: a✓

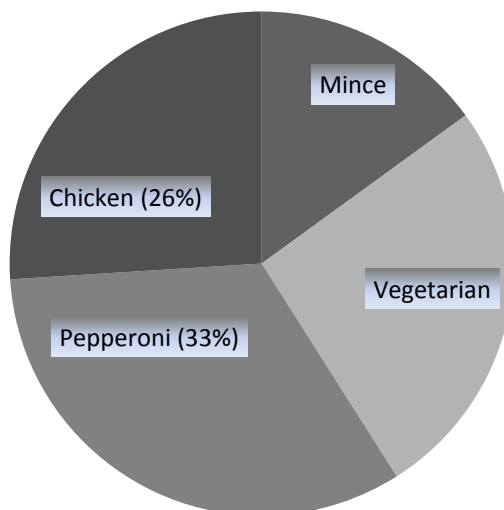
2.3 The figure below shows the net of a solid. What is the name of the solid?



- 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

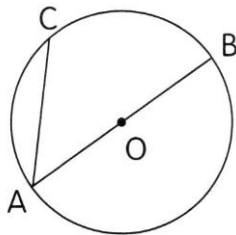
ANS: a✓

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?

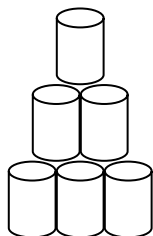
- a) 4 cm
- b) 8 cm
- c) 16 cm
- d) 64 cm

ANS: a✓

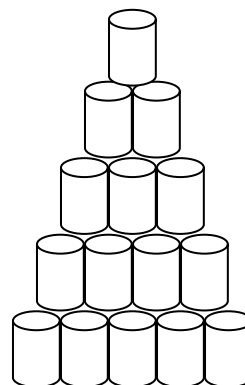
QUESTION 3: [7 marks]



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)

$$T_n = -1 + 2n / T_n = 2n - 1$$
✓

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

$$\text{Number of rows} = \text{number of cans in the base}$$
✓

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)

$$\frac{1}{x^2}$$
✓

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

$$\frac{6x^5y^2}{12x^6y^3}$$
✓

$$\frac{1}{2xy}$$
✓

$$4.5 \quad p \div p \quad (1) \quad 4.6 \quad \sqrt{25y^{16}} \quad (1)$$

$$1\checkmark$$

$$5y^8\checkmark$$

$$4.7 \quad (3d^5e^2f^3)^3 \times 9d^8ef^4g \quad (3) \quad 4.8 \quad \frac{3x^2 10y^3}{12xy^4} \quad (2)$$

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

$$\frac{30x^2 y^3}{12xy^4} \checkmark$$

$$243 d^{23} e^7 \checkmark f^{13} g \checkmark$$

$$\frac{5x}{2y} \checkmark$$

QUESTION 5: [6 marks]

Consider the expression below when answering the questions that follow:

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

$$5.1 \quad \text{Simplify the above expression, and write your answer in descending powers of } x. (3)$$

$$4x^3 \checkmark + 4x^2 \checkmark + x \checkmark + 7$$

$$5.2 \quad \text{Write down the constant term.} \quad (1)$$

$$7\checkmark$$

$$5.3 \quad \text{If } x = -1, \text{ evaluate the expression.} \quad (2)$$

$$4(-1)^3 + 4(-1)^2 + (-1) + 7 \checkmark$$

$$6\checkmark$$

QUESTION 6: [11 marks]

Solve the following equations:

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

$72 = 6x\checkmark + 6\checkmark$

$66 = 6x$

$x = 11\checkmark$

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

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

$2x = 48\checkmark$

$x = 24\checkmark$

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

$x = 5\checkmark$

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

$x = 8\checkmark$

- 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 $x - 60$

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

$$4x = 800$$

$$x = 200$$

Kerry spent R200

QUESTION 7: [3 marks]

Fill in the values in the boxes.

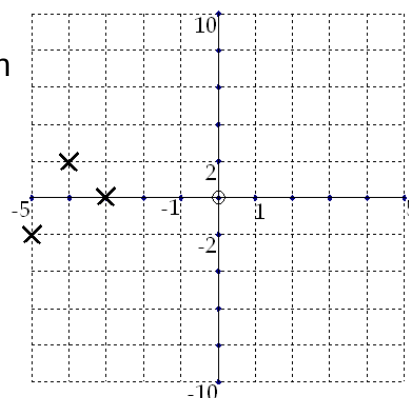
7.1	-2	$\longrightarrow$	$4 - x$	$\longrightarrow$	6	(1)
7.2	1	$\longrightarrow$	$x^2 + 1$	$\longrightarrow$	5	(1)
7.3	$0,1$	$\longrightarrow$	$10 \div x$	$\longrightarrow$	100	(1)

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

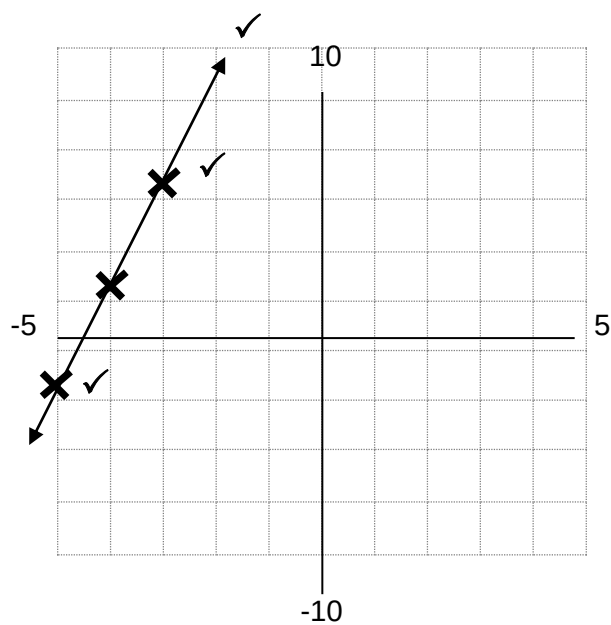


- 8.1 How can we tell he did something wrong just by looking at the graph? (1)

Points won't create a straight line when connected

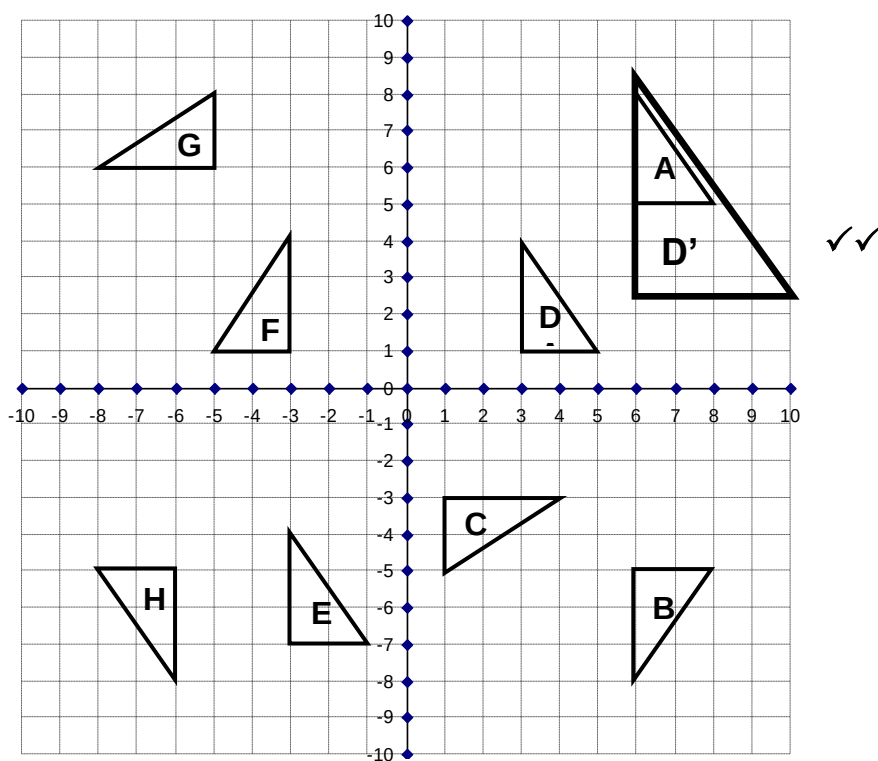
- 8.2 Joe has made mistakes in the table and on the graph. Locate, and correct them by filling in the table below, and by plotting and connecting the correct points to create the graph on the Cartesian plane provided. (4)

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 units². Without doing any working out, predict the area of Triangle **D'**. (1)

12units²✓

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.

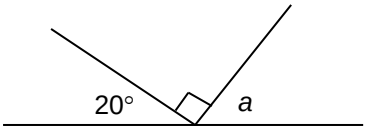
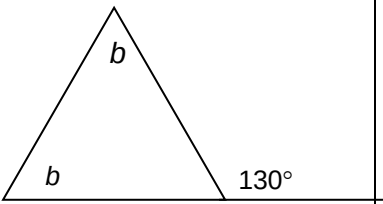
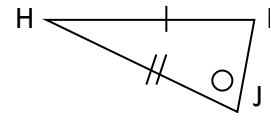
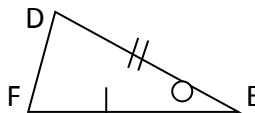
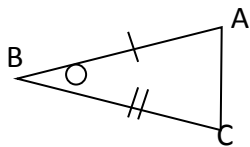
DIAGRAM	STATEMENT	REASON
10.1  (3)	$a = 70^\circ$✓✓	Angles on Straight Line✓
10.2  (2)	$b + b = 130^\circ$ $b = 65^\circ$✓	Exterior Angles of a Triangles✓

DIAGRAM	STATEMENT	REASON
10.3	$6c - 40^\circ + 2c - 20^\circ = 180^\circ \checkmark$ $8c - 60^\circ = 180^\circ$ $c = 30^\circ \checkmark$ $d = 3(30^\circ) - 40^\circ$ $d = 50^\circ \checkmark$	Co-interior angles; $AB \parallel CD \checkmark$ Vertically opposite $\checkmark$

QUESTION 11: [12 marks]

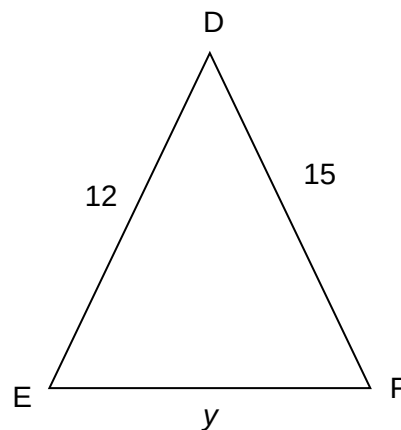
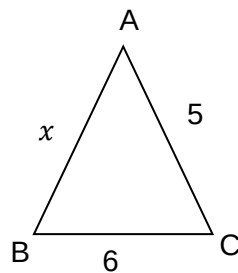
11.1 Which two triangles are congruent?



$\Delta \underline{ABC} \equiv \Delta \underline{FED} \checkmark \checkmark$

(2)

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



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

(1)

3 $\checkmark$

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

$$x \times 3 = 12 \checkmark$$

$$x = 4 \checkmark$$

$$6 \times 3 = y \checkmark$$

$$y = 18 \checkmark$$

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:
SQUARE

OPTION B:
PARALLELOGRAM

OPTION C:
KITE

OPTION D:
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)

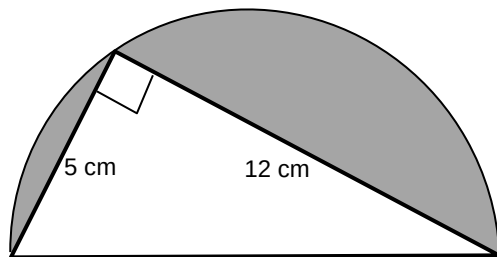
QUESTION 12: [10 marks]

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. $\frac{1}{2} \text{base} \times \text{h}$ ✓ (1)

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

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



$$5^2 + 12^2 = r^2 \checkmark$$

$$r^2 = 169 \checkmark$$

$$r = 13 \checkmark$$

12.5 Calculate the area of the triangle. (2)

$$\frac{1}{2} (12 \text{ cm}) \times 5 \text{ cm} \checkmark$$

$$30 \text{ cm}^2 \checkmark$$

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

$$\pi \left(\frac{13}{2} \text{ cm}\right)^2 \checkmark - 30 \text{ cm}^2 \checkmark$$

$$102,7 \text{ cm}^2 \checkmark$$

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✓
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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✓