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PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

MATHEMATICS

GRADE 8

2017 FINAL EXAMINATION

17 NOVEMBER 2017

MARKS: 100

DURATION: 2 HOURS

Instructions:

1. This paper consists of 10 pages including the cover page.
2. Read the questions carefully before answering.
3. Answer all questions.
4. Show all the working steps
5. Answer questions 2.9 and 3.8 on the grid paper provided on the last page of your question paper. Remove the grid paper from your question paper and submit it together with the answer book.

Question 1 [26]

- 1.1 Use prime factorization below to find the HCF of 120 and 300. (2)

Prime factorization:

$$120 = 2 \times 2 \times 2 \times 3 \times 5$$

$$300 = 2 \times 2 \times 3 \times 5 \times 5$$

(4)

- 1.2 John, Peter and Thomas worked in a local clinic garden. John worked for 5 hours, Peter for 3 hours and Thomas for 2 hours. They were paid R1 000 in total for their work. The money had to be shared according to the hours that they work. How much money will each get?

- 1.3 Calculate the following without using a calculator. Show all the calculation steps. (2)

$$2 - (-2) + (4 - 9)$$

- 1.4 On a cold winter, the night temperature in Bloemfontein was recorded as -3°C . During the day the temperature increased by 9°C . What was the temperature that day? (3)

- 1.5 Simplify the following exponential expressions.

1.5.1 $2y \times 3y^2 - 14y \times y^2$ (2)

1.5.2 $3^3 + \sqrt[3]{64} - (2^3)^2$ (4)

- 1.6 Simplify the following expression without using a calculator: (2)

$$2 + \frac{4}{3} - 2\frac{1}{3}$$

- 1.7 Jane spent $\frac{2}{5}$ of her R900 on Christmas clothing. How much money does she have left over after paying the clothes? (3)

- 1.8 Evaluate without the use of calculator (2)

$$\sqrt{0,04} \quad (\text{leave your answer in the simplest common fraction}).$$

- 1.9 John saves R15,25 every week, He now has R106,75 saved up. For how many weeks has he been saving? (2)

Question 2 [30]

- 2.1 Study the pattern below and then answer the questions that follow:

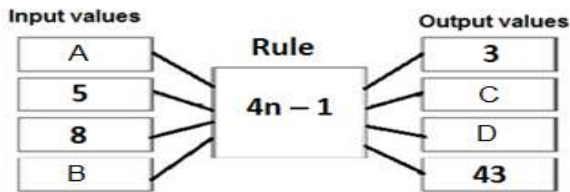
10; 7; 4; 1;

- 2.1.1 Write down the next term. (1)

- 2.1.2 Provide a rule to describe the relationship between successive terms in the pattern. (2)

(4)

2.2 Complete the flow diagram below for the functional relationship between the input and output values, by answering A to D.



2.3 The table below shows the relationship between x and y .

(2)

Find the value of m and n .

x	-2	-1	0	1	2		12	n
y	-5	-4	-3	-2	-1		m	34

(2)

2.4 Consider the expression below and then answer questions 2.4.1 and 2.4.2.

Algebraic expression	Number of terms	Numerical coefficient of x	Constant term
$2x^2 + x - 3$	3	2.4.1	2.4.2

2.5 Simplify the following algebraic expressions:

2.5.1 $3x + 3 - (3x - 2)$

(3)

2.5.2 $\frac{6x^5 + 15x^3}{3x^2}$

(2)

2.6 Write this sentence as algebraic equation and use letter x for the unknown number.

(2)

If you double a number and then subtract it from 20, you get 4.

2.7 Solve the following equations:

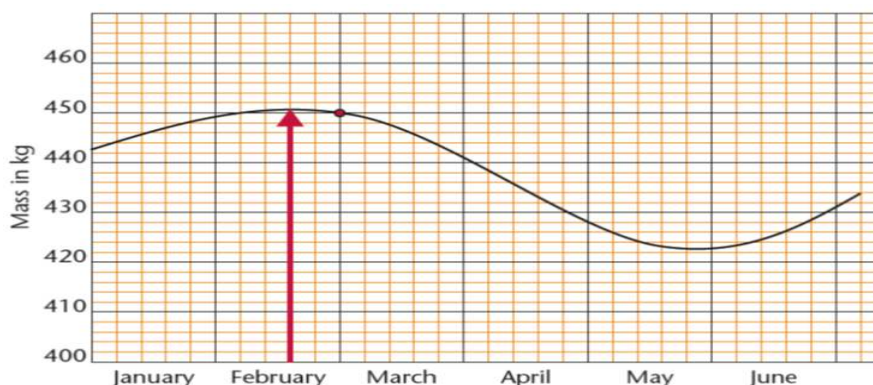
2.7.1 $x - 10 = 2$

(2)

2.7.2 $4^x + 2 = 66$

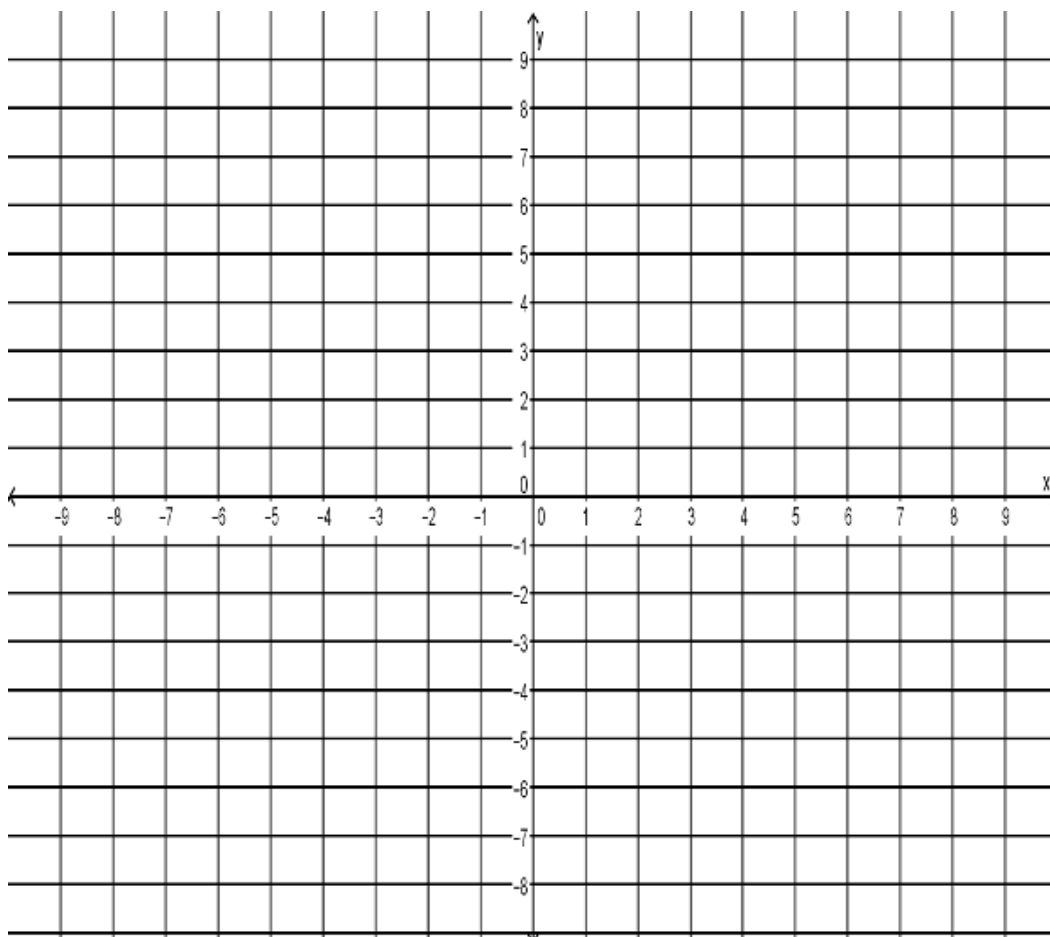
(3)

2.8 Mr Johnson is a dairy farmer. He cares for his cows and weighs all of them daily. Here is a graph of one cow's mass in kilograms over a period of six months



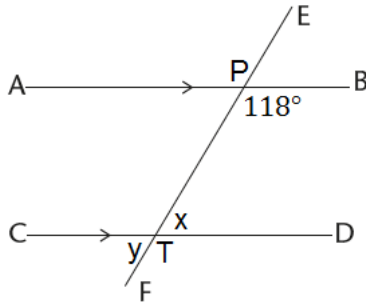
- 2.8.1 The cow's mass reached a maximum a few days after the middle of February, as shown by the arrow on the graph. When, in the period shown on the graph, did the cow's mass reach a minimum? (1)
- 2.8.2 During most of February the cow weighed slightly more than 450 kg. During which month did the cow weigh less than 430 kg, for the whole month? (1)
- 2.8.3 Throughout the month of June, the mass of the cow increased. During which months did the mass of the cow decrease right through the month? (2)
- 2.9 Draw a graph by plotting the following ordered pairs on the Cartesian plane. (3)
(Use the grid paper provided on the second last page. Remove the grid paper from your question paper and submit it together with the answer book)

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

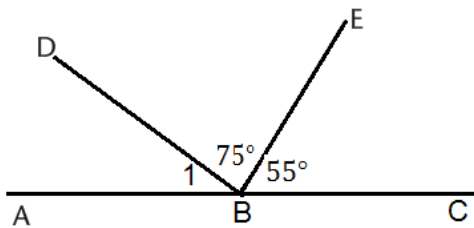


Question 3**[25]**

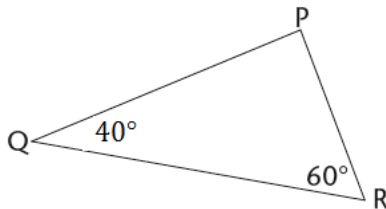
- 3.1 In the diagram below, $AB \parallel CD$ and $\hat{BPT} = 118^\circ$. Calculate with reasons the value of x and y . (3)



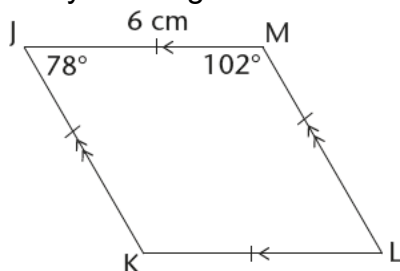
- 3.2 In the diagram ABC is a straight line. Calculate the size of $\hat{B}_1$. (3)



- 3.3 In $\triangle PQR$, $\hat{Q} = 40^\circ$ and $\hat{R} = 60^\circ$. Calculate with a reason the size of $\hat{P}$. (2)



- 3.4 Study the diagram drawn below and then answer the following questions.

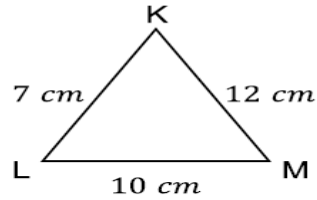
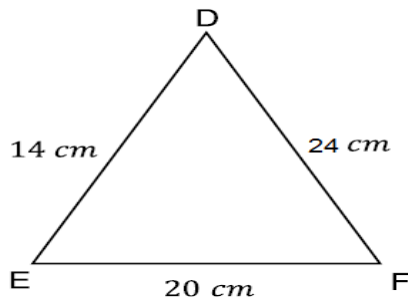


- 3.4.1 Calculate with a reason the size of $\hat{K}$. (2)
- 3.4.2 What is the length of JK? (1)

Decide whether the following figures are congruent or similar.

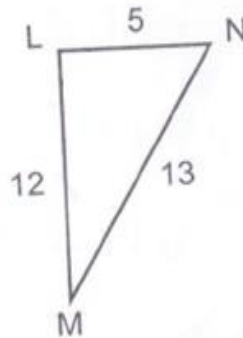
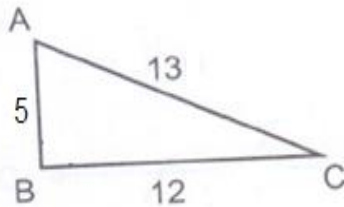
3.5
3.5.1

(1)



3.5.2

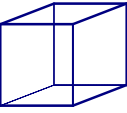
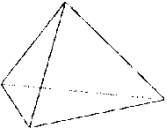
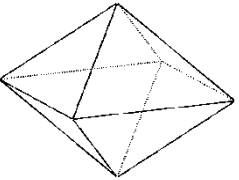
(1)



3.6

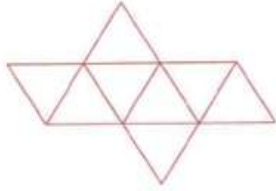
Study the 3D solids below and complete the table below:

(4)

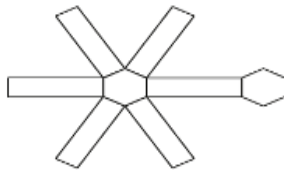
Solid	Name	Number of faces	Shape of the faces
	Hexahedron (Cube)	<u>3.6.1</u>	Squares
	<u>3.6.2</u>	4	<u>3.6.3</u>
	Octahedron	8	<u>3.6.4</u>

3.7 Below are nets of 3D solids. Classify each net as a **Pyramid**, a **Prism** or a **Platonic solid**.

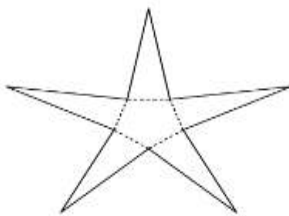
3.7.1 (1)



3.7.2 (1)



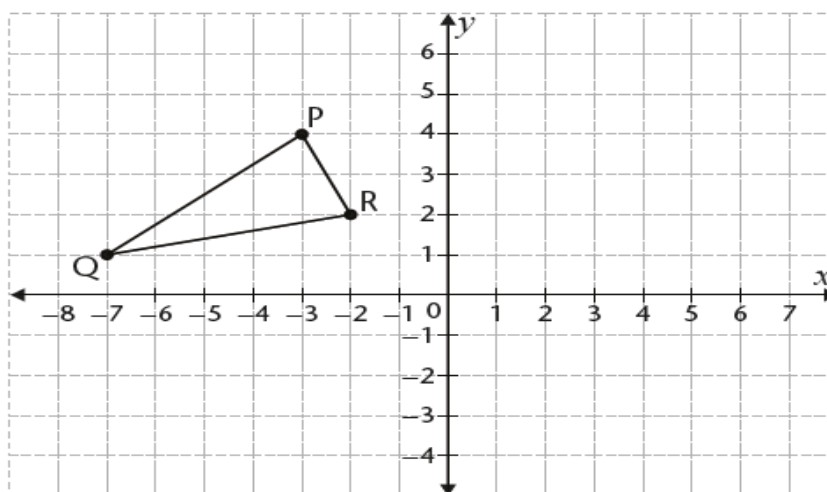
3.7.3 (1)



3.8

3.8.1 Use the grid paper provided to draw $\Delta P'Q'R'$, a reflection of ΔPQR in the y-axis. Label the vertices of $\Delta P'Q'R'$. (3)

(Use the grid paper provided on the last page. Remove the grid paper from your question paper and submit it together with the answer book)

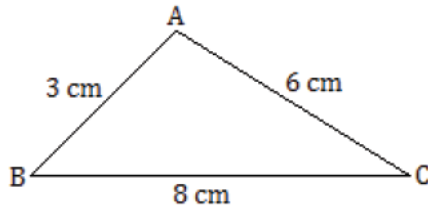


- 3.8.2 If $\Delta P''Q''R''$ is an enlargement of ΔPQR by a scale factor of 2, what will be the **coordinates** of the point P'' . (2)

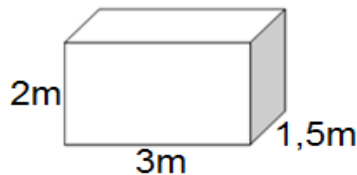
Question 4

[8]

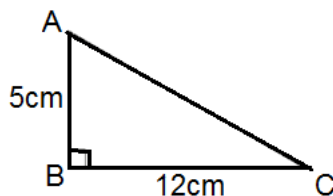
- 4.1 Calculate the perimeter of the triangle drawn below. (2)



- 4.2 Calculate correct to one decimal place, the volume of a rectangular prism shown below. (3)



- 4.3 In ΔABC , $AB \perp BC$. Use Theorem of Pythagoras to determine the length of AC if $AB = 5$ cm and $BC = 12$ cm. (3)



Question 5

[11]

- 5.1 The following marks out of 50 were scored by learners in a Mathematics test. The marks were arranged using the stem and leaf method.

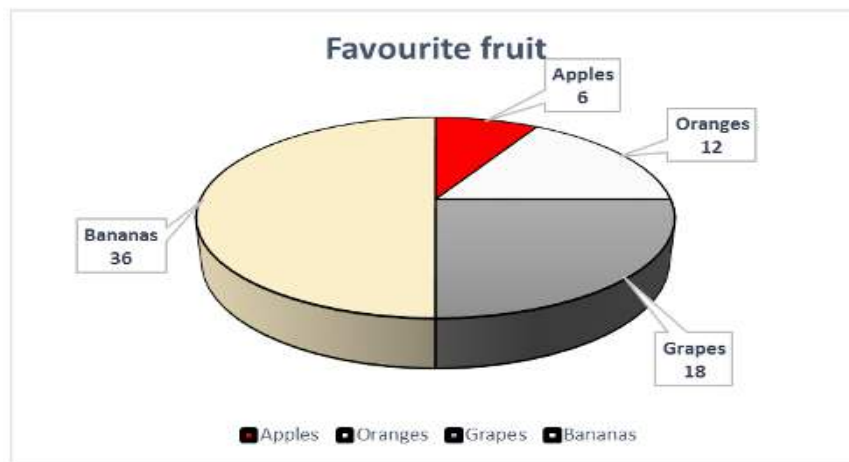
Stem	Leaves
1	2, 3
2	7, 9
3	4, 5
4	1, 3, 3, 3, 6, 9
5	0

- 5.1.1 Write down the range. (1)
- 5.1.2 What is the modal mark? (1)

5.1.3 Determine the median mark. (2)

5.2 Nomsa conducted a survey with a group of grade 8 learners. She asked them to name only one of their favourite fruits. She recorded all the data collected in a table and drew a pie chart to represent the data collected.

Favourite fruit	Number of grade 8 learners
Apples	6
Oranges	12
Grapes	18
Bananas	36



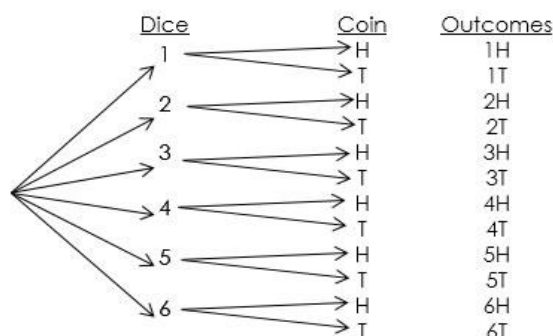
The pie chart shown here represents the data collected. Look at the pie graph and answer the questions that follow:

5.2.1 How many grade 8 learners took part in the survey? (2)

5.2.2 Which was the least favourite fruit amongst the learners? (1)

5.2.3 Determine what percentage of learners eat bananas? (1)

5.3 The tree diagram below shows possible outcomes when a dice is thrown and a coin is tossed. Use it to answer the following questions:



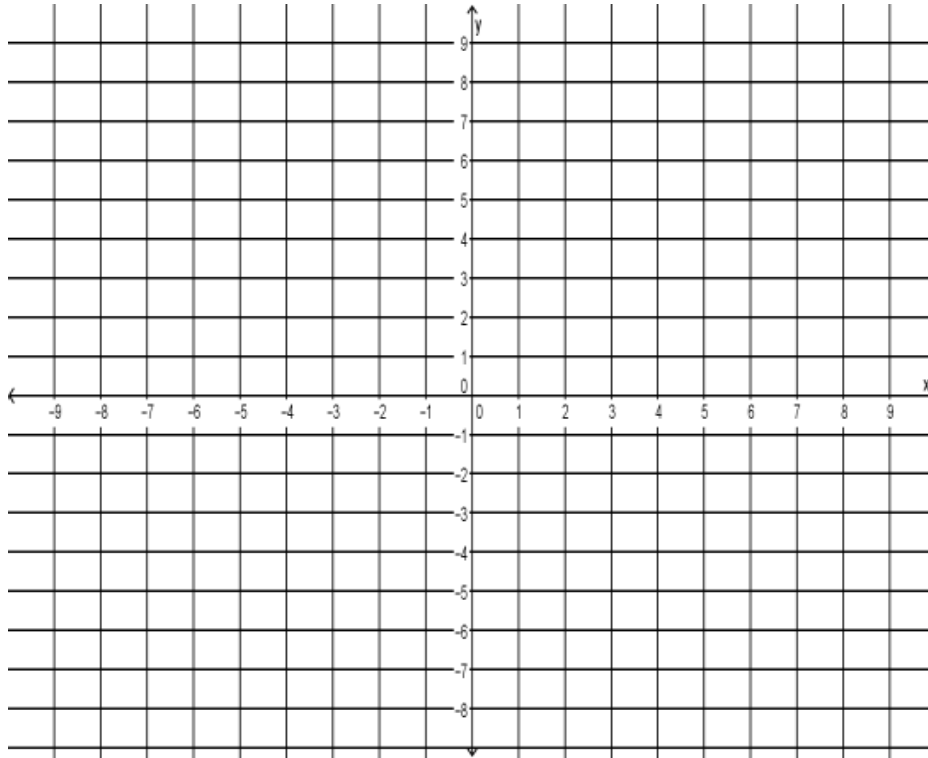
5.3.1 What is the probability of getting a 5 and heads? (1)

5.3.2 What is the probability of getting a 5? (2)

Total =100

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2.9



3.8

