Mathematics Exam | Grade 8

Paper 2 | Bergvliet High School | Examiner: S Whitehorn

Marks: 60 | 15 November 2024 | Moderator: D Lekay

Time: 75 Min

Name: _____

Teacher Eb Fr Jo Le Si Vi Wh (circle your teacher)

Class B E R G V L I (circle your class)

INSTRUCTIONS

Read the following instructions carefully before answering the questions.

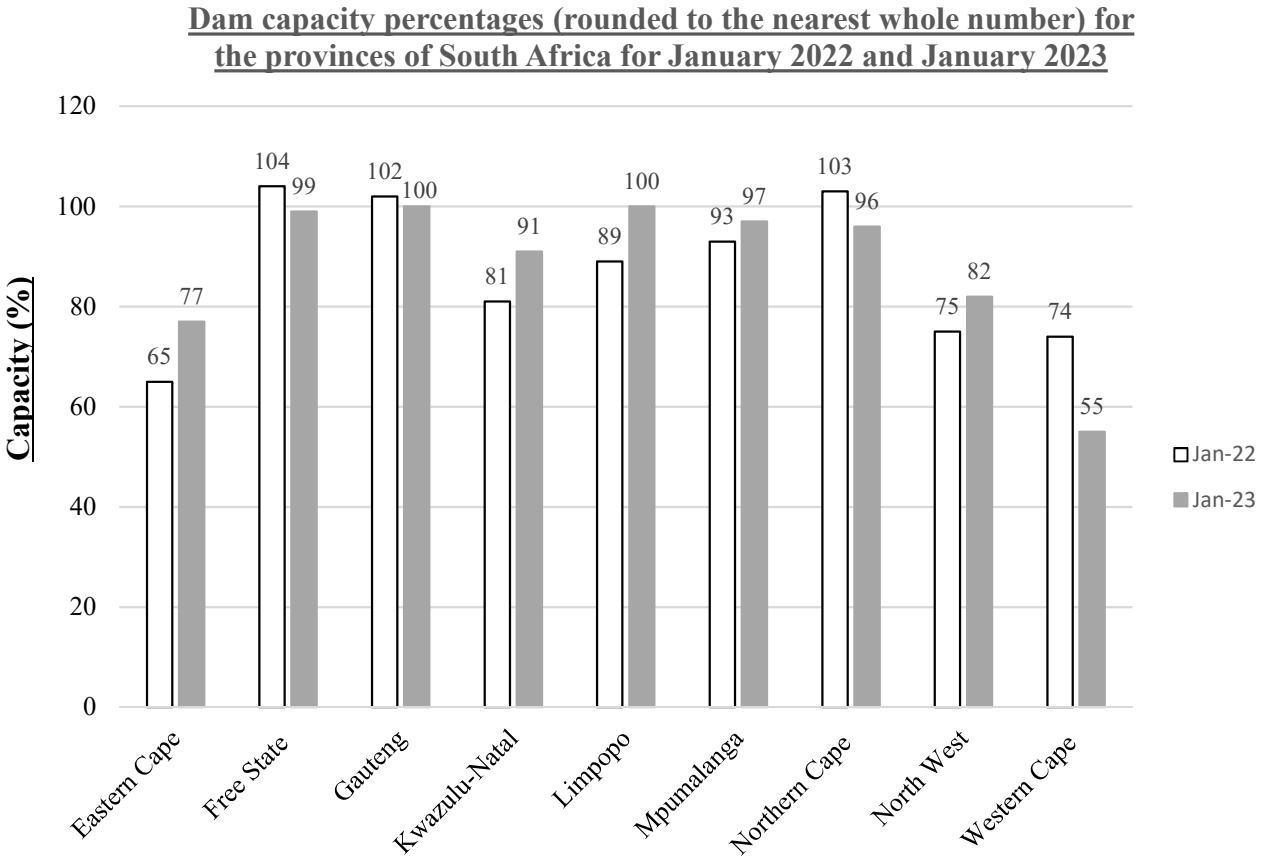
1. This paper consists of 10 pages and 7 questions.
2. Answer **ALL** the questions in this question paper.
3. Clearly show **ALL** calculations, diagrams et cetera that you have used in determining your answers.
4. Note that diagrams are not necessarily drawn to scale.
5. You MAY use an approved scientific calculator unless stated otherwise.
6. If necessary, round off answers to TWO decimal places, unless stated otherwise.
7. Write neatly and legibly in blue or black pen.

Question 1	Question 2	Question 3	Question 4	Question 5	Question 6	Question 7	TOTAL
12	**14**	**3**	**6**	**11**	**10**	**4**	**60**

Useful Formulae:	$A = lb$	$A = s^2$	$A = \frac{1}{2}bh$	$A = \pi r^2$	$C = 2\pi r$	$V = lbh$	$V = \frac{1}{2}bhd$
	$V = s^3$	$TSA = 6l^2$		$TSA = 2(lb + lh + bh)$		$TSA = bh + H(a + b + c)$	
	$V = area\ of\ base \times height$						

QUESTION 1

In a recent survey conducted by the Department of Water and Sanitation, the dam levels across South Africa were recorded. The graph below shows the dam capacity, as a percentage, in January 2022 and January 2023.



Adapted from: www.dws.gov.za

1.1. Which provinces dams were the fullest in January 2022? (1)

1.2. Determine the average dam capacity for South Africa in January 2023. (3)

1.3. Determine the range for the January 2022 data. (3)

1.4. Determine the median value of the data set for January 2023. (2)

1.5. Determine the percentage change for the Western Cape's dam levels from January 2022 to January 2023. (3)

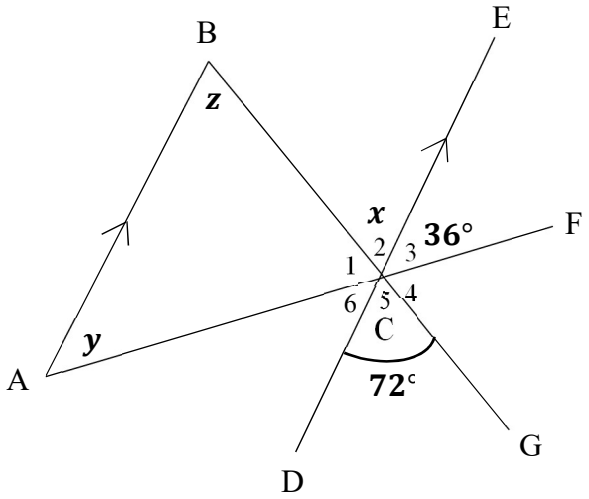
[12]

FOR QUESTIONS 2 - 4 YOU MUST GIVE REASONS FOR YOUR ANSWERS

QUESTION 2

Determine the sizes of the unknown angles, indicated with lowercase letters, in the following:

2.1 $AB \parallel DE$. ACF, DCF and BCG are straight lines. $\hat{C}_5 = 72°$ and $\hat{C}_3 = 36°$.

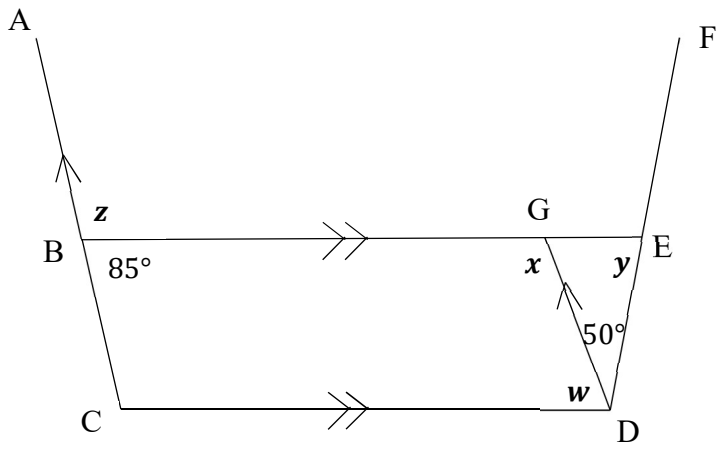


Determine the value of the following, in the order given below:

2.1.1. $x =$ (2)

2.1.2.	$y =$	(2)
2.1.3.	$z =$	(2)

2.2. $AC \parallel DG$ and $BE \parallel CD$. ABC and FED are straight lines. $G\hat{D}F = 50°$ and $C\hat{B}G = 85°$.



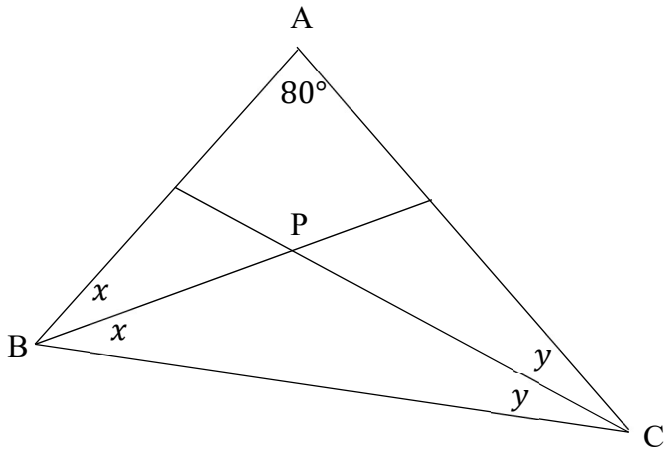
Determine the value of the following, in the order given below:

2.2.1.	$w =$	(2)
2.2.2.	$x =$	(2)
2.2.3.	$y =$	(2)
2.3.4.	$z =$	(2)

[14]

QUESTION 3

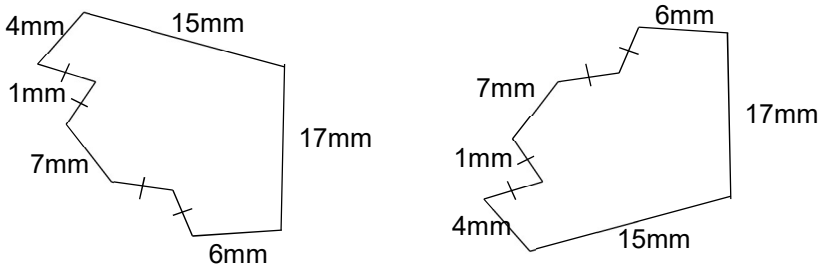
In $\Delta ABC, \hat{A} = 80°$ and the bisectors of angles B and C intersect at P inside the triangle. Determine the size of $B\hat{P}C$. **[3]**



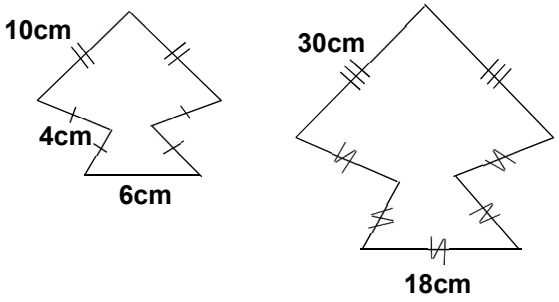
QUESTION 4

4.1 State whether the following images are congruent, similar or both, and give a reason for your answer.

4.1.1. (2)



4.1.2. (2)

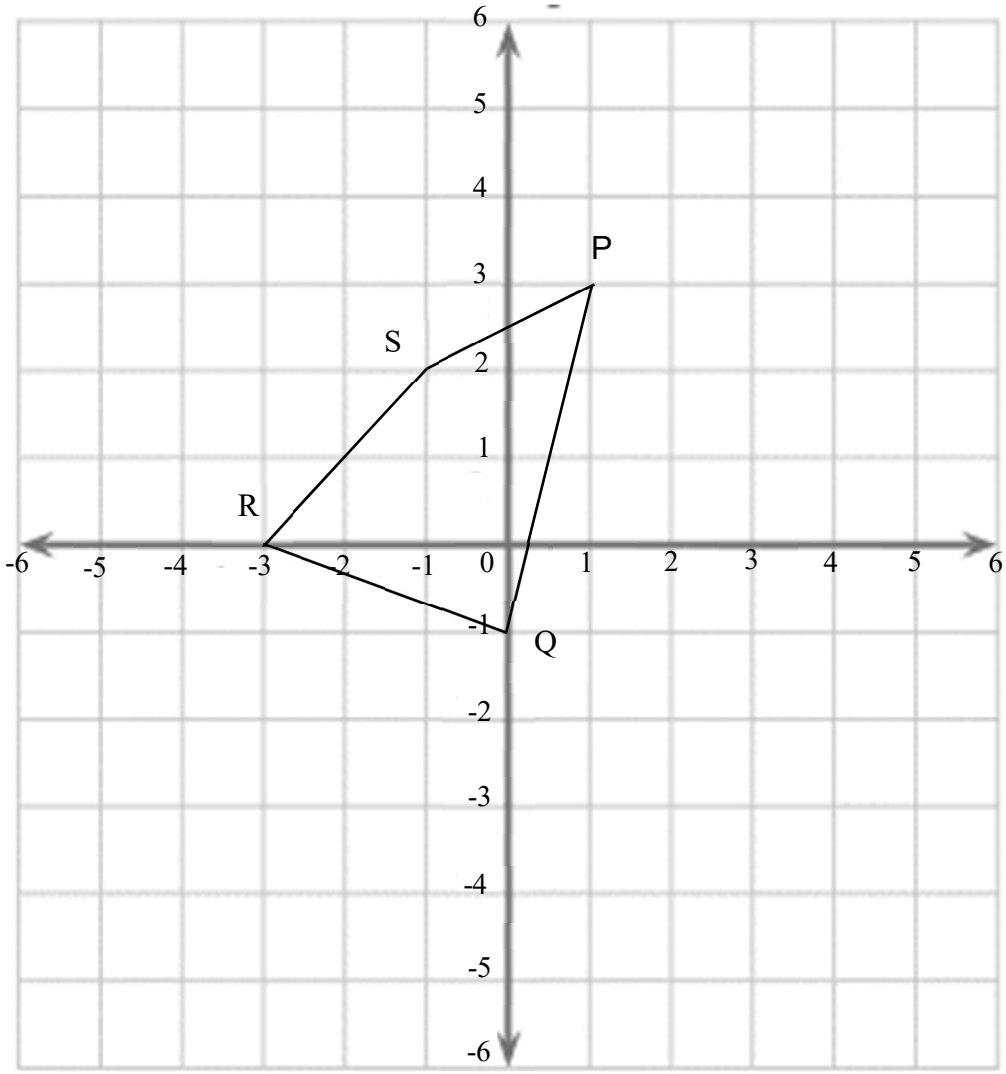


4.2 Using the larger image in Question 4.1.2., determine the perimeter of the polygon. (2)

[6]

QUESTION 5

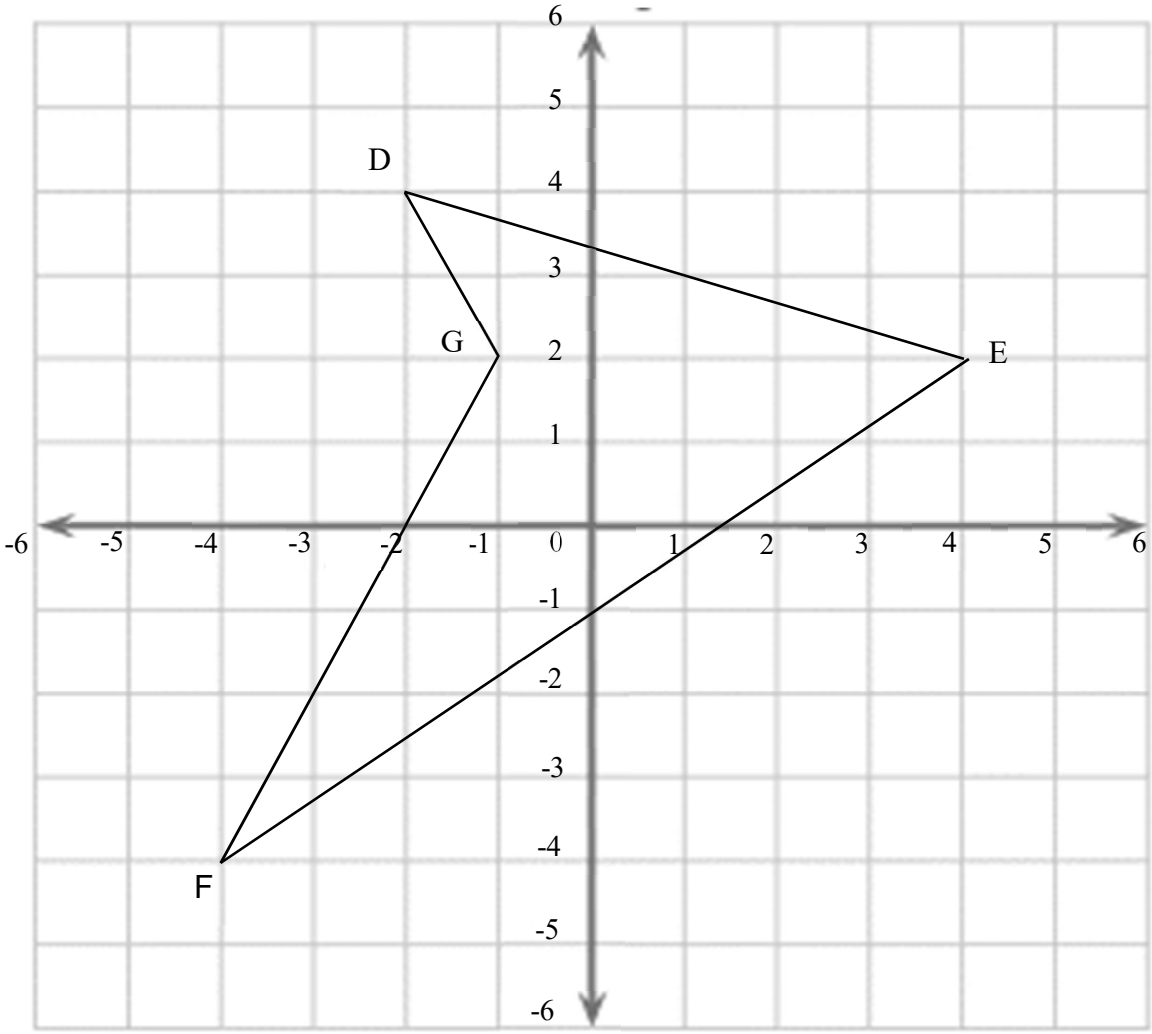
5.1 Given the polygon $PQRS$ on the Cartesian plane below:



5.1.1. Write down the coordinates of S. (2)

5.1.2. On the grid above, drawn the reflection of $PQRS$ about the x-axis, labelling all points with their coordinates. (4)

5.2 Given the polygon $DEFG$ below:



$DEFG$ is enlarged by a scale factor of $\frac{1}{2}$ about the origin.

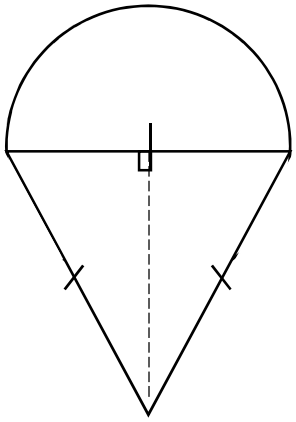
5.2.1. Write down the coordinates of the image $D'E'F'G'$. (4)

5.2.2. Draw the image of $D'E'F'G'$ on the axes above, labelling all coordinates. (1)

[11]

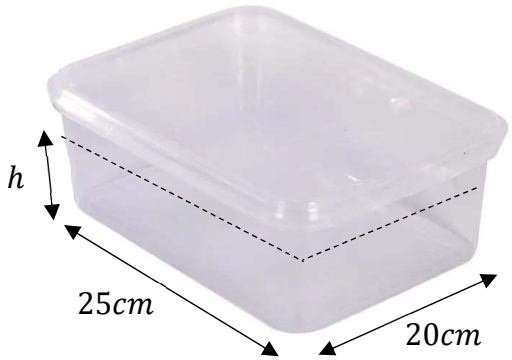
QUESTION 6

6.1 Cassidy is designing a new logo for her local ice-cream shop. The image below is her first draft of the signage to go outside the store. She has created the logo from an equilateral triangle, with side lengths of 12m, and a semi-circle where the diameter is equal to the side length of the triangle:



The ice-cream and cone will need to have a sealant painted on it to ensure that it is able to be outside. Determine the total area that needs to be painted. (6)

6.2 The ice-cream shop has ordered new containers for the sale of their ice-cream flavours. The design is shown below:



The tub can contain $3{,}5l$ of ice-cream. Determine the height to which the tub must be filled with ice-cream. (4)

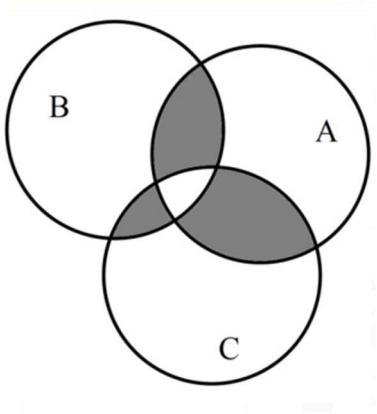
[10]

QUESTION 7

In the diagram below, each of the circles shown has an area of $120cm^2$. **[4]**

$\frac{1}{4}$ of the area of circle A is shades. $\frac{1}{5}$ of circle B's area is shaded. $\frac{1}{6}$ of the area of circle C is shaded.

Determine the sum of the shaded areas in cm^2.



TOTAL: 60 MARKS