GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GAUTENG DEPARTMENT OF EDUCATION

PROVINCIAL EXAMINATION

NOVEMBER 2020

GRADE 9

MATHEMATICS
(PAPER 2)

NAME OF LEARNER: _____

GRADE: _____

TIME: 1 hour

MARKS: 50

10 pages + 1 formula sheet

INSTRUCTIONS AND INFORMATION:

1. Answer ALL the questions.

2. Question 1 consists of FIVE multiple choice questions. You must circle the letter of the correct answer in the QUESTION PAPER.

3. Answer questions 2 – 4 in the spaces provided.

4. Clearly show all calculations, diagrams and graphs that you have used in determining your answers. Answers ONLY will not necessarily be awarded full marks.

5. Diagrams are not necessarily drawn to scale. Reasons MUST always be given for statements made when answering geometry questions.

6. The teacher will lead you through the practice question before you start the test.

7. Approved scientific calculators (non-programmable and non-graphical) may be used, unless otherwise stated.

8. Write neatly and legibly.

Practice Question

Circle the letter of the correct answer.

1. Complete: $\hat{A}$ is an obtuse angle, because …

   A $0° < \hat{A} < 90°$.
   B $180° < \hat{A} < 360°$.
   C $90° < \hat{A} < 180°$.
   D $\hat{A} = 180°$.

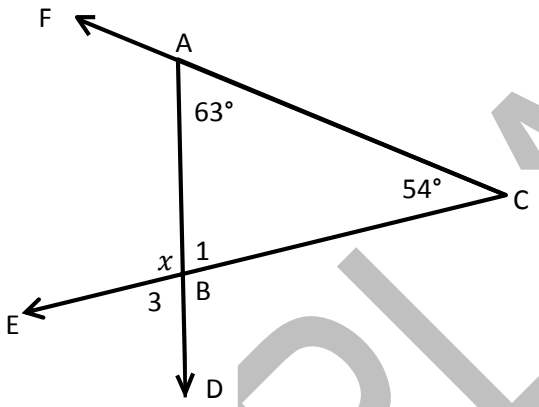
You have done it correctly if you circled **C.**

QUESTION 1

FOUR options are provided as possible answers to the following questions.

Circle the letter next to the correct answer in the QUESTION PAPER.

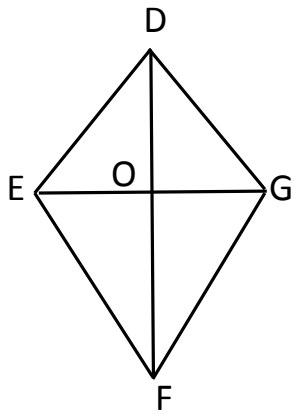
1.1 ΔABC with AC extended to F, $B\widehat{A}C = 63°$, CB extended to E, $\widehat{C} = 54°$, AB extended to D and $E\widehat{B}A = x°$.



Complete: The size of $x =$ ...

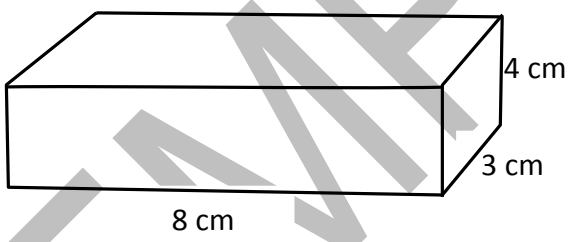
A 54°.
B 63°.
C 117°.
D 126°. (1)

1.2 Which statement below about kite DEFG is TRUE?



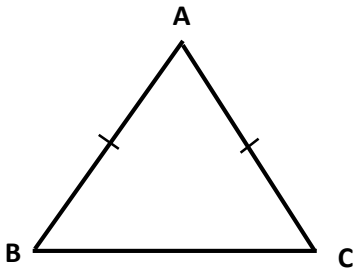
A Two pairs of adjacent sides are equal in length.
B Diagonals bisect each other.
C Two pairs of opposite sides are parallel.
D Diagonals are equal in length.

1.3 The rectangular prism below has a length of 8 cm, breadth of 3 cm and height of 4 cm. The volume of the prism is _____.



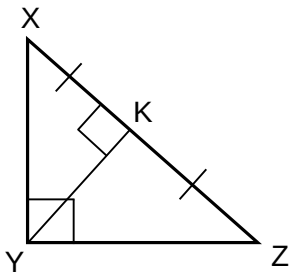
A 15 cm^3.
B 48 cm^3.
C 96 cm^3.
D 56 cm^3. (1)

1.4 What type of triangle is ΔABC below?



A Equilateral triangle
B Scalene triangle
C Right-angled triangle
D Isosceles triangle

1.5 XY ⊥ YZ and XK ⊥ KY



Which statement is correct?

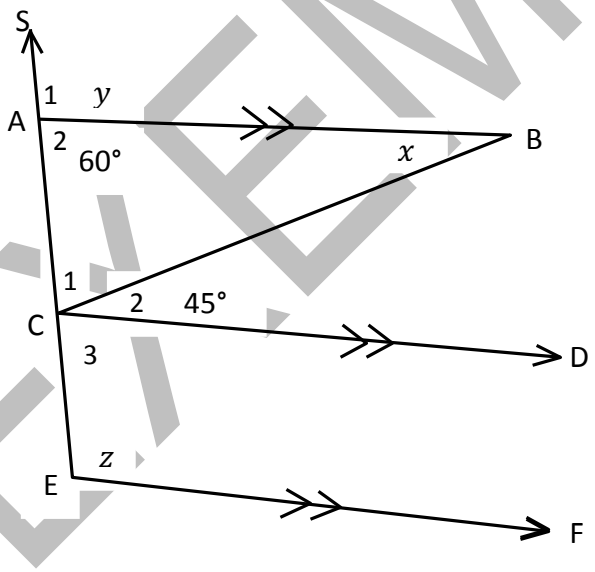
A ΔXYK ≡ ΔZYK
B ΔXYK ≡ ΔXYZ
C ΔZYK|||ΔXYK
D ΔXYK|||ΔXYZ (1)

[5]

QUESTION 2

Answer the following questions in the spaces provided.

2.1 AB ∥ CD ∥ EF, $C\hat{A}B = 60°$, $B\hat{C}D = 45°$, $\hat{B} = x$, $\hat{A}_1 = y$ and $\hat{D} = z$.



2.1.1 Determine, with reasons, the value of x.

Statement	Reason

(1)

2.1.2 Determine, with reasons, the value of y.

Statement	Reason
$\hat{C}_1 + 60° + 45° = 180°$	_____
$\hat{C}_1 =$_____	
$A\hat{C}D = \hat{C}_1 + \hat{C}_2 =$ _____	
$A\hat{C}D = y$	_____
$y =$ _____	

(5)

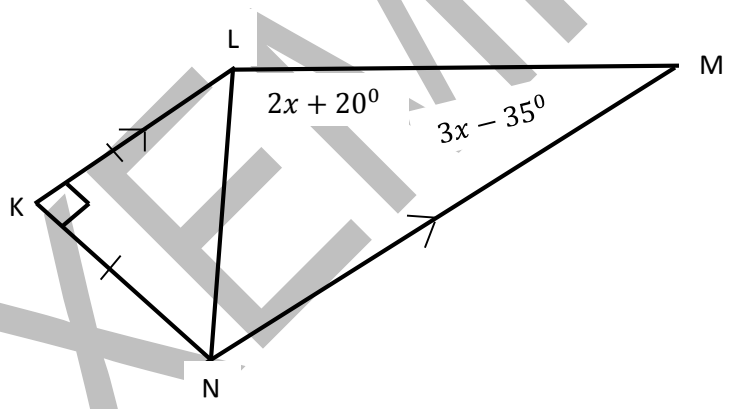
2.1.3 Determine the value of z.

Statement	Reason
$z =$ _____	corresponding $\angle s$ and EF ∥ CD

(1)

2.2 Given: KN = KL, KL // NM

$\hat{L} = 2x + 20°$ and $\hat{M} = 3x - 35°$



2.2.1 Calculate the value of x with reason/s.

Statement	Reason
$K\hat{L}N = K\hat{N}L$	_____-
$\therefore K\hat{L}N =$ _____	
$K\hat{L}N = L\hat{N}M$	_____
_____	sum of internal $\angle s$ of Δ
$\therefore x =$ _____	

(5)

2.2.2 Hence, calculate the size of $N\hat{L}M$.

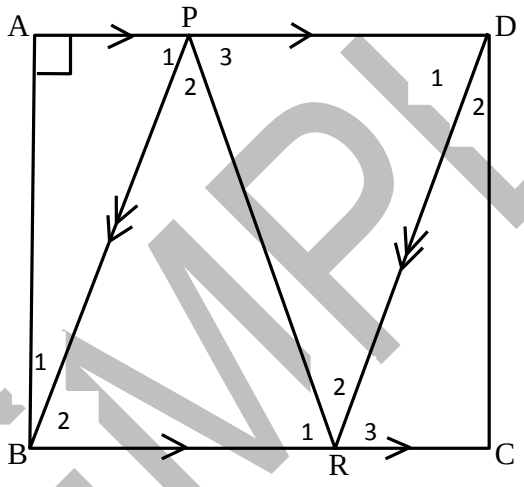
Statement	Reason

(2)
[14]

QUESTION 3

Answer the following questions in the spaces provided.

3.1 In the diagram below, ABCD is a square and PBRD is a parallelogram.

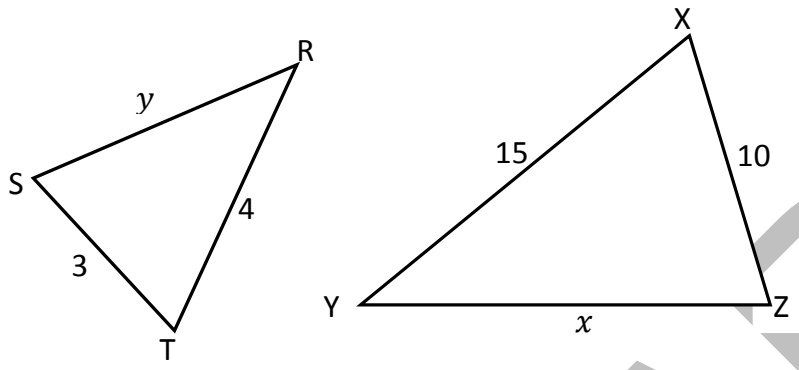


Complete to prove that $\Delta ABP \equiv \Delta CDR$.

Statement	Reason
AB = _____	_____
PB = _____	_____
$\hat{A}$ = _____	_____
$\therefore \Delta ABP \equiv$ _____	_____

(4)

3.2 Given: $\Delta STR \;|||\; \Delta XYZ$



3.2.1 Write down the proportional sides of the two similar triangles above, by completing the statement.

Statement	Reason
$\frac{ST}{XY} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$	proportional sides of $\|\|\| \Delta s$

(2)

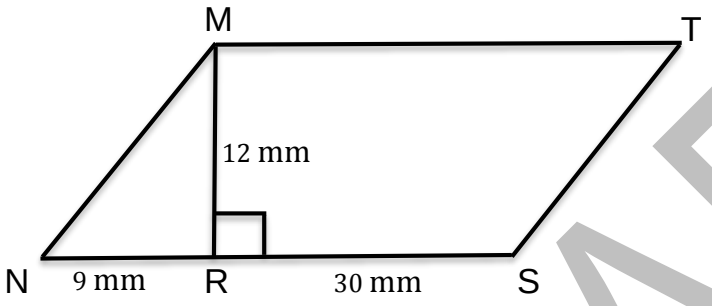
3.2.2 Hence, calculate the value of x and y.

(5)
[11]

QUESTION 4

Answer the following questions in the spaces provided.

4.1 MNST is a parallelogram. NR = 9 mm, RS = 30 mm and MR = 12 mm.



Calculate:

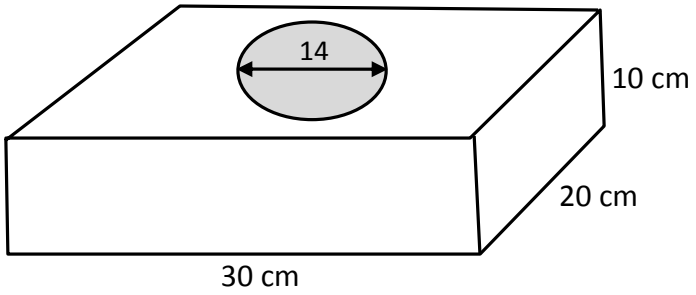
4.1.1 The area of ΔMNR.

(3)

4.1.2 The perimeter of MNST.

(5)

4.2 A circular hole with a diameter of 14 cm is drilled through a rectangular block of wood. The dimensions of the wooden block are 30 cm by 20 cm by 10 cm.



4.2.1 Determine the volume of the wooden block.

(3)

4.2.2 Determine the volume of the wooden block that remained after the hole was drilled. Use $\pi = \frac{22}{7}$.

(6)

4.2.3 Determine the outer surface area of the wooden block before the hole was drilled.

(3)

[20]

TOTAL: 50

END

FORMULA SHEET

	Perimeter	**Area**
Rectangle	$2(l+b)$	$l \times b$
Circle	$2\pi r$	πr^2
Trapezium	$S_1 + S_2 + S_3 + S_4$	$\frac{1}{2}(sum\ of\ parallel\ sides) \times h$
Triangle	$S_1 + S_2 + S_3$	$\frac{1}{2} b \times\perp h$

	Volume
Rectangular prism	$l \times b \times h$
Cylinder	$\pi r^2 \times$ h
Triangular prism	$\frac{1}{2} b \times\perp h \times H$

	Outer Surface Area
Rectangular prism	$2(l+b) \times H + 2 \times l \times b$