GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GAUTENG DEPARTMENT OF EDUCATION

PROVINCIAL EXAMINATION

JUNE 2019

GRADE 9

MATHEMATICS

NAME OF LEARNER: _____

GRADE / CLASS: _____

TIME: 2 hours

MARKS: 100

19 pages

P.T.O.

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INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of 10 questions and 19 pages.
2. Answer ALL questions on this paper.
3. A non-programmable calculator may be used unless otherwise stated.
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. If necessary, round-off answers to 2 decimal places, unless otherwise stated.
6. Diagrams are not necessarily drawn to scale. Reasons MUST always be given when doing geometry calculations.
7. Number the answers correctly according to the numbering system used in this question paper.
8. Answer questions 1 to 10 in Section B in the spaces provided.
9. Write neatly and legibly.

SECTION A

QUESTION 1

Answer the following questions by choosing the correct answer. Circle the letter next to the correct answer.

1 Which number is a prime number?

A 25
B 42
C 27
D –23 (1)

2 Complete: The annual increase in the price of goods and services, based on the previous year's prices, is called ...

A a loan.
B inflation.
C the interest rate.
D depreciation. (1)

3 Complete: $2\sqrt{49} - (-5)^2 + \sqrt[3]{-125} = ...$

A 34
B –1
C –6
D –16 (1)

4 Complete: $\frac{1}{2}x + 1\frac{3}{4}x = ...$

A $2\frac{1}{4}x$

B $3\frac{2}{4}x$

C $2\frac{11}{3}x$

D $4\frac{7}{8}x$ (1)

5 Complete: The next term in the number sequence 1; 4; 9; ... , is...

A 12.
B 16.
C 24.
D 36. (1)

6 Complete: The price of maize decreased from R1 280 to R1 275 per ton.

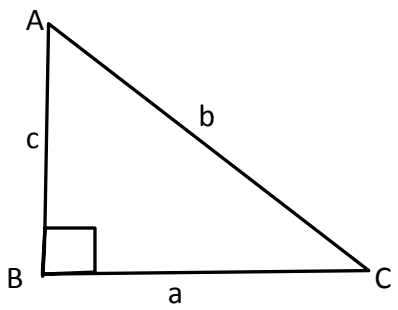
The percentage decrease in the price = ...

A 10%.
B 0,31%.
C 0,39%.
D 0,45%. (1)

7 The sum of the interior angles of a quadrilateral = ...

A 90°.
B 360°.
C 180°.
D 540°. (1)

8



Complete: The theorem of Pythagoras states that …

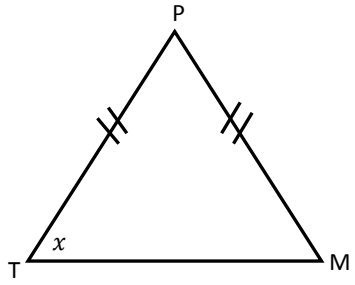
A $c^2 = a^2 + b^2$.
B $b^2 = a^2 - c^2$.
C $a^2 = c^2 - b^2$.
D $b^2 = a^2 + c^2$. (1)

9 Complete: If $\hat{A} = 70°$ and $\hat{B} = 110°$ then $\hat{A} + \hat{B}$ are called .... angles.

A complementary
B supplementary
C acute
D obtuse (1)

10 In ΔPTM, PT = PM and $\hat{T} = x°$.

Calculate the size of $\hat{P}$ in terms of x.



A $x°$
B $180° - 2x°$
C $180° - x°$
D $3x°$

(1)
[10]

SECTION B

QUESTION 1

1.1 Evaluate:

$(1{,}34 \times 10^4) \times (2{,}3 \times 10^3)$

(1)

1.2 If $a = -1$, $b = -\frac{1}{2}$, $c = 4$, calculate the value of $a^2 - b^2 + c^2$.

(3)

1.3 Simplify:

1.3.1 $-2(x + 2)(x + 3)$

(2)

1.3.2 $\frac{3x + 2}{2} - \frac{10x - 3}{3}$

(3)

1.3.3 $\dfrac{(-6x^3y^0z^2) \times 2^3 x^7}{\sqrt{36x^6y^4}}$

(4)

[13]

QUESTION 2

Solve the following equations:

2.1 $2^x = \dfrac{1}{8}$

(2)

2.2 $2x + \frac{x-6}{2} = -1$

(4)

2.3 $(x + 4)(x - 4) = 0$

(2)

2.4 $2(2x-4)=3(3x+4)$

(4)

[12]

QUESTION 3

Factorise fully:

3.1 $8\,m^2-12\,m^8-20\,m^4$

(2)

3.2 $a^2(2x-y)-b^2(2x-y)$

(4)

[6]

QUESTION 4

4.1 Four packets of biscuits cost R74,00. What will six packets of the same biscuits cost?

(2)

4.2 R6 000 is invested for 3,5 years.
Calculate the value of the investment if:

4.2.1 it is invested at 12 % per annum simple interest.

(3)

4.2.2 it is invested at 12 % per annum compound interest.

(3)

4.2.3 Which is the better option between the two investments?

(1)

4.3 A car travels at an average speed of 90 km per hour.

4.3.1 How far will the car travel in $3\frac{1}{2}$ hours?

(2)

4.3.2 How long will it take the car to travel 390 km at the same speed?

(2)

[13]

QUESTION 5

5.1 The table below shows the relationship between the ages of a mother and her son.

Age of the mother in years	25	30	40	b	70
Age of the son in years	1	a	15	26	c

5.1.1 Determine the values of a, b and c.

(3)

5.1.2 How old will the son be when the mother is 92 years old?

(1)

5.2 Consider the number sequence: 4 ; 9 ; 14 ; 19 ; ...

5.2.1 Write down the general term of the number sequence in the form $T_n = ...$

(2)

5.2.2 Which term in the sequence is equal to 64?

(3)
[9]

QUESTION 6

6.1 From the provided list of 2-D forms below, identify all the quadrilaterals that meet the following characteristics:

kite	rhombus	trapezium	hexagon	parallelogram	square	rectangle

6.1.1 The diagonals are perpendicular bisectors.

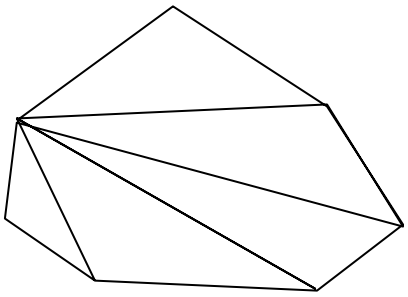
(1)

6.1.2 The diagonals are not equal in length, but they are perpendicular.

(1)

6.2 The sum of the interior angles of a n-sided polygon can be calculated using the formula: Sum of angles $= (n - 2) \times 180°$.

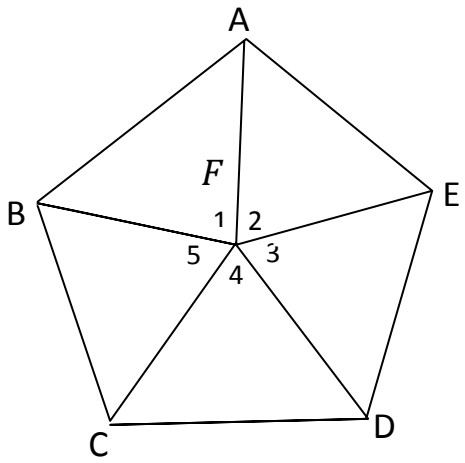
Use the formula to determine the sum of the interior angles of the diagram given below.



(2)

6.3 The diagram below shows a regular polygon ABCDE with a central point F.

AF = BF = CF = DF = EF and $\hat{F}_1 = \hat{F}_2 = \hat{F}_3 = \hat{F}_4 = \hat{F}_5$.

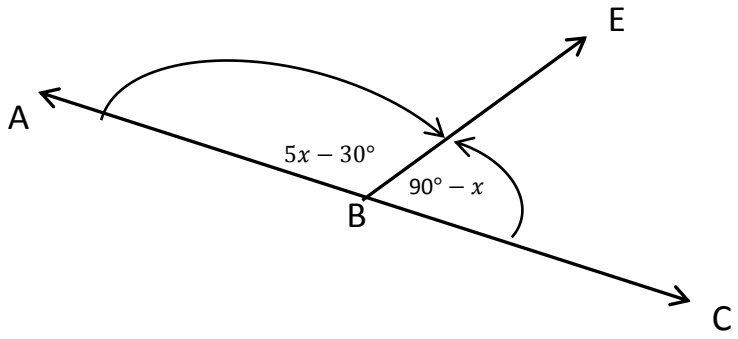


Calculate the size of the angles with vertex F.

(3)
[7]

QUESTION 7

7.1 ABC is a straight line. $A\hat{B}E = 5x - 30°$ and $C\hat{B}E = 90° - x$.



7.1.1 Determine the value of x

Statement	Reason
$5x - 30° + 90° - x =$_____	_____
_____	
_____	

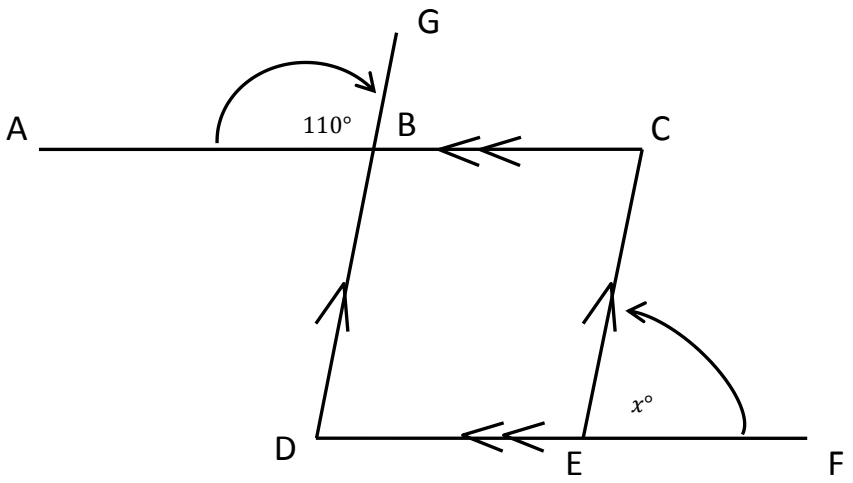
(3)

7.1.2 Hence calculate the size of $A\hat{B}E$.

Statement	Reason
_____	
_____	
_____	

(2)

7.2 In the diagram below AC ∥ DF and DG ∥ CE.
$A\widehat{B}G = 110°$ and $C\widehat{E}F = x°$.



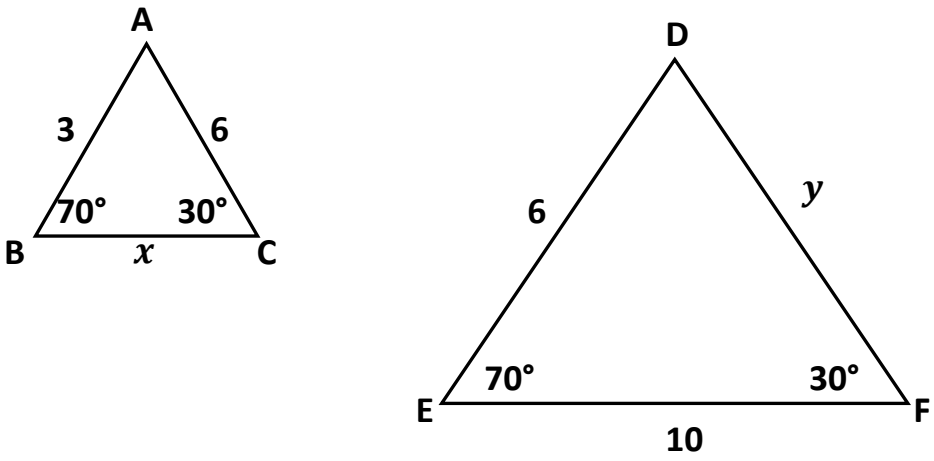
Determine the value of x.

Statement	Reason
$D\hat{B}C =$_____	_____
$B\hat{D}F =$_____	_____
$D\hat{B}C + B\hat{D}F =$ _____	_____
_____	
_____	

(4)
[9]

QUESTION 8

8.1 In the diagram below, $\Delta ABC \ \|\|\| \ \Delta DEF$.

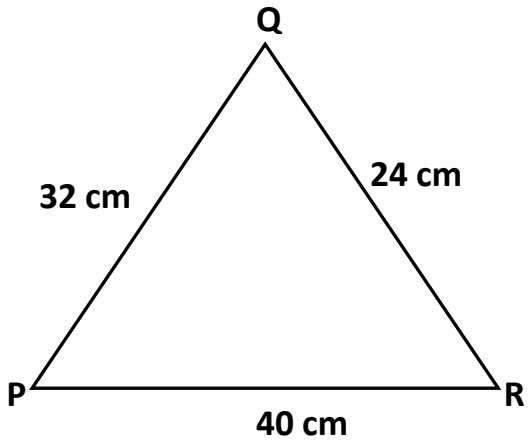


Determine the value of x.

Statement	Reason
$\frac{AB}{DE} = _____$	_____
_____ = _____	
_____ = _____	
_____ = _____	

(3)

8.2 In ΔPQR, PQ =32 cm, QR = 24 cm and PR = 40 cm.

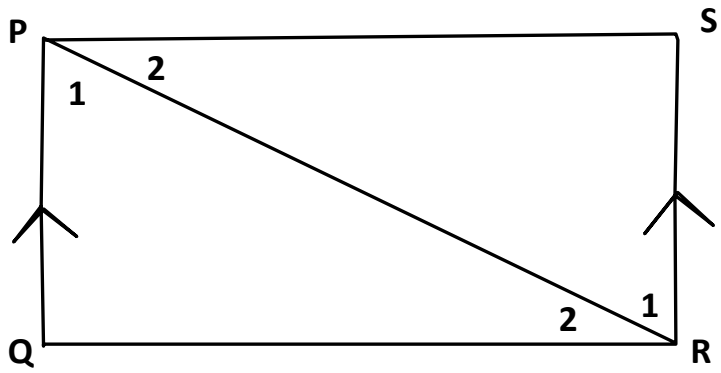


Determine whether ΔPQR is a right-angled triangle, or not.

(3)
[6]

QUESTION 9

9.1 The diagram below shows rectangle PQRS with PQ ∥ SR and $\hat{Q} = \hat{S}$.

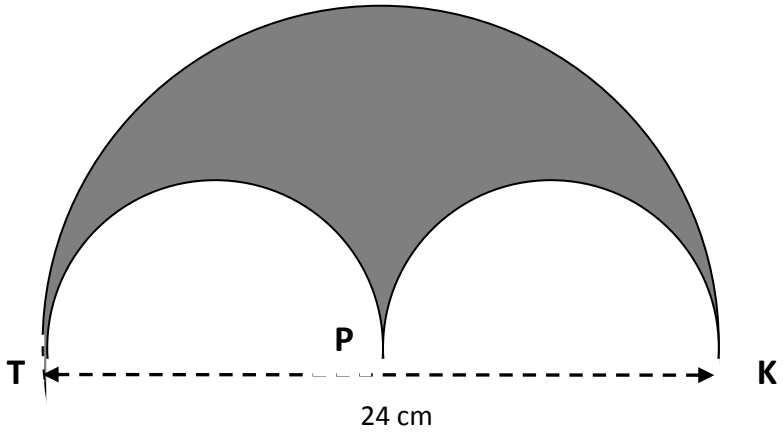


Prove that Δ PQR ≡ ΔPSR.

Statement	Reason
In Δ PQR and ΔPSR.	
_____	
_____	
_____	
_____	

(5)

9.2 TK is the diameter of the large semi-circle with centre P. TP and PK is the diameter of the two smaller semi-circles.TK = 2TP = 24 cm. $\pi = 3{,}14$.



Complete and calculate the perimeter of the shaded region.

$\frac{1}{2}$ Circumference of large circle = $\frac{1}{2} \times$ _____
= _____
= _____

$2 \times \frac{1}{2}$ Circumference of smaller circles = _____
= _____
= _____

∴ Perimeter of shaded region = _____
= _____ (6)

[11]

QUESTION 10

Construct triangle KLM with $\widehat{K} = 120°$, KL = 8 cm and MK = 6 cm.

(2)
[2]

TOTAL: 100

END