



SASTRI COLLEGE
DEPARTMENT OF MATHEMATICS
GRADE 8

MID YEAR EXAMINATION 2018

Duration: 2hrs Marks: 120

INSTRUCTIONS:

- This exam comprises 7 pages and 9 questions.
- Calculators are NOT permitted.
- Show all working details

QUESTION ONE

Select the correct answer from the options given.

[5]

- 1.1 Complete the sequence: $-8 ; -4 ; 0 ; 4 ; \underline{\hspace{1cm}} ; 12$. (1)
- A. 4
B. -8
C. 12
D. 8
- 1.2 An equilateral triangle has: (1)
- A. three sides unequal in length.
B. a right angle.
C. three equal sides with each angle measuring 60° .
D. one obtuse angle
- 1.3 $2x + 2 = 10$ will be true if $x = \underline{\hspace{1cm}}$ (1)
- A. 4
B. 7
C. 6
D. -4
- 1.4 There are $\underline{\hspace{1cm}}$ terms in the following expression: (1)
- $$(2x + 3) + x^2 + 5$$
- A. 4
B. 3
C. 2
D. 1

- 1.5 Complete the statement: (1)
 In any _____ triangle, the _____ is equal to the sum of the squares of the other two sides.
- A. isosceles, hypotenuse squared
 - B. right-angled, hypotenuse doubled
 - C. equilateral, hypotenuse squared
 - D. right-angled, square of the hypotenuse

QUESTION TWO

[11]

Simplify each of the following completely. Indicate ALL working.

- 2.1 $5 - 3 - 6 =$ (1)
- 2.2 $-2(10) + (5 \div 5) =$ (3)
- 2.3 $\frac{8^2}{\sqrt[3]{-8}}$ (3)
- 2.4 $\sqrt{\sqrt{81} \div (-9 \times 1)}$ (4)

QUESTION 3

[8]

Use PRIME FACTORIZATION to answer the following.

- 3.1 Determine the **HCF AND LCM** of 14 and 50. (4)
- 3.2 $\sqrt[3]{729}$ (4)

QUESTION 4

[10]

4.1 **ADD:**

$$\begin{array}{r} 2x^2 + 5x + 6 \\ 5x^2 - 7x + 8 \\ \hline x^2 + x \\ \hline \end{array}$$

4.2. **SUBTRACT:**

$$\begin{array}{r} 4y^2 - y + 14 \\ 6y^2 - 4y + 2 \\ \hline \\ \hline \end{array}$$

(3x2)

- 4.3 Given: $a = 2$; $b = -3$ and $c = \frac{1}{2}$, determine the value of:

4.3.1 abc (2)

4.3.2 $\frac{3a}{b}$ (2)

QUESTION 5**[20]****5.1 Given the expression:** $-4a^2 - 3a + 5 + a^3 - 2a^4$

5.1.1 Identify the constant. (1)

5.1.2 What is the degree of the above expression? (1)

5.1.3 Write down the coefficient of a^4 . (1)5.1.4 Arrange the expression in descending powers of a . (2)**5.2 SIMPLIFY**

5.2.1 $2x^0 + 2 =$ (2)

5.2.2 $4pq \times 2pq^2 =$ (3)

5.2.3
$$\frac{6a^2bc^4}{-12abc^6}$$
 (3)

5.2.4 $-(3x^2y)^3$ (3)

5.2.5
$$\frac{\sqrt{16m^8}}{10m^8 + 2m^8}$$
 (4)

QUESTION 6**[10]****SOLVE FOR x IN EACH THAT FOLLOW.**

6.1 $-10x = 100$ (2)

6.2 $2(x + 4) = 16 + 3x$ (3)

6.3 $2^x = 4$ (2)

6.4 Jody has double as much airtime as Maria. If they have R93 altogether, how much airtime does Jody have? (3)

Use an equation to solve the word problem above.

(HINT: Let Maria = x)

QUESTION 7

Study the pattern below and answer the set questions.



PATTERN 1



PATTERN 2



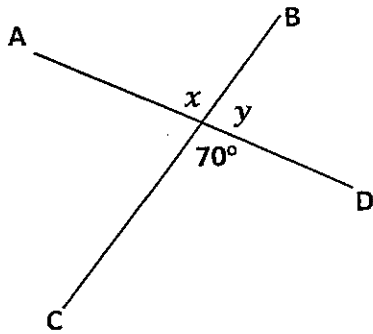
PATTERN 3

- 7.1 How many stars would the next pattern have? (2)
- 7.2 Provide the general rule for the pattern above. (2)
- 7.3 Which pattern will have 14 stars? (3)
- 7.4 How many stars will the 20th pattern have? (3)

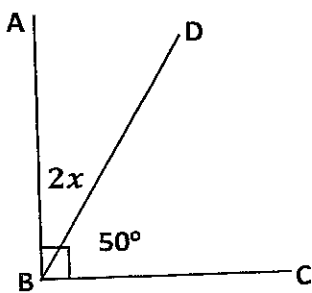
QUESTION 8

SOLVE FOR THE UNKNOWN ANGLES, PROVIDE REASONS AND SHOW ALL WORKING

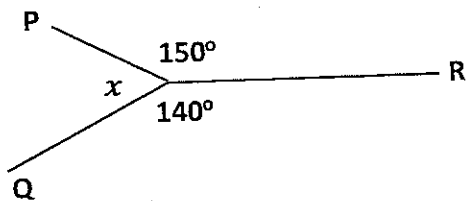
8.1 (4)



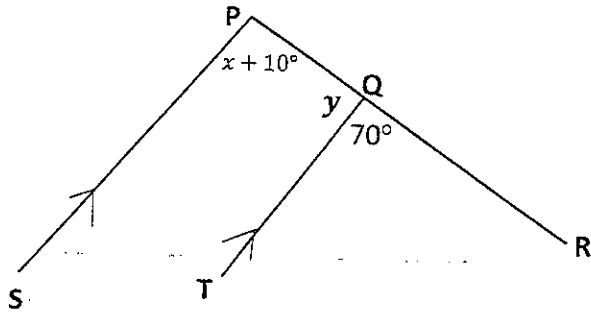
8.2 (3)



8.3 (3)

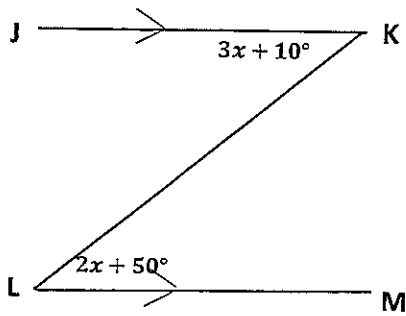


8.4



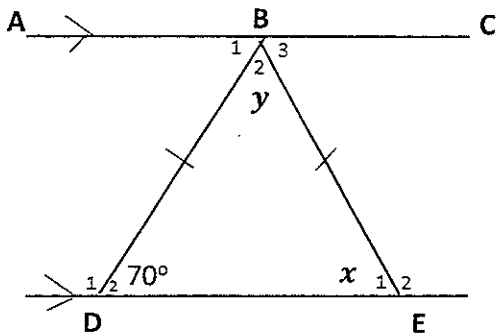
(5)

8.5



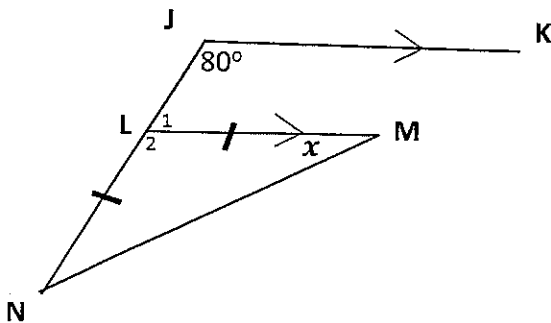
(3)

8.6



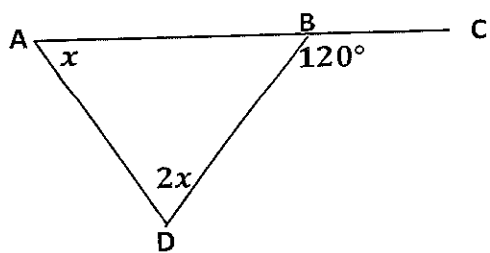
(4)

8.7



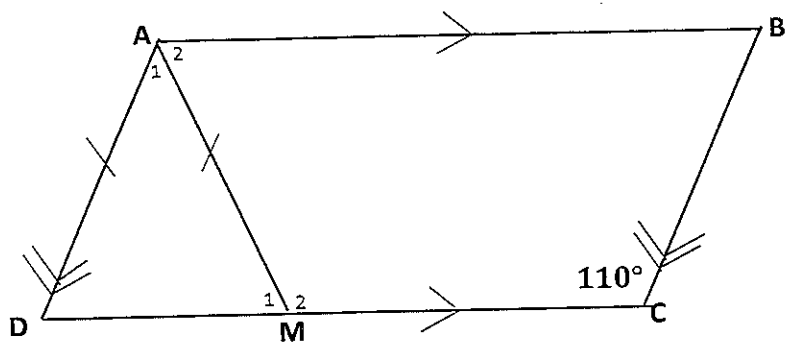
(6)

8.8



(4)

8.9



(6)

$AD \parallel BC$ and $AB \parallel CD$.

$AD = AM$

Calculate \hat{BAD}

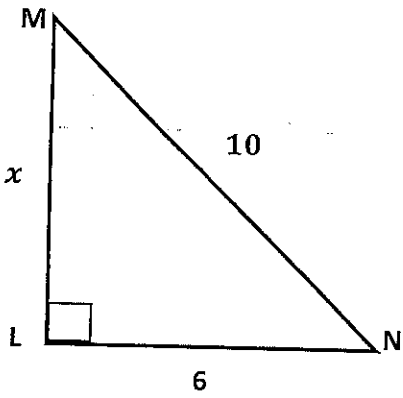
Please turn over for Question 9

QUESTION 9

SOLVE FOR THE LENGTH OF THE UNKNOWN SIDE.

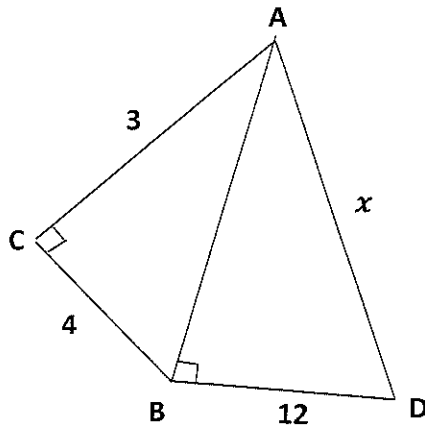
[8]

9.1



(3)

9.2



(5)

Total : 120

