B.K. BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS
A CBSE DAY–CUM–BOYS' RESIDENTIAL SCHOOL

POST MID-TERM (2025-26)
MATHEMATICS

Class: VII **Time: 1 hr.**
**Date: 09.01.26** **Max Marks: 25**
Admission no: **Roll no:**

General Instructions:
- This question paper consists of five sections
- Section A consists of multiple-choice questions of 1 mark each. Section B consists of 2-mark questions and Section C consists of 3-mark questions.
- Attempt all questions. All answers must be correctly numbered as in the question paper and written in the answer sheet.
- Write neatly and draw diagrams wherever necessary.

A. Choose the correct answer: **1 x 5 = 5**

1. What is the value of (-1) raised to an even number?
   a) -1 **b) 1** c) 0 d) None of these

2. If $2^3 \times 2^4 = 2^?$
   a) 3 b) 4 c) 1 **d) 7**

3. A/an _____ connect a vertex of a triangle to the mid-point of the opposite side.
   a) Altitude **b) median** c) vertex d) none of these

4. In the Pythagoras property, the triangle must be _____ .
   a) obtuse-angled b) acute-angled **c) right-angled** d) zero

5. If two angles of a triangle are 80˚ and 40˚, what is the measure of the third angle?
   a) 60˚ b) 30˚ c) 40˚ d) 20˚
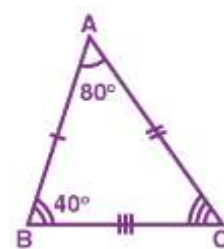
B. Do as directed **2 x 4 = 8**

6. a) Express 512 using the exponential notation

   512÷2=256
   256÷2=128
   128÷2=64
   64÷2=32
   32÷2=16
   16÷2=8
   8÷2=4

$4 \div 2 = 2$
$2 \div 2 = 1$

There are 9 divisions, which means 512 is the 9th power of 2, or 2^9

b) Find the value of $(4^0 + 4^1) \times 2^2$
$4^0 = 1$
$4^1 = 4$
$2^2 = 4$

$(4^0 + 4^1) \times 2^2 = (1 + 4) \times 4$
$= 5 \times 4$
$= 20$

7. The numbers are given below. Express them in the standard form.
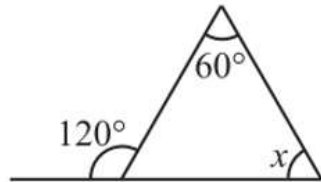   a) 1,28,64,00,000   (b) 2,39,247

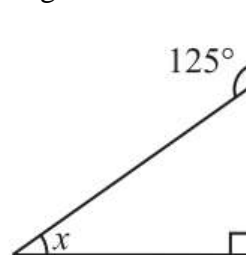The numbers provided can be expressed in standard (scientific) form as follows:

a) 1,28,64,00,000 is 1.2864×10^9

b) 2,39,247 is 2.39247×10^5

8. Find the value of the unknown interior angle x in the following figures.

(a)

125°

(b)

9. Is there a triangle whose sides have lengths 10.2 cm, 5.8 cm and 4.5 cm?
   Prove it.
Suppose such a triangle is possible.
Then the sum of the lengths of any two sides would be greater than the length of the third side.
 Let us check this.
$4.5 + 5.8 > 10.2$ Yes
$5.8 + 10.2 > 4.5$ Yes
$10.2 + 4.5 > 5.8$ Yes
Therefore, the triangle is possible.

C. **Solve the following**   **3 x 4 = 12**

10. Simplify $[125 \times t^8] \div [5^2 \times 10 \times t^4]$

$(125 \times t^8)/(5^2 \times 10 \times t^4)$
Let's express 125 and 10 in terms of their prime factors as shown below,

$= (5^3 \times t^8)/(5^2 \times 5 \times 2 \times t^4)$

$= (5^3 \times t^8)/(5^{2+1} \times 2 \times t^4)$ [Since, $a^m \times a^n = a^{m+n}$]

$= (5^3 \times t^8)/(5^3 \times 2 \times t^4)$

$= (5^{3-3} \times t^{8-4})/2$ [Since, $a^m/a^n = a^{m-n}$]

$= (5^0 \times t^4)/2$

$= 1 \times t^4/2$ [Since, $a^0 = 1$]

$= t^4/2$

11. A tree is broken at a height of 5 m from the ground and its top touches the ground at a distance of 12 m from the base of the tree. Find the original height of the tree.

12. Find x so that $(5)^{x+1} \times (5)^5 = (5)^7$

$(5)^{x+1} \times (5)^5 = (5)^7$

$(5)^{x+1+5} = (5)^7$

Using $a^m \times a^n = a^{m+n}$

$(5)^{x+6} = (5)^7$

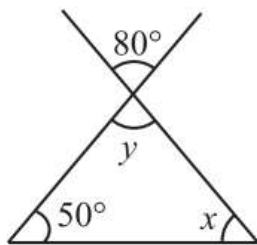On both sides, powers have the same base, so their exponents must be equal.
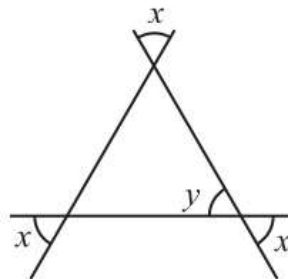
Therefore, $x + 6 = 7$

$x = 7 - 6$

$\quad = 1$

$x = 1$.

13. Find the values of the unknowns x and y in the following diagrams

(a)

(b)