Class: VIII SUMMATIVE ASSESSMENT TERM II

2025-26 MATHEMATICS - ANSWER KEY Score: 40

Section A (1 Score each)

1. **C) -5**
   - **Explanation:** When adding a positive integer to a negative integer, we find the difference between their absolute values and keep the sign of the number with the larger absolute value ($8 - 3 = 5$, and since 8 is negative, the result is -5).
2. **B) Statement I is false, Statement II is true.**
   - **Explanation:** $\frac{1}{3}$ cannot be written as a fraction with a power of 10 as the denominator (terminating decimal). Its decimal form is the repeating decimal $0.333...$.
3. **B) 4 cm**
   - **Explanation:** The diameter is double the radius. Therefore, Radius = Diameter $\div 2 = 8 \div 2 = 4$ cm .
4. **A) 6**
   - **Explanation:** To find x, divide 18 by 3. $x = \frac{18}{3} = 6$.

Section B (2 Scores each)

5. **Construction Steps:**
   1. Draw a line segment AB of length 6 cm using a ruler.
   2. Place the compass point on A and set the width to more than half the length of the line (e.g., 4 cm). Draw arcs above and below the line.
   3. Without changing the width, place the compass point on B and draw arcs to intersect the previous arcs.
   4. Join the points of intersection with a straight line. This line is the perpendicular bisector of AB .
6. **Answer: 28 girls**

- **Explanation:** The ratio of boys to girls is $3:4$.
- Let the number of boys be $3x$ and girls be $4x$.
- Given boys = 21, so $3x = 21 \Rightarrow x = \frac{21}{3} = 7$.
- Number of girls = $4x = 4 \times 7 = 28$.

7. **Answer: -3**
   - **Explanation:**
   - (i) $5 - 3 = 2$
   - (ii) $3 - 5 = -2$
   - (iii) $5 - 8 = -3$ (Subtracting a larger positive number from a smaller positive number results in a negative number).
8. **Answer: 0.125**
   - **Explanation:** Multiply the numerator and denominator by 125 to get a power of 10 in the denominator ($8 \times 125 = 1000$).
   - $\frac{1}{8} = \frac{1 \times 125}{8 \times 125} = \frac{125}{1000} = 0.125$.

Section C (3 Scores each)

9. **Answer:**
   - (i) **Raju's current age:** $3x$
   - (ii) **Equation:** After 10 years, Son's age = $x + 10$, Raju's age = $3x + 10$. Sum = $(x + 10) + (3x + 10) = 60 \Rightarrow 4x + 20 = 60$
   - (iii) **Current ages:** $4x = 60 - 20 = 40$ $x = \frac{40}{4} = 10$. Son's age = 10 years. Raju's age = $3 \times 10 = 30$ years .
10. **A)**
    - (i) **Figure:** A circle with center O, a chord AB, and a perpendicular OM from center to chord.
    - (ii) **Calculation:** Perpendicular from center bisects the chord. So, half of chord length = $\frac{8}{2} = 4$ cm. Distance from center (height) = 3 cm. Using Pythagoras theorem for the radius (hypotenuse): $\text{Radius}^2 = 3^2 + 4^2 = 9 + 16 = 25$

      $\text{Radius} = \sqrt{25} = 5$ cm .

    OR

B) Construction:

1. Draw a triangle with sides 4 cm, 5 cm, and 6 cm.
2. Draw the perpendicular bisectors of any two sides of the triangle.
3. Mark the point where these bisectors meet as the circumcentre.
4. Place the compass on the circumcentre, measure the distance to any vertex (radius), and draw the circle passing through all three vertices .

11. **Answer:**

- (i) **Lengths of sides:** Let the sides be $3x, 4x, 5x$. Perimeter = $3x + 4x + 5x = 12x$. Given Perimeter = 36 cm. $12x = 36 \Rightarrow x = 3$. Sides are: $3(3) = 9$ cm, $4(3) = 12$ cm, $5(3) = 15$ cm.
- (ii) **Right-angled triangle? Yes.** Check using Pythagoras theorem ($a^2 + b^2 = c^2$): $9^2 + 12^2 = 81 + 144 = 225$. $15^2 = 225$. Since $9^2 + 12^2 = 15^2$, it is a right-angled triangle .

12. **A)**

- (i) $\frac{3}{10} + \frac{5}{100} = 0.3 + 0.05 = 0.35$
- (ii) $\frac{1}{2} + \frac{1}{4} = 0.5 + 0.25 = 0.75$.

OR

B)

- (i) $\frac{1}{10} + \frac{1}{100} + \frac{1}{1000} = 0.1 + 0.01 + 0.001 = 0.111$
- (ii) $\frac{1}{9} = 0.111...$ (obtained by dividing 1 by 9) .

Section D (4 Scores each)

13. **A)**

- (i) **Construction:** Draw a line, mark a point, and construct an equilateral triangle (or use the standard 60° construction) to get a 60° angle.
- (ii) **Construction:** Draw the angle bisector of the 60° angle. The resulting two angles will be 30° each .
- (iii) **Proof:** From a point on the bisector, draw perpendiculars to the arms. Compare the two resulting triangles. They are congruent (common hypotenuse, equal angles), proving the perpendicular distances are equal .

OR

B) Construction:

1. Draw a line segment AC = 6 cm.
2. Construct the perpendicular bisector of AC.
3. Mark the midpoint O. Since the other diagonal is 8 cm, cut off length 4 cm ($8 \div 2$) from O on both sides of the bisector (points B and D).
4. Join A, B, C, and D. ABCD is the required rhombus.
5. **Measure:** The side length will be 5 cm (calculated via Pythagoras: $\sqrt{3^2 + 4^2} = 5$) .

14. **Answer:**

- (i) **Expression for length:** $l = w + 5$.
- (ii) **Equation:** Perimeter $P = 2(l + w)$. $50 = 2(w + 5 + w)$ $50 = 2(2w + 5)$ $50 = 4w + 10$
- (iii) **Solution:** $4w = 50 - 10 = 40$ $w = 10$. Width = 10 m, Length = $10 + 5 = 15$ m .

15. **A)**

- (i) $-10 - 5 = -15$ (Subtracting a positive number from a negative number moves further left on the number line).
- (ii) $-10 - (-5) = -10 + 5 = -5$ (Subtracting a negative is adding a positive).
- (iii) **Speed calculation:** $v = 49 - 9.8t$ At $t = 6$, $v = 49 - 9.8(6) = 49 - 58.8 = -9.8$ m/s.

  Interpretation: The negative sign indicates the object is moving downwards .

OR

B)

- (i) **Solution:** $3x + 5 = 20$ $3x = 15$ $x = 5$.
- (ii) **Number Line:** Start at 0. Move 4 right (+4). Move 7 left (-7). Operation: $4 - 7 = -3$. Arrive at -3.

16. **Answer:**

- (i) **Width:** Ratio $L : W = 3 : 2$. $L = 18$. $3x = 18 \Rightarrow x = 6$. $W = 2x = 2 \times 6 = 12$ cm.
- (ii) **New Length:** New Width $W' = 10$. Ratio $3 : 2$. $2y = 10 \Rightarrow y = 5$. New Length $L' = 3y = 3 \times 5 = 15$ cm.

- (iii) **Proof:** If sides are in ratio $a : b$, let the sides be ak and bk (where k is a constant). Area = $ak \times bk = ab(k^2)$. Since k^2 is a number, the area is a multiple of the product ab .