

PVG's  
**Muktangan English School & Jr. College, Pune - 9**  
**Unit Test - II (2024-25)**  
**STD IX**

Subject : Mathematics (Part I)

Marks - 20

Date : 28.01.2025

Time : 9.30 am to 10.45 am

**Q1. A) Choose the correct alternative alphabet. (Eg. i - C) : (2)**

i) Which of the following algebraic equations do not represent a linear equation in two variables?

A)  $\sqrt{2}x + \sqrt{5}y = 16$

B)  $\sqrt{x} + 3\sqrt{y} = 12$

C)  $\frac{1}{2}x + \frac{1}{5}y = 4$

D)  $x - \frac{1}{2}y = -3$

ii) The reduced form of 64 : 100 is \_\_\_\_\_.

A)  $\frac{8}{12.5}$

B)  $\frac{2}{25}$

C)  $\frac{16}{25}$

D)  $\frac{4}{25}$

**B) Attempt the following subquestions : (2)**

i) If  $x = 1$  is a solution of equation  $x + 7 = m$ , then find the value of  $m$ .

ii) Using the property  $\frac{a}{b} = \frac{ak}{bk}$ , find  $x$  if

$$\frac{5}{7} = \frac{x}{3.5}$$

**Q2. A) Attempt any one of the following activities : (2)**

i) Write the ratio of first quantity to second quantity by filling in the boxes given below :

5 dozen : 120 units

→ **Solution :**

5 dozen =  $5 \times 12 =$   units \_\_\_\_\_ [1]

∴ Ratio = 5 dozen : 120 units

=  $\frac{5 \text{ dozen}}{120 \text{ units}}$

=  $\frac{\text{input}}{120}$  \_\_\_\_\_ from [1]

=

∴ Ratio =  :

ii) Frame linear equation in two variables representing the information :

'Difference between two complementary angles is 6' by completing the activity below :

→ **Solution :**

Let x and y be the two complementary angles such that  $x > y$ .

∴ according to the first condition,

$$x + \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

and according to the second condition,

$$x - \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

**B) Attempt any two of the following subquestions : (4)**

i) If  $\frac{a}{b} = \frac{15}{7}$ , then find the value of  $\frac{b}{a+b}$

ii) If a, b, c are in continued proportion such that  $a = 3$ ,  $c = 27$ , then find the value of b.

iii) Solve the given linear simultaneous equations using substitution method to find the value of y.

$$3y + 2x = 12; \quad x = 9 - y.$$

**Q3. A) Attempt any one of the activity given below : (3)**

i) Solve the given simultaneous linear equations by completing the activity below :

→ **Solution :**

$$5x - y = 11 \text{ ————— [1];} \quad 4x + y = 7 \text{ ————— [2]}$$

Adding equation [1] and [2]

$$5x - y = 11$$

$$+ 4x + y = 7$$

$$\hline 9x = \boxed{\phantom{00}}$$

$$\therefore \text{ On solving, } x = \boxed{\phantom{00}}$$

Substitute  $x = \boxed{\phantom{00}}$  in equation [2]

$$\therefore 4 \times \boxed{\phantom{00}} + y = 7$$

$$\therefore \boxed{\phantom{00}} + y = 7 \quad y = \boxed{\phantom{00}}$$

$$\therefore (x, y) = (\boxed{\phantom{00}}, \boxed{\phantom{00}}) \text{ is the solution}$$

- ii) If  $5m - n = 3m + 4n$ , then find the value of  $\frac{3m + 4n}{3m - 4n}$  by completing the activity given below :

→ **Solution :**

$$5m - n = 3m + 4n \text{ ————— (given)}$$

$$\therefore \frac{m}{n} = \frac{\boxed{\quad}}{\boxed{\quad}} \text{ ————— on solving ——— [1]}$$

Multiply equation [1] by  $\frac{3}{4}$  on both sides,

$$\therefore \frac{m}{n} \times \frac{3}{4} = \frac{5}{2} \times \frac{3}{4}$$

$$\therefore \frac{3m}{4n} = \frac{\boxed{\quad}}{8}$$

$$\therefore \frac{3m + 4n}{3m - 4n} = \frac{\boxed{\quad} + 8}{\boxed{\quad} - 8} \text{ ————— (By } \boxed{\quad} \text{ )}$$

$$\therefore \frac{3m + 4n}{3m - 4n} = \frac{\boxed{\quad}}{\boxed{\quad}}$$

**B) Attempt any one of the following subquestions : (3)**

- i) If  $\frac{x}{x + 2y + z} = \frac{y}{y + 2z + x} = \frac{z}{z + 2x + y}$  and  $x + y + z \neq 0$ , then show that each ratio is equal to  $\frac{1}{4}$ .

- ii) Ajay is younger than Anju by 7 years. If the sum of their ages is 35. Find Anju's present age.

**Q4. Attempt any one of the following subquestions : (4)**

- i) Solve the given simultaneous linear equations :

$$\frac{x}{3} + 5y = 13; 2x + \frac{y}{2} = 19$$

- ii) Solve the following :

$$\frac{\sqrt{x + 13} + \sqrt{x - 1}}{\sqrt{x + 13} - \sqrt{x - 1}} = 3$$



