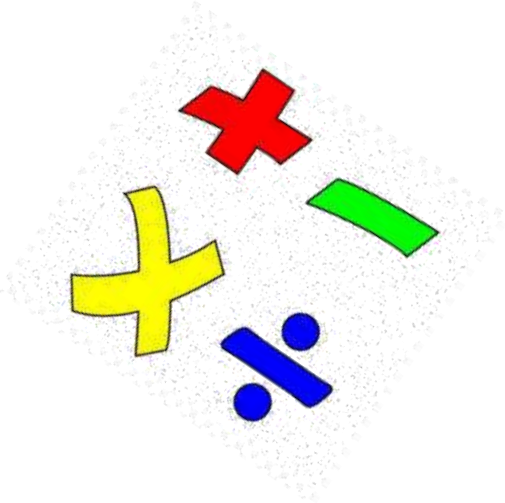
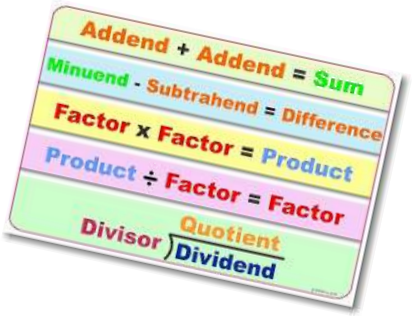
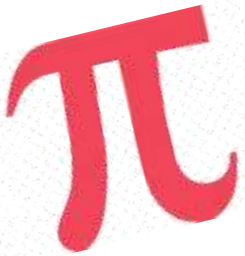




Math

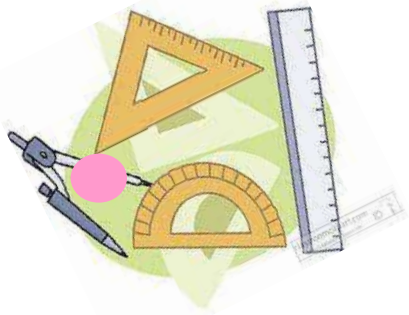
Prep 2 2nd term



March Revision

Teacher

Eman Samir



Unit 1

Q1 Choose the correct answer :-

1) If $x, 3, 4, 6$ are proportional, what is the value of x ?

a) 0 b) 1 c) 2 d) 3

2) What is the second proportional for the numbers $4, 6, 12$?

a) 18 b) 8 c) 6 d) 2

3) If $7x = 3y$, what is the value of $\frac{y}{x}$?

a) $\frac{7}{3}$ b) $\frac{3}{10}$ c) $\frac{10}{3}$ d) $\frac{3}{7}$

4) If $2x = 7y$, what is the value of $\left(\frac{x}{y}\right)^{-1}$?

a) $\frac{2}{7}$ b) $\frac{7}{2}$ c) $\frac{49}{4}$ d) $\frac{4}{49}$

5) If $5x - 3y = 0$, what is the value of $\frac{x}{y}$?

a) $\frac{5}{3}$ b) $\frac{3}{5}$ c) $-\frac{3}{5}$ d) $-\frac{5}{3}$

6) If $5a, 2, 3b, 7$ are four proportional quantities. What is the value of: $\frac{a}{b}$?

a) $\frac{3}{7}$ b) $\frac{6}{35}$ c) $\frac{3}{5}$ d) $\frac{3}{2}$

7) If $\frac{a}{5} = \frac{b}{3}$, what is the value of: $\frac{a+b}{a-b}$?

a) $\frac{8}{3}$ b) $\frac{5}{3}$ c) $\frac{1}{4}$ d) 4

8) If $\frac{a}{3} = \frac{b}{4}$, what is the value of: $\frac{3a-b}{b-a}$?

a) $\frac{4}{3}$ b) $\frac{3}{4}$ c) $\frac{1}{5}$ d) 5

9) If $\frac{a}{3} = \frac{b}{2}$, what is the value of $(6a - 9b - 1)^{2026}$?

a) 2026 b) -2026 c) 1 d) -1

10) If $\frac{a}{3} = \frac{b}{5}, 5a - 2b = 20$, what is the value of: b ?

a) 3 b) 5 c) 15 d) 20

11) If $\frac{3a}{5b} = \frac{1}{2}$, what is the value of: $\frac{a}{b}$?

a) $\frac{6}{5}$ b) $\frac{5}{6}$ c) $\frac{2}{3}$ d) $\frac{3}{2}$

12) If $4x^2 = 9y^2$, what is the value of: $\frac{x}{y}$?

a) $\frac{9}{4}$ b) $\frac{3}{2}$ c) $\pm\frac{2}{3}$ d) $\pm\frac{3}{2}$

13) If $\frac{5a-7b}{2a+3b} = 0$, what is the value of: $\frac{b}{a}$?

a) $\frac{5}{7}$ b) $\frac{7}{5}$ c) $\frac{3}{10}$ d) $\frac{10}{3}$

14) If $\frac{a+2b}{a-b} = \frac{2}{3}$, what is the value of: $\frac{b}{a}$?

a) $\frac{1}{8}$ b) 8 c) $-\frac{1}{8}$ d) -8

15) If $4x^2 + 9y^2 = 12xy$, what is the value of: $\frac{x}{y}$?

a) $\frac{3}{2}$ b) $\frac{2}{3}$ c) $-\frac{2}{3}$ d) $-\frac{3}{2}$

16) If $3a = 6\ b = 8c$, then $a : b : c$ equals .....

a) $3 : 4 : 8$ b) $3 : 6 : 8$ c) $8 : 4 : 3$ d) $8 : 6 : 3$

17) If $\frac{x}{6} = \frac{y}{10}$, what is the value of $\frac{x}{y}$?

a) $\frac{5}{3}$ b) $\frac{5}{6}$ c) $\frac{3}{5}$ d) $\frac{5}{10}$

18) If $a, b, 2, 3$ are proportional, what is the value $\frac{b}{a}$?

a) $\frac{3}{2}$ b) $\frac{2}{3}$ c) 3 d) 2

19) If $\frac{a}{b} = \frac{2}{7}$, what is the value of $\frac{2b}{7a}$?

a) $\frac{4}{49}$ b) $\frac{2}{7}$ c) 1 d) $\frac{49}{4}$

20) If $a, x, b, 2x$ are proportional, what is the value $\frac{a}{b}$?

a) 2 b) $\frac{1}{2}$ c) $\frac{1}{3}$ d) $\frac{1}{4}$

21) If a, b, c, d are proportional quantities, then:

a) $\frac{b}{d} = \frac{a}{c}$ b) $\frac{a}{c} = \frac{d}{b}$ c) $\frac{b}{c} = \frac{a}{d}$ d) $ab = cd$

22) If $\frac{5}{x} = \frac{6}{y}$, what is the value of $\frac{2x+y}{y-x}$?

a) 5 b) $\frac{11}{16}$ c) $\frac{16}{11}$ d) 16

23) If $\frac{a}{b} = \frac{c}{d} = \frac{2}{3}$, then $\frac{a+c}{b+d}$ equals:

a) $\frac{4}{3}$ b) $\frac{2}{3}$ c) $\frac{4}{9}$ d) $\frac{1}{3}$

24) If $\frac{a}{2} = \frac{b}{3} = \frac{c}{5}$, then each ratio equals:

a) $\frac{a+b+c}{3}$ b) $\frac{a+2b-c}{3}$ c) $\frac{a-b+c}{10}$ d) $\frac{a-b}{5}$

25) If $\frac{4}{x} = \frac{7}{y} = \frac{a}{y-x}$, what is the value of a ?

a) -3 b) 3 c) 11 d) 28

26) If $m - n = 6$, $\frac{3}{m} = \frac{5}{n}$, then what is the value of m ?

a) 15 b) 9 c) -9 d) -15

27) If $\frac{x}{5} = \frac{y}{a} = \frac{3x-2y}{9}$, what is the value of a ?

a) 6 b) 2 c) 3 d) 9

28) What is the mean proportional between a, c ?

a) $\sqrt{a+c}$ b) $\frac{a+c}{2}$ c) $\pm\sqrt{ac}$ d) ac

29) Which of the following numbers are proportional?

a) 2, 4, 6 b) 3, 5, 8 c) 3, 9, 27 d) 1, 4, 9

30) If a is the first proportional for the two numbers 4,16 , what is the value of a ?

a) 8 b) 4 c) 2 d) 1

31) If b is a mean proportional between 3,12 , what is the value of b ?

a) ± 4 b) ± 6 c) ± 9 d) ± 36

32) If 6 is the mean proportional between the two numbers m,2, what is the value of m ?

a) 8 b) 12 c) 18 d) 36

33) If x is the positive mean proportional between 24 , 54 , what is the value of x ?

a) 15 b) 36 c) 39 d) 78

34) If 2 b is a mean proportional between a , $5c$, what is the value of: $\frac{b^2}{ac}$?

a) $\frac{5}{4}$ b) $\frac{2}{5}$ c) $\frac{3}{5}$ d) 10

35) If x, y, z are in continued proportion, What is the value of x ?

a) $\pm\sqrt{yz}$ b) yz c) $\frac{y^2}{z}$ d) $\frac{y}{z}$

36) What is the third proportional for the numbers $x^3, 2x^2$?

a) $2x$ b) $4x$ c) x^2 d) $2x^5$

37) If 7 , x , $\frac{1}{y}$ are in proportion, What is the value of: x^2y ?

a) 7 b) $\frac{1}{7}$ c) 14 d) 49

38) If b is a mean proportional between $(12-\sqrt{32}), (3+\sqrt{2})$, what is the value of b ?

a) $\pm\sqrt{7}$ b) $\pm2\sqrt{7}$ c) $\pm4\sqrt{7}$ d) $\pm16\sqrt{7}$

39) If $\frac{a}{b}=\frac{b}{c}=3$, then which of the following is correct?

a) $a=3c$ b) $a=9b$ c) $a=9c$ d) $a=6c$

40) If $\frac{a}{b}=\frac{b}{c}=\frac{c}{5}=2$, what is the value of a ?

a) 5×2^2 b) 40 c) 10 d) 2×5^3

41) If $\frac{a}{b}=\frac{b}{c}=\frac{c}{d}=2$,what is the value of $\frac{a}{d}$?

a) 2 b) 4 c) 8 d) 16

42) The mean proportional between $(x-2)$, $(x+2)$ is :

a) $\sqrt{x+2}$ b) x^2-4 c) $\pm\sqrt{x^2-4}$ d) $\sqrt{x^2-4}$

43) If $\frac{a}{b}=\frac{b}{c}=\frac{c}{d}=3$, then what is the value of : $\frac{a+b+c}{b+c+d}$?

a) 1 b) 3 c) 9 d) 6

44) If $\frac{a}{b}=\frac{b}{c}=\frac{c}{d}=4$, then what is the value of $\frac{a+d}{d}$?

a) 65 b) 49 c) 37 d) 25

Q2 Answer the following :-

1) If y : x = 2 : 5 , find the value of (10x + 3y) : (5x +2y).

2) If (2x-3) : (x-5) = 1 : 4 find the value of X.

3) If $4x^2 + 9y^2 = 12xy$, find the value of $\frac{x}{y}$.

4) Find the number if its square is added to both terms of the ratio 7 : 11 it becomes 4 : 5

5) If $\frac{x}{2} = \frac{y}{4} = \frac{z}{5}$, x + y -2z = 12 , find the value of z.

6) If a , b , c , d are proportional , prove that $\frac{a+b}{b} = \frac{c+d}{d}$

7) If b is the middle between a , c prove that $\frac{a-c}{a+b} = \frac{a-2b+c}{a-b}$

8) Find the value of x , y if x , 12 , 6 , y in continued proportion

9) If b is the middle between a , c prove that $\frac{4a^2-9b^2}{4b^2-9c^2} = \frac{a}{c}$

10) Find the value of x , y if 2 , x , y , 54 in continued proportion

11) Find the value of x if x , 24 , 144 are proportional

12) If $\frac{a}{4x+y} = \frac{b}{x-4y}$ prove that $\frac{a+b}{5x-3y} = \frac{a-b}{3x+5y}$

13) If $\frac{a}{2x-y} = \frac{b}{2y-x}$ prove that $\frac{2a+b}{a+2b} = \frac{x}{y}$

14) If $\frac{x}{a-b+c} = \frac{y}{b-c+a} = \frac{z}{c-a+b}$ prove that $\frac{x+y}{a} = \frac{y+z}{b}$

15) If $\frac{a}{2} = \frac{b}{3} = \frac{c}{4} = \frac{2a-b+5c}{3x}$ find the value of x.

Unit 2

Q1 Choose the correct answer :-

1) If $(x-1,11)=(8,y+3)$, then $\sqrt{x+2y}=$ .....

a) 5 b) ±5 c) $\sqrt{17}$ d) 25

2) If $(3^x,\sqrt{y})=(1,4)$, then $x+y=$ .....

a) 2 b) 3 c) 16 d) 17

3) If $x>y$, $(x^3,y^2)=(1,4)$, then $xy=$ .....

a) 4 b) 2 c) -2 d) -4

4) If $(x-3,y)=(2,\sqrt{16})$, then $(y,x)=$ .....

a) $(1,4)$ b) $(5,4)$ c) $(4,1)$ d) $(4,5)$

5) If $X=\{1,2\}$, then $X\times\emptyset=$ .....

a) X b) $\emptyset$ c) $\{0\}$ d) $\{(1,0),(2,0)\}$

6) $\{3\}\times\{5\}=$ .....

a) $\{15\}$ b) $\{3,5\}$ c) $(3,5)$ d) $\{(3,5)\}$

7) If $X=\{3,5\}, Y=\{6,7\}$, then $(6,7)\in$ .....

a) $X\times Y$ b) $Y\times X$ c) X^2 d) Y^2

8) If $X=\{3\}$, then $X^2=$ .....

a) 9 b) $(3,3)$ c) $\{9\}$ d) $\{(3,3)\}$

9) If $X=\{3\}$, then $n(X^2)=$ .....

a) 1 b) 9 c) $\{3,3\}$ d) 3

10) If $n(X)=3, n(X\times Y)=12$, then $n(Y)=$ .....

a) 4 b) 9 c) 15 d) 36

11) If $n(X^2)=9$, then $n(X)=$ .....

a) 2 b) 3 c) 9 d) 81

12) If $X=\{5,7,9\}$ and $n(X\times Y)=6$, then $n(Y^2)=$ .....

a) 4 b) 6 c) 9 d) 12

13) If $X \times Y = \{(1, 4), (1, 7), (1, 8)\}$, then $n(Y^2) =$ .....

a) 1 b) 3 c) 6 d) 9

14) If $X = \{2, 3, 4, 7, 8\}$, $Y = \{1, 4, 5, 6\}$, then $n(X^2) - n(Y \times X) =$ .....

a) 5 b) 10 c) 15 d) 25

15) If $n(X^2) = 9, n(X \times Y) = 12$, then $n(Y^2) =$ .....

a) 4 b) 6 c) 9 d) 16

16) If X is a non-empty set $n(X) = n(X \times Y)$, then $n(Y) =$ .....

a) 1 b) 2 c) 3 d) 4

17) If X, Y are two sets where: $n(X \times Y) = 11$, then $n(X) + n(Y) =$ .....

a) 8 b) 9 c) 11 d) 12

18) If X, Y are two sets where: $n(X^2) + n(X \times Y) = 5$, then $n(Y^2) =$ .....

a) 25 b) 16 c) 4 d) 1

19) To which cartesian product from the following , the point $\left(\frac{1}{2}, \sqrt{5}\right)$ belongs to?

a) $\mathbb{N} \times \mathbb{N}$ b) $\mathbb{Z} \times \mathbb{Z}$ c) $\mathbb{Q} \times \mathbb{Q}$ d) $\mathbb{R} \times \mathbb{R}$

20) Which of the following ordered pairs belongs to $\mathbb{Q} \times \mathbb{Q}$?

a) $(\sqrt[3]{1}, \sqrt{2})$ b) $(-\sqrt[3]{16}, -5)$ c) $\left(\sqrt{\frac{4}{9}}, -\frac{1}{2}\right)$ d) $\left(\sqrt[3]{27}, -\sqrt{\frac{1}{8}}\right)$

21) If the function $f: X \longrightarrow Y$, then the range of the function f is a subset of .....

a) $X \times Y$ b) X c) $Y \times X$ d) Y

22) If $f(x) = x^2 - x + 3$, what is the value of $f(-2)$?

a) -2 b) -1 c) 5 d) 9

23) If $f(x) = x^2 - \sqrt{2}x$, what is the value of $f(\sqrt{2})$?

a) 4 b) 2 c) 6 d) 0

24) If the function $f:\mathbb{Z}\longrightarrow\mathbb{Z}$ where $f(x)=x^2$, then $f(2)+f(-2)=$ .....

a) 0 b) 4 c) 8 d) -8

25) If $f(x)=x^2$, $g(x)=x+4$,What is the value of : $5f(2)+2g(5)$?

a) 18 b) 20 c) 38 d) 70

26) If $f(x)=kx+8, f(2)=0$,What is the value of k ?

a) 8 b) 6 c) 4 d) -4

27) If $f(x)=x-5$, and $\frac{1}{2}f(a)=3$, What is the value of a ?

a) 2 b) 8 c) 11 d) 16

28) If $(-1,0)$ belongs to the function f where $f(x)=mx+2$,What is the value of m ?

a) 0 b) -1 c) 2 d) -2

29) If $(3,y)$ belongs to the function f where $f(x)=x+2$, what is the value of y ?

a) 5 b) 3 c) 2 d) 1

30) If (a,a) belongs to the function f where $f(x)=2x+3$, what is the value of a ?

a) 2 b) 3 c) -3 d) -2

31) If $X=\{2,4,6\}, n(Y)=4$ and the function $f:X\longrightarrow Y, f(x)=x^2-1$, then Y can be .....

a) $\{3,7,13\}$ b) $\{3,15,25,45\}$ c) $\{3,15,35\}$ d) $\{3,15,25,35\}$

32) The straight line representing the function f where $f(x)=3x-12$ cuts the x-axis at the point .....

a) $(-12,0)$ b) $(12,0)$ c) $(4,0)$ d) $(-4,0)$

33) The straight line representing the function f where $f(x)=6-2x$ cuts the y -axis at the point

a) $(0,-6)$ b) $(0,-3)$ c) $(0,3)$ d) $(0,6)$

34) The ordered pair $(1, 2)$ belongs to the function f where:

a) $f(x) = 2x - 1$ b) $f(x) = -3x + 7$
c) $f(x) = 2x + 1$ d) $f(x) = -3x + 5$

35) If $f(x) = 7$, then $f(-3) =$ .....

a) 7 b) -7 c) 21 d) -21

36) If $f(x) = 2$, then $3f(\sqrt{2}) =$ .....

a) $f(3\sqrt{2})$ b) $3\sqrt{2}$ c) 6 d) $2\sqrt{3}$

37) If $f(x) = 2$, then $f(3) - f(1) =$ .....

a) $f(2)$ b) 2 c) 0 d) 4

38) If $f: \mathbb{R} \longrightarrow \mathbb{R}$ and $f(x) = 3$, then $\frac{f(6)}{f(0)} =$ .....

a) 6 b) 1 c) 3 d) undefined

39) If $f: \mathbb{R} \longrightarrow \mathbb{R}$ and $f(x) = 7$, what is the value of $\frac{5f(4)}{10f(6)}$?

a) $\frac{1}{3}$ b) $\frac{1}{2}$ c) $\frac{7}{3}$ d) $\frac{7}{2}$

40) The function $f: \mathbb{R} \to \mathbb{R}$ where $f(x) = 5$ is represented by a straight line that intersects the y-axis at the point .....

a) $(5, 0)$ b) $(0, 5)$ c) $(-5, 0)$ d) $(0, -5)$

41) If the straight line representing the function f where $f(x) = 2x - a$ passes through the origin, then $a =$ .....

a) -2 b) 2 c) 0 d) 3

42) If the straight line representing the function f where $f(x) = kx + 4$ passes through the point $(1, 1)$, what is the value of $f(-1)$?

a) -7 b) -1 c) 1 d) 7

43) If the straight line representing the function f where $f(x) = 2x + b$ passes through the point $(-1, 5)$, what is the value of $f(0)$?

a) -7 b) -5 c) 5 d) 7

44) If the point $(k, 5)$ lies on the straight line representing the function f where $f(x) = 2x - 7$, what is the value of k ?

a) 3 b) 4 c) 5 d) 6

45) If $(5k, k)$ belongs to the function f where $f(x) = 3x + 14$, what is the value of k ?

a) 14 b) 10 c) -7 d) -1

46) If $g(x) = 4$, $f(x) = -3$, what is the perpendicular distance between the two straight lines representing the two functions f, g ?

a) 1 b) 3 c) 5 d) 7

47) Which of the following equations is an equation of the first degree in one variable?

a) $x + y = 12$ b) $2x - \frac{2}{x} = 0$ c) $2\sqrt{x} + 3 = 5$ d) $2x - 4 = 3$

48) The solution set of the equation: $5x - 7 = 2x + 5$ in $\mathbb{R}$ is .....

a) $\{4\}$ b) $\{3\}$ c) $\{5\}$ d) $\{2\}$

49) What is the solution set of the equation: $\sqrt{2}x - 1 = 1$ in $\mathbb{R}$?

a) $\{2\}$ b) $\{1\}$ c) $\{\sqrt{2}\}$ d) $\emptyset$

50) The solution set of the equation: $\frac{y+2}{3} = \frac{y-1}{2}$ in $\mathbb{R}$ is .....

a) $\{-5\}$ b) $\{7\}$ c) $\{-7\}$ d) $\{5\}$

51) Which of the following inequalities is an inequality of the first degree in one variable?

a) $x^2 - x \geq 3$ b) $0.4t - 7 < 2t$ c) $\frac{2}{t} + t > 5$ d) $3x < 2y + 5$

52) Which of the following inequalities expresses the solution set in $\mathbb{R}$ represented by the given figure?

a) $x > 3$ b) $x < 3$ c) $x \geq 3$ d) $x \leq 3$

53) Which of the following inequalities expresses the solution set in $\mathbb{R}$ represented by the given figure?

a) $-4 < x < 4$ b) $-4 \leq x < 4$ c) $-4 < x \leq 4$ d) $-4 \leq x \leq 4$

54) What is the solution set of the inequality $2x < 14$ in $\mathbb{R}$?

a) $]-\infty, 7[$ b) $]-7, \infty[$ c) $]7, \infty[$ d) $[7, \infty[$

55) What is the solution set of the inequality $3 \geq x > -2$ in $\mathbb{R}$?

a) $]-2, 3]$ b) $[-2, 3[$ c) $[-2, 3]$ d) $]-2, 3[$

56) What is the solution set of the inequality $-x > 3$ in $\mathbb{R}$?

a) $]-\infty, -3[$ b) $]-\infty, 3[$ c) $]-3, \infty[$ d) $]3, \infty[$

57) What is the solution set of the inequality $5 > -x > -3$ in $\mathbb{R}$?

a) $[-5, 3]$ b) $]-5, 3[$ c) $[-3, 5]$ d) $]-3, 5[$

58) The solution set of the inequality $-1 < x - 5 < 1$ in $\mathbb{R}$ is .....

a) $[4, 6]$ b) $]4, 6[$ c) $]4, 6]$ d) $[4, 6[$

59) The interval $[-1,2[$ is the solution set in $\mathbb{R}$ for the inequality .....

a) $-1 < x < 2$ b) $-1 < x < 2$ c) $-1 \leq x < 2$ d) $-1 \leq x \leq 2$

60) If $-2 < 2x < 6$, then $x \in$ .....

a) $]-1,3[$ b) $]-1,3]$ c) $[-1,3[$ d) $[-1,3]$

61) If $3 > x > -3$ where $x \in \mathbb{R}$, then $2x$ belongs to .....

a) $]-5,5[$ b) $[-6,6]$ c) $]-6,6]$ d) $]-6,6[$

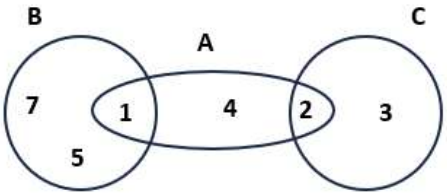
62) If $2 > x > -2$ where $x \in \mathbb{R}$, then $2x + 3$ belongs to .....

a) $[-1,7]$ b) $]-1,5[$ c) $]-1,7[$ d) $]-4,6[$

63) The number 5 belongs to the solution set of the inequality .....

a) $x > 5$ b) $x < 5$ c) $-x \geq -5$ d) $-x \geq 5$

Q2 Answer the following :-



1) Using the opposite venn diagram find :

a) $(A \cap C) \times B$

b) $(C \cup B) \times B$

2) If $A = \{1, 7, 9\}$, $B = \{2, 4, 7\}$, $C = \{1, 7\}$, find :

a) $A \times C$ and represent it by arrow diagram

b) $B \times (A \cup C)$

3) If $X = \{1, 3, 5\}$, $Y = \{1, 2, 4, 5, 6\}$ and $\mathbb{R}$ is a relation from X to Y , where $a\mathbb{R}b$ means $a+b=7$, for each $a \in X$, $b \in Y$

a) Write the relation $\mathbb{R}$ as a set of ordered pairs

b) Write the relation $\mathbb{R}$ in a table

c) Represent the relation by an arrow diagram

d) Represent the relation by a cartesian diagram

e) Find its domain and range

4) If $f(X) = 3X + b$, $f(4) = 15$, find the value of $5b^2 + 2b - 20$

5) If X = $\{4, 3, 2\}$, and $\mathbb{R}$ is a relation from X to X , which a$\mathbb{R}$b means b+a=even number , a $\in X$, b $\in$ Y

a) Write the relation $\mathbb{R}$ as a set of ordered pairs

b) Write the relation $\mathbb{R}$ in a table

c) Represent the relation by an arrow diagram

d) Represent the relation by a cartesian diagram

e) Is the relation is a function ? why ?

6) Represent the following graphically :

1) $f(X) = 2X - 1$

2) $f(X) = 3X$

3) $f(X) = 5$

7) If $f(x) = 2x + k$, the point (3 , 11) lies on the straight line which represent the function f , find the value of f (2) , K

8) If $f(x) = 2x + b$, the point (3 , 10) lies on the straight line which represent the function f , find the value of f (5) , b

9) Find the solution set in $\mathbb{R}$ of the equation $2x - \sqrt{2} = 5\sqrt{2}$

10) Find the solution set in $\mathbb{R}$ of the equation $4(x+5)+3=2x+11$

11) Find the solution set in $\mathbb{R}$ of the equation $6x-5=2x+11$

12) Use the inequality to express the set of real numbers greater than 5 and less than 8 then represent on the number line

13) Find the solution set of the following inequality in $\mathbb{R}$ and represent it on the number line $5-3x \geq 2$

14) If $f(X)=5X+b$, $f(2)=12$, find the value of $b^2 - 2b - 1$

Answers

Unit 1

Q1 Choose the correct answer :-

1) If $x, 3, 4, 6$ are proportional, what is the value of x ?

a) 0 b) 1 c) 2 d) 3

2) What is the second proportional for the numbers $4, 6, 12$?

a) 18 b) 8 c) 6 d) 2

3) If $7x = 3y$, what is the value of $\frac{y}{x}$?

a) $\frac{7}{3}$ b) $\frac{3}{10}$ c) $\frac{10}{3}$ d) $\frac{3}{7}$

4) If $2x = 7y$, what is the value of $\left(\frac{x}{y}\right)^{-1}$?

a) $\frac{2}{7}$ b) $\frac{7}{2}$ c) $\frac{49}{4}$ d) $\frac{4}{49}$

5) If $5x - 3y = 0$, what is the value of $\frac{x}{y}$?

a) $\frac{5}{3}$ b) $\frac{3}{5}$ c) $-\frac{3}{5}$ d) $-\frac{5}{3}$

6) If $5a, 2, 3b, 7$ are four proportional quantities. What is the value of: $\frac{a}{b}$?

a) $\frac{3}{7}$ b) $\frac{6}{35}$ c) $\frac{3}{5}$ d) $\frac{3}{2}$

7) If $\frac{a}{5} = \frac{b}{3}$, what is the value of: $\frac{a+b}{a-b}$?

a) $\frac{8}{3}$ b) $\frac{5}{3}$ c) $\frac{1}{4}$ d) 4

8) If $\frac{a}{3} = \frac{b}{4}$, what is the value of: $\frac{3a-b}{b-a}$?

a) $\frac{4}{3}$ b) $\frac{3}{4}$ c) $\frac{1}{5}$ d) 5

9) If $\frac{a}{3} = \frac{b}{2}$, what is the value of $(6a - 9b - 1)^{2026}$?

a) 2026 b) -2026 c) 1 d) -1

10) If $\frac{a}{3} = \frac{b}{5}, 5a - 2b = 20$, what is the value of: b ?

a) 3 b) 5 c) 15 d) 20

11) If $\frac{3a}{5b} = \frac{1}{2}$, what is the value of: $\frac{a}{b}$?

a) $\frac{6}{5}$ b) $\frac{5}{6}$ c) $\frac{2}{3}$ d) $\frac{3}{2}$

12) If $4x^2 = 9y^2$, what is the value of: $\frac{x}{y}$?

a) $\frac{9}{4}$ b) $\frac{3}{2}$ c) $\pm\frac{2}{3}$ d) $\pm\frac{3}{2}$

13) If $\frac{5a-7b}{2a+3b} = 0$, what is the value of: $\frac{b}{a}$?

a) $\frac{5}{7}$ b) $\frac{7}{5}$ c) $\frac{3}{10}$ d) $\frac{10}{3}$

14) If $\frac{a+2b}{a-b} = \frac{2}{3}$, what is the value of: $\frac{b}{a}$?

a) $\frac{1}{8}$ b) 8 c) $-\frac{1}{8}$ d) -8

15) If $4x^2 + 9y^2 = 12xy$, what is the value of: $\frac{x}{y}$?

a) $\frac{3}{2}$ b) $\frac{2}{3}$ c) $-\frac{2}{3}$ d) $-\frac{3}{2}$

16) If $3a = 6\ b = 8c$, then $a : b : c$ equals .....

a) $3 : 4 : 8$ b) $3 : 6 : 8$ c) $8 : 4 : 3$ d) $8 : 6 : 3$

17) If $\frac{x}{6} = \frac{y}{10}$, what is the value of $\frac{x}{y}$?

a) $\frac{5}{3}$ b) $\frac{5}{6}$ c) $\frac{3}{5}$ d) $\frac{5}{10}$

18) If $a, b, 2, 3$ are proportional, what is the value $\frac{b}{a}$?

a) $\frac{3}{2}$ b) $\frac{2}{3}$ c) 3 d) 2

19) If $\frac{a}{b} = \frac{2}{7}$, what is the value of $\frac{2b}{7a}$?

a) $\frac{4}{49}$ b) $\frac{2}{7}$ c) 1 d) $\frac{49}{4}$

20) If $a, x, b, 2x$ are proportional, what is the value $\frac{a}{b}$?

a) 2 b) $\frac{1}{2}$ c) $\frac{1}{3}$ d) $\frac{1}{4}$

21) If a, b, c, d are proportional quantities, then:

a) $\frac{b}{d}=\frac{a}{c}$ b) $\frac{a}{c}=\frac{d}{b}$ c) $\frac{b}{c}=\frac{a}{d}$ d) $ab=cd$

22) If $\frac{5}{x}=\frac{6}{y}$, what is the value of $\frac{2x+y}{y-x}$?

a) 5 b) $\frac{11}{16}$ c) $\frac{16}{11}$ d) 16

23) If $\frac{a}{b}=\frac{c}{d}=\frac{2}{3}$, then $\frac{a+c}{b+d}$ equals .....

a) $\frac{4}{3}$ b) $\frac{2}{3}$ c) $\frac{4}{9}$ d) $\frac{1}{3}$

24) If $\frac{a}{2}=\frac{b}{3}=\frac{c}{5}$, then each ratio equals:

a) $\frac{a+b+c}{3}$ b) $\frac{a+2b-c}{3}$ c) $\frac{a-b+c}{10}$ d) $\frac{a-b}{5}$

25) If $\frac{4}{x}=\frac{7}{y}=\frac{a}{y-x}$, what is the value of a ?

a) -3 b) 3 c) 11 d) 28

26) If $m-n=6$, $\frac{3}{m}=\frac{5}{n}$, then what is the value of m ?

a) 15 b) 9 c) -9 d) -15

27) If $\frac{x}{5}=\frac{y}{a}=\frac{3x-2y}{9}$, what is the value of a ?

a) 6 b) 2 c) 3 d) 9

28) What is the mean proportional between a , c ?

a) $\sqrt{a+c}$ b) $\frac{a+c}{2}$ c) $\pm\sqrt{a\,c}$ d) $a\,c$

29) Which of the following numbers are proportional?

a) 2 , 4 , 6 b) 3 , 5 , 8 c) 3 , 9 , 27 d) 1 , 4 , 9

30) If a is the first proportional for the two numbers 4,16 , what is the value of a ?

a) 8 b) 4 c) 2 d) 1

31) If b is a mean proportional between 3,12 , what is the value of b ?

a) ±4 b) ±6 c) ±9 d) ±36

32) If 6 is the mean proportional between the two numbers m,2, what is the value of m ?

a) 8 b) 12 c) 18 d) 36

33) If x is the positive mean proportional between 24 , 54 , what is the value of x ?

a) 15 b) 36 c) 39 d) 78

34) If 2b is a mean proportional between a , $5c$, what is the value of: $\frac{b^2}{ac}$?

a) $\frac{5}{4}$ b) $\frac{2}{5}$ c) $\frac{3}{5}$ d) 10

35) If x, y, z are in continued proportion, What is the value of x ?

a) $\pm\sqrt{yz}$ b) yz c) $\frac{y^2}{z}$ d) $\frac{y}{z}$

36) What is the third proportional for the numbers $x^3, 2x^2$?

a) $2x$ b) $4x$ c) x^2 d) $2x^5$

37) If 7 , x , $\frac{1}{y}$ are in proportion, What is the value of: x^2y ?

a) 7 b) $\frac{1}{7}$ c) 14 d) 49

38) If b is a mean proportional between $(12-\sqrt{32}), (3+\sqrt{2})$, what is the value of b ?

a) $\pm\sqrt{7}$ b) $\pm2\sqrt{7}$ c) $\pm4\sqrt{7}$ d) $\pm16\sqrt{7}$

39) If $\frac{a}{b}=\frac{b}{c}=3$, then which of the following is correct?

a) $a=3c$ b) $a=9b$ c) $a=9c$ d) $a=6c$

40) If $\frac{a}{b}=\frac{b}{c}=\frac{c}{5}=2$, what is the value of a ?

a) 5×2^2 b) 40 c) 10 d) 2×5^3

41) If $\frac{a}{b}=\frac{b}{c}=\frac{c}{d}=2$,what is the value of $\frac{a}{d}$?

a) 2 b) 4 c) 8 d) 16

42) The mean proportional between $(x-2)$, $(x+2)$ is :

a) $\sqrt{x+2}$ b) x^2-4 c) $\pm\sqrt{x^2-4}$ d) $\sqrt{x^2-4}$

43) If $\frac{a}{b}=\frac{b}{c}=\frac{c}{d}=3$, then what is the value of : $\frac{a+b+c}{b+c+d}$?

a) 1 b) 3 c) 9 d) 6

44) If $\frac{a}{b}=\frac{b}{c}=\frac{c}{d}=4$, then what is the value of $\frac{a+d}{d}$?

a) 65 b) 49 c) 37 d) 25

Q2 Answer the following :-

1) If y : x = 2 : 5 , find the value of (10x + 3y) : (5x +2y).

$\frac{56}{29}$

2) If (2x-3) : (x-5) = 1 : 4 find the value of X.

= 1

3) If $4x^2 + 9y^2 = 12xy$, find the value of $\frac{x}{y}$.

$\frac{3}{2}$

4) Find the number if its square is added to both terms of the ratio 7 : 11 it becomes 4 : 5

3 or -3

5) If $\frac{x}{2}=\frac{y}{4}=\frac{z}{5}$, x + y -2z = 12 , find the value of z.

-15

6) If a , b , c , d are proportional , prove that $\frac{a+b}{b}=\frac{c+d}{d}$

$\frac{a}{b}=\frac{c}{d}=k$, $a=bk$ $c=dk$

$\frac{a+b}{b}=\frac{bk+b}{b}=\frac{b(k+1)}{b}=k+1$ 1

$\frac{c+d}{d}=\frac{dk+b}{b}=\frac{d(k+1)}{d}=k+1$ 2

from 1 and 2 $\frac{a+b}{b}=\frac{c+d}{d}$

7) If b is the middle between a , c prove that $\frac{a-c}{a+b}=\frac{a-2b+c}{a-b}$

$a=ck^2$, $b=ck$

$\frac{a-c}{a+b}=\frac{ck^2-c}{ck^2+ck}=\frac{c(k^2-1)}{ck(k+1)}=\frac{c(k-1)(k+1)}{ck(k+1)}=\frac{(k-1)}{k}$ 1

$\frac{a-2b+c}{a-b}=\frac{ck^2-2ck+c}{ck^2-ck}=\frac{c(k^2-2k+1)}{ck(k-1)}=\frac{c(k-1)(k-1)}{ck(k-1)}=\frac{(k-1)}{k}$ 2

from 1 and 2 $\frac{a-c}{a+b}=\frac{a-2b+c}{a-b}$

8) Find the value of x , y if x , 12 , 6 , y in continued proportion

X = 24 y = 3

9) If b is the middle between a , c prove that $\frac{4a^2-9b^2}{4b^2-9c^2}=\frac{a}{c}$

$a=ck^2$, $b=ck$

$\frac{4a^2-9b^2}{4b^2-9c^2}=\frac{4c^2k^4-9c^2k^2}{4c^2k^2-9c^2}=\frac{c^2k^2(4k^2-9)}{c^2(4k^2-9)}=k^2$ 1

$\frac{a}{c}=\frac{ck^2}{c}=ck^2$ 2

from 1 and 2 $\frac{4a^2-9b^2}{4b^2-9c^2}=\frac{a}{c}$

10) Find the value of x , y if 2 , x , y , 54 in continued proportion

X = 6 y = 18

11) Find the value of x if x , 24 , 144 are proportional

X = 4

12) If $\frac{a}{4x+y} = \frac{b}{x-4y}$ prove that $\frac{a+b}{5x-3y} = \frac{a-b}{3x+5y}$

Prove by yourself or watch the video on YouTube

13) If $\frac{a}{2x-y} = \frac{b}{2y-x}$ prove that $\frac{2a+b}{a+2b} = \frac{x}{y}$

Prove by yourself or watch the video on YouTube

14) If $\frac{x}{a-b+c} = \frac{y}{b-c+a} = \frac{z}{c-a+b}$ prove that $\frac{x+y}{a} = \frac{y+z}{b}$

Prove by yourself or watch the video on YouTube

15) If $\frac{a}{2} = \frac{b}{3} = \frac{c}{4} = \frac{2a-b+5c}{3x}$ find the value of x.

x = 7

Unit 2

Q1 Choose the correct answer :-

1) If $(x-1,11)=(8,y+3)$, then $\sqrt{x+2y}=$ .....

a) 5 b) ±5 c) $\sqrt{17}$ d) 25

2) If $(3^x,\sqrt{y})=(1,4)$, then $x+y=$ .....

a) 2 b) 3 c) 16 d) 17

3) If $x>y$, $(x^3,y^2)=(1,4)$, then $xy=$ .....

a) 4 b) 2 c) -2 d) -4

4) If $(x-3,y)=(2,\sqrt{16})$, then $(y,x)=$ .....

a) $(1,4)$ b) $(5,4)$ c) $(4,1)$ d) $(4,5)$

5) If $X=\{1,2\}$, then $X\times\emptyset=$ .....

a) X b) $\emptyset$ c) $\{0\}$ d) $\{(1,0),(2,0)\}$

6) $\{3\}\times\{5\}=$ .....

a) $\{15\}$ b) $\{3,5\}$ c) $(3,5)$ d) $\{(3,5)\}$

7) If $X=\{3,5\}, Y=\{6,7\}$, then $(6,7)\in$ .....

a) $X\times Y$ b) $Y\times X$ c) X^2 d) Y^2

8) If $X=\{3\}$, then $X^2=$ .....

a) 9 b) $(3,3)$ c) $\{9\}$ d) $\{(3,3)\}$

9) If $X=\{3\}$, then $n(X^2)=$ .....

a) 1 b) 9 c) $\{3,3\}$ d) 3

10) If $n(X)=3, n(X\times Y)=12$, then $n(Y)=$ .....

a) 4 b) 9 c) 15 d) 36

11) If $n(X^2)=9$, then $n(X)=$ .....

a) 2 b) 3 c) 9 d) 81

12) If $X=\{5,7,9\}$ and $n(X\times Y)=6$, then $n(Y^2)=$ .....

a) 4 b) 6 c) 9 d) 12

13) If $X \times Y = \{(1, 4), (1, 7), (1, 8)\}$, then $n(Y^2) =$ .....

a) 1 b) 3 c) 6 d) 9

14) If $X = \{2, 3, 4, 7, 8\}$, $Y = \{1, 4, 5, 6\}$, then $n(X^2) - n(Y \times X) =$ .....

a) 5 b) 10 c) 15 d) 25

15) If $n(X^2) = 9, n(X \times Y) = 12$, then $n(Y^2) =$ .....

a) 4 b) 6 c) 9 d) 16

16) If X is a non-empty set $n(X) = n(X \times Y)$, then $n(Y) =$ .....

a) 1 b) 2 c) 3 d) 4

17) If X, Y are two sets where: $n(X \times Y) = 11$, then $n(X) + n(Y) =$ .....

a) 8 b) 9 c) 11 d) 12

18) If X, Y are two sets where: $n(X^2) + n(X \times Y) = 5$, then $n(Y^2) =$ .....

a) 25 b) 16 c) 4 d) 1

19) To which cartesian product from the following , the point $\left(\frac{1}{2}, \sqrt{5}\right)$ belongs to?

a) $\mathbb{N} \times \mathbb{N}$ b) $\mathbb{Z} \times \mathbb{Z}$ c) $\mathbb{Q} \times \mathbb{Q}$ d) $\mathbb{R} \times \mathbb{R}$

20) Which of the following ordered pairs belongs to $\mathbb{Q} \times \mathbb{Q}$?

a) $(\sqrt[3]{1}, \sqrt{2})$ b) $(-\sqrt[3]{16}, -5)$ c) $\left(\sqrt{\frac{4}{9}}, -\frac{1}{2}\right)$ d) $\left(\sqrt[3]{27}, -\sqrt{\frac{1}{8}}\right)$

21) If the function $f: X \longrightarrow Y$, then the range of the function f is a subset of .....

a) $X \times Y$ b) X c) $Y \times X$ d) Y

22) If $f(x) = x^2 - x + 3$, what is the value of $f(-2)$?

a) -2 b) -1 c) 5 d) 9

23) If $f(x) = x^2 - \sqrt{2}x$, what is the value of $f(\sqrt{2})$?

a) 4 b) 2 c) 6 d) 0

24) If the function $f:\mathbb{Z}\longrightarrow\mathbb{Z}$ where $f(x)=x^2$, then $f(2)+f(-2)=$ .....

a) 0 b) 4 c) 8 d) -8

25) If $f(x)=x^2$, $g(x)=x+4$,What is the value of : $5f(2)+2g(5)$?

a) 18 b) 20 c) 38 d) 70

26) If $f(x)=kx+8, f(2)=0$,What is the value of k ?

a) 8 b) 6 c) 4 d) -4

27) If $f(x)=x-5$, and $\frac{1}{2}f(a)=3$, What is the value of a ?

a) 2 b) 8 c) 11 d) 16

28) If $(-1,0)$ belongs to the function f where $f(x)=mx+2$,What is the value of m ?

a) 0 b) -1 c) 2 d) -2

29) If $(3,y)$ belongs to the function f where $f(x)=x+2$, what is the value of y ?

a) 5 b) 3 c) 2 d) 1

30) If (a,a) belongs to the function f where $f(x)=2x+3$, what is the value of a ?

a) 2 b) 3 c) -3 d) -2

31) If $X=\{2,4,6\}, n(Y)=4$ and the function $f:X\longrightarrow Y, f(x)=x^2-1$, then Y can be .....

a) $\{3,7,13\}$ b) $\{3,15,25,45\}$ c) $\{3,15,35\}$ d) $\{3,15,25,35\}$

32) The straight line representing the function f where $f(x)=3x-12$ cuts the x-axis at the point .....

a) $(-12,0)$ b) $(12,0)$ c) $(4,0)$ d) $(-4,0)$

33) The straight line representing the function f where $f(x)=6-2x$ cuts the y -axis at the point

a) $(0,-6)$ b) $(0,-3)$ c) $(0,3)$ d) $(0,6)$

34) The ordered pair $(1,2)$ belongs to the function f where:

a) $f(x)=2x-1$ b) $f(x)=-3x+7$
c) $f(x)=2x+1$ d) $f(x)=-3x+5$

35) If $f(x)=7$, then $f(-3)=$ ……

a) 7 b) -7 c) 21 d) -21

36) If $f(x)=2$, then $3f(\sqrt{2})=$ ……

a) $f(3\sqrt{2})$ b) $3\sqrt{2}$ c) 6 d) $2\sqrt{3}$

37) If $f(x)=2$, then $f(3)-f(1)=$ ……

a) $f(2)$ b) 2 c) 0 d) 4

38) If $f:\mathbb{R}\longrightarrow\mathbb{R}$ and $f(x)=3$, then $\frac{f(6)}{f(0)}=$ ……

a) 6 b) 1 c) 3 d) undefined

39) If $f:\mathbb{R}\longrightarrow\mathbb{R}$ and $f(x)=7$, what is the value of $\frac{5f(4)}{10f(6)}$?

a) $\frac{1}{3}$ b) $\frac{1}{2}$ c) $\frac{7}{3}$ d) $\frac{7}{2}$

40) The function $f:\mathbb{R}\to\mathbb{R}$ where $f(x)=5$ is represented by a straight line that intersects the y-axis at the point ……

a) $(5,0)$ b) $(0,5)$ c) $(-5,0)$ d) $(0,-5)$

41) If the straight line representing the function f where $f(x)=2x-a$ passes through the origin, then $a=$ ……

a) -2 b) 2 c) 0 d) 3

42) If the straight line representing the function f where $f(x) = kx + 4$ passes through the point $(1, 1)$, what is the value of $f(-1)$?

a) -7 b) -1 c) 1 d) 7

43) If the straight line representing the function f where $f(x) = 2x + b$ passes through the point $(-1, 5)$, what is the value of $f(0)$?

a) -7 b) -5 c) 5 d) 7

44) If the point $(k, 5)$ lies on the straight line representing the function f where $f(x) = 2x - 7$, what is the value of k ?

a) 3 b) 4 c) 5 d) 6

45) If $(5k, k)$ belongs to the function f where $f(x) = 3x + 14$, what is the value of k ?

a) 14 b) 10 c) -7 d) -1

46) If $g(x) = 4$, $f(x) = -3$, what is the perpendicular distance between the two straight lines representing the two functions f, g ?

a) 1 b) 3 c) 5 d) 7

47) Which of the following equations is an equation of the first degree in one variable?

a) $x + y = 12$ b) $2x - \frac{2}{x} = 0$ c) $2\sqrt{x} + 3 = 5$ d) $2x - 4 = 3$

48) The solution set of the equation: $5x - 7 = 2x + 5$ in $\mathbb{R}$ is .....

a) $\{4\}$ b) $\{3\}$ c) $\{5\}$ d) $\{2\}$

49) What is the solution set of the equation: $\sqrt{2}x - 1 = 1$ in $\mathbb{R}$?

a) $\{2\}$ b) $\{1\}$ c) $\{\sqrt{2}\}$ d) $\emptyset$

50) The solution set of the equation: $\frac{y+2}{3} = \frac{y-1}{2}$ in $\mathbb{R}$ is .....

a) $\{-5\}$ b) $\{7\}$ c) $\{-7\}$ d) $\{5\}$

51) Which of the following inequalities is an inequality of the first degree in one variable?

a) $x^2 - x \geq 3$ b) $0.4t - 7 < 2t$ c) $\frac{2}{t} + t > 5$ d) $3x < 2y + 5$

52) Which of the following inequalities expresses the solution set in $\mathbb{R}$ represented by the given figure?

a) $x > 3$ b) $x < 3$ c) $x \geq 3$ d) $x \leq 3$

53) Which of the following inequalities expr represented by the given figure?

a) $-4 < x < 4$ b) $-4 \leq x < 4$ c) $-4 < x \leq 4$ d) $-4 \leq x \leq 4$

54) What is the solution set of the inequality $2x < 14$ in $\mathbb{R}$?

a) $]-\infty, 7[$ b) $]-7, \infty[$ c) $]7, \infty[$ d) $[7, \infty[$

55) What is the solution set of the inequality $3 \geq x > -2$ in $\mathbb{R}$?

a) $]-2, 3]$ b) $[-2, 3[$ c) $[-2, 3]$ d) $]-2, 3[$

56) What is the solution set of the inequality $-x > 3$ in $\mathbb{R}$?

a) $]-\infty, -3[$ b) $]-\infty, 3[$ c) $]-3, \infty[$ d) $]3, \infty[$

57) What is the solution set of the inequality $5 > -x > -3$ in $\mathbb{R}$?

a) $[-5, 3]$ b) $]-5, 3[$ c) $[-3, 5]$ d) $]-3, 5[$

58) The solution set of the inequality $-1 < x - 5 < 1$ in $\mathbb{R}$ is .....

a) $[4, 6]$ b) $]4, 6[$ c) $]4, 6]$ d) $[4, 6[$

59) The interval $[-1, 2[$ is the solution set in $\mathbb{R}$ for the inequality .....

a) $-1 < x < 2$ b) $-1 < x < 2$ c) $-1 \leq x < 2$ d) $-1 \leq x \leq 2$

60) If $-2 < 2x < 6$, then $x \in$ ……

a) $]-1,3[$ b) $]-1,3]$ c) $[-1,3[$ d) $[-1,3]$

61) If $3 > x > -3$ where $x \in \mathbb{R}$, then $2x$ belongs to ……

a) $]-5,5[$ b) $[-6,6]$ c) $]-6,6]$ d) $]-6,6[$

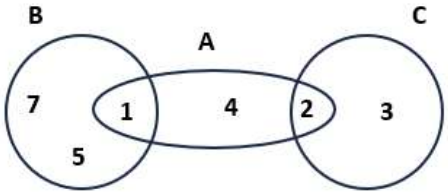
62) If $2 > x > -2$ where $x \in \mathbb{R}$, then $2x + 3$ belongs to ……

a) $[-1,7]$ b) $]-1,5[$ c) $]-1,7[$ d) $]-4,6[$

63) The number 5 belongs to the solution set of the inequality ……

a) $x > 5$ b) $x < 5$ c) $-x \geq -5$ d) $-x \geq 5$

Q2 Answer the following :-



1) Using the opposite venn diagram find :

a) $(A \cap C) \times B$

$\{(2,1),(2,5)(2,7)\}$

b) $(C \cup B) \times B$

$\{(1,1),(1,5)(1,7),(2,1),(2,5),(2,7),(3,1),(3,5),(3,7),(5,1),(5,5),(5,7)(7,1),(7,5)(7,7)\}$

2) If $A = \{1,7,9\}$, $B = \{2,4,7\}$, $C = \{1,7\}$, find :

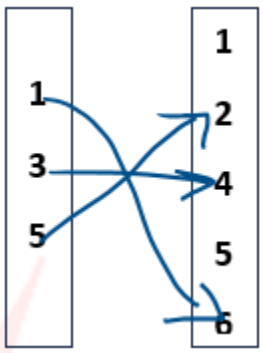
a) $A \times C$ and represent it by arrow diagram

$\{(1,1),(1,7),(7,1),(7,7),(9,1),(9,7)\}$

b) $B \times (A \cup C)$

$\{(4,1),(4,7)(4,9),(2,1),(2,7)(2,9),(7,1),(7,7)(7,9)\}$

3) If $X = \{1,3,5\}$, $Y = \{1,2,4,5,6\}$ and $\mathbb{R}$ is a relation from X to Y , where $a\mathbb{R}b$ means a+b=7 , for each $a \in X$, $b \in Y$

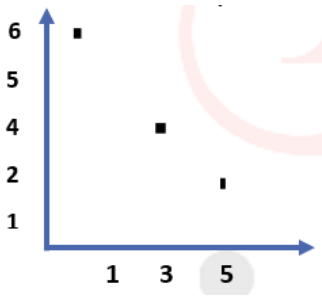


a) Write the relation $\mathbb{R}$ as a set of ordered pairs

$\mathbb{R} = \{(1,6),(3,4),(5,2)\}$

b) Write the relation $\mathbb{R}$ in a table

X	1	3	5
Y	6	4	2



c) Represent the relation by an arrow diagram

d) Represent the relation by a cartesian diagram

e) Find its domain and range

domain = $\{1,3,5\}$ range = $\{2,4,6\}$

4) If $f(X) = 3X + b$, $f(4) = 15$, find the value of $5b^2 + 2b - 20$

= 31

5) If X = $\{4, 3, 2\}$, and $\mathbb{R}$ is a relation from X to X , which a$\mathbb{R}$b means b+a=even number , a $\in X$, b $\in$ Y

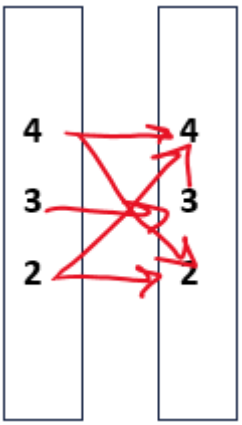
a) Write the relation $\mathbb{R}$ as a set of ordered pairs

$\mathbb{R} = \{(4,4), (4,2), (2,2), (2,4), (3,3)\}$

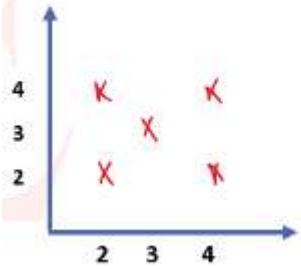
b) Write the relation $\mathbb{R}$ in a table

X	2	2	3	4	4
Y	2	4	3	2	4

c) Represent the relation by an arrow diagram



d) Represent the relation by a cartesian diagram



e) Is the relation is a function ? why ?

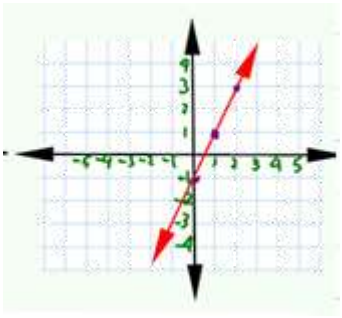
No, because the elements 4 and 2 $\in$ X appear as

A first projection more than one time

6) Represent the following graphically :

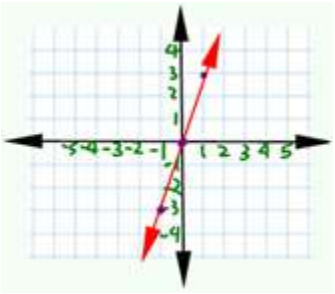
1) $f(X) = 2X - 1$

x	0	1	2
$f(x)$	-1	1	3



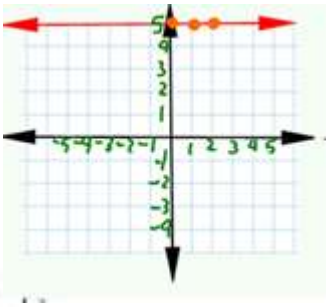
2) $f(X) = 3X$

x	0	1	-1
$f(x)$	0	3	-3



3) $f(X) = 5$

x	0	1	2
$f(x)$	5	5	5



7) If $f(x) = 2x + k$, the point (3 , 11) lies on the straight line which represent the function f , find the value of f (2) , K

K=5 f(2)=9

8) If $f(x) = 2x + b$, the point (3 , 10) lies on the straight line which represent the function f , find the value of f (5) , b

b = 4 f(5) = 14

9) Find the solution set in $\mathbb{R}$ of the equation $2x - \sqrt{2} = 5\sqrt{2}$

$S.S = \{3\sqrt{2}\}$

10) Find the solution set in $\mathbb{R}$ of the equation $4(x+5)+3=2x+11$

$S.S=\{-6\}$

11) Find the solution set in $\mathbb{R}$ of the equation $6x-5=2x+11$

$S.S=\{4\}$

12) Use the inequality to express the set of real numbers greater than 5 and less than 8 then represent on the number line

$5<x<8$

13) Find the solution set of the following inequality in $\mathbb{R}$ and represent it on the number line $5-3x\geq 2$

$S.S=]-\infty,1]$

14) If $f(X)=5X+b$, $f(2)=12$, find the value of b^2 - 2b - 10

= -10