શ્રી વંદનમ્ એજ્યુકેશન એન્ડ ચેરીટેબલ ટ્રસ્ટ સંચાલિત

શ્રી વસિષ્ઠ વિદ્યાલય

મુ. પો. વાવ, ને. હા. નં.-48, કામરેજ, જિ. સુરત.

31
બેઠક નંબર

ઉત્તરવહી

Unit - test પરીક્ષા – 2026-2027

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ધોરણ : 10th વર્ગ : F

વિષય : Maths તારીખ : 2-7-2026

મુખ્ય ઉત્તરવહી	પુરવણી	કુલ
1	+ 4 =	5

નિરીક્ષકની સહી : Maths 02107

પરીક્ષકની સહી : PV

વિભાગ /પ્રશ્ન	ગુણ	મેળવેલ ગુણ
OMR		
1	24	24
2	18	18
3	18	18
4	20	20
5		
કુલ	80	80

પરીક્ષાલક્ષી સૂચન : જરૂર હોય તેટલી જ પુરવણી લેવી.

અહીંથી જવાબ લખવાનું શરૂ કરવું

Sec-A (24)

1. → (A) 13

2. → (D) $-\frac{5}{3}$

3. → (C) $x+10y$

4. → (C) $\Delta ABC \sim \Delta YZX$

5. → (B) 2

6. → (B) -1.5

7. -9

8. Upward Parabola

પ્રશ્ન પેટા પ્રશ્ન ક્રમાંક

□ + □ + □ + □ + □ = □

9. Similar

10. 5

11. 2.45

12. equilateral

13. True

14. False

15. False

16. True

17. LCM of Prime number = product of the number

$\therefore$ LCM $(p, q, r) = p \times q \times r$

$= pqr$

18. Product of zeros $= \frac{c}{a}$

Here, $a = 1$, $b = -3$, $c = -10$

$\therefore \alpha \cdot \beta = \frac{c}{a}$

પ્રશ્ન પેટા પ્રશ્ન ક્રમાંક

[ ] + [ ] + [ ] + [ ] + [ ] = [ ]

$\therefore \alpha \cdot \beta = \frac{-10}{1}$

$\therefore \alpha \cdot \beta = -10$

19. $n = 7$ (odd), ascending order = 4, 5, 6, 7, 8, 9, 17

$\therefore M = \left(\frac{n}{2} + 1\right)^{th}$ observation

$\therefore M = \left(\frac{7+1}{2}\right)^{th}$ observation

$\therefore M = \left(\frac{8}{2}\right)^{th}$ observation

$\therefore M = 4^{th}$ observation

$\therefore M = 7$

20. $P(A) = \frac{\text{Favourable outcomes}}{\text{Total outcomes}}$

$P(A) = \frac{3}{7}$

21. → (A) 2×7^2

22. → (C) $t^2 \times 7$

23. → (B) 0

પ્રશ્ન
પેટા પ્રશ્ન
ક્રમાંક

□ + □ + □ + □ + □ = □

24) 24. → (c) +1

☐ + ☐ + ☐ + ☐ + ☐ = ☐

Sec - B (18)

25. Let's us Assume that $6+\sqrt{2}$ is rational

$$\therefore 6+\sqrt{2} = \frac{a}{b} \quad \text{(where a and b are co-prime)}$$

$$\therefore \sqrt{2} = \frac{a}{b} - 6$$

$$\therefore \sqrt{2} = \frac{a-6b}{b}$$

2)

→ Here, a and b are integers and $\left(\frac{a-6b}{b}\right)$ is rational so, $\sqrt{2}$ is also rational

→ But, we Prove that $\sqrt{2}$ is irrational

→ So, our Assumption is wrong.

→ So, we can conclude that $6+\sqrt{2}$ is irrational.

26. $510 =$

2	510
3	255
5	85
17	17
	1

$92 =$

2	92
2	46
23	23
	1

$510 = 2 \times 3 \times 5 \times 17$

$92 = 2^2 \times 23$

પ્રશ્ન પેટા પ્રશ્ન ક્રમાંક

[ ] + [ ] + [ ] + [ ] + [ ] = [ ]

HCF = 2

LCM = $2^2 \times 3 \times 5 \times 17 \times 23$

$= 4 \times 15 \times 17 \times 23$

$= 60 \times 17 \times 23$

LCM = 23460

2)

We know that,

HCF × LCM = Product of two numbers

$2 \times 23460 = 510 \times 92$

$46920 = 46920$

27. $\alpha + \beta = \sqrt{2}$

$\alpha \cdot \beta = \frac{1}{3}$

We know that,

Standard form of quadratic polynomial,

$\therefore p(x) = x^2 - (\alpha+\beta)x + \alpha \cdot \beta$

$\therefore p(x) = x^2 - (\sqrt{2})x + \left(\frac{1}{3}\right)$

$\therefore p(x) = x^2 - \sqrt{2}x + \frac{1}{3}$

$\therefore p(x) = \frac{1}{3}(3x^2 - 3\sqrt{2}x + 1)$

$\therefore p(x) = 3x^2 - 3\sqrt{2}x + 1$

2)

પ્રશ્ન પેટા પ્રશ્ન ક્રમાંક

[ ] + [ ] + [ ] + [ ] + [ ] = [ ]

2)

28. $\alpha + \beta = -\frac{1}{4}$

$\alpha \cdot \beta = \frac{1}{4}$

Standard form of quadratic polynomial,

$p(x) = x^2 - (\alpha+\beta)x + \alpha \cdot \beta$

$\therefore p(x) = x^2 - \left(\frac{-1}{4}\right)x + \left(\frac{1}{4}\right)$

$\therefore p(x) = x^2 + \frac{1}{4}x + \frac{1}{4}$

$\therefore p(x) = \frac{1}{4}(4x^2 + x + 1)$

$\therefore p(x) = 4x^2 + x + 1$

29. $5x - 3y = 11$

$5x - 3y - 11 = 0$ — (i)

$a_1 = 5, \quad b_1 = -3, \quad c_1 = -11$

$-10x + 6y = -22$

$-10x + 6y + 22 = 0$ — (ii)

$a_2 = -10, \quad b_2 = 6, \quad c_2 = 22$

$\frac{a_1}{a_2} = \frac{5}{-10} = \frac{-1}{2}$

પ્રશ્ન પેટા પ્રશ્ન ક્રમાંક

[ ] + [ ] + [ ] + [ ] + [ ] = [ ]

2)

$$\frac{b_1}{b_2} = \frac{-3}{6} = \frac{-1}{2}$$

$$\frac{c_1}{c_2} = \frac{-14}{28} = \frac{-1}{2}$$

$$\therefore \frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$$

Hence, the pair of linear equation are consistent

30. Suppose,

larger angle = x

Smaller angle = y

$$x + y = 180 \quad \text{— (i)}$$

2)

$$x = y + 18$$

$$x - y = 18 \quad \text{— (ii)}$$

Add eq (i) and (ii),

$$x + y = 180 \quad \text{— (i)}$$

$$x - y = 18 \quad \text{— (ii)}$$

$$2x = 198$$

$$x = \frac{198}{2} = 99$$

પ્રશ્ન પેટા પ્રશ્ન ક્રમાંક

[ ] + [ ] + [ ] + [ ] + [ ] = [ ]

$x = 99$ Put in eq (i)

$x + y = 180$

$99 + y = 180$

$y = 180 - 99$

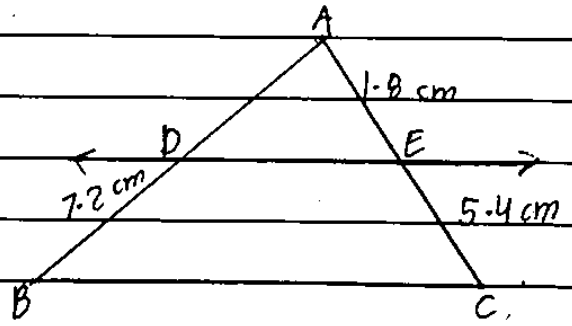
$y = 81$

→ So, larger angle = $x = 99$

smaller angle = $y = 81$

32. In fig, DE // BC then,

By using BPT theorem,



$\frac{AD}{DB} = \frac{AE}{EC}$

$\frac{AD}{7.2} = \frac{1.8}{5.4}$

$AD = \frac{1.8 \times 7.2}{5.4}$ 3

$AD = \frac{7.2}{3}$

$AD = 2.4$ cm

2)

33. Given,

$l = 3$

$f_1 = 8$

$f_0 = 7$

$f_2 = 2$

$h = 2$

Now, $z = l + \left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right) \times h$

$z = 3 + \left(\frac{8 - 7}{2(8) - 7 - 2}\right) \times 2$

$z = 3 + \left(\frac{1}{16 - 9}\right) \times 2$

2)

$z = 3 + \left(\frac{1}{7}\right) \times 2$

$z = 3 + \frac{2}{7}$

$z = 3 + 0.28$

$z = 3.28$

પ્રશ્ન પેટા પ્રશ્ન ક્રમાંક

□ + □ + □ + □ + □ = □

34. Given,

$\bar{x} - z = 3$ — (i)

$\bar{x} + z = 45$ — (ii)

Add eq. (i) and (ii),

$\bar{x} - z = 3$ — (i)

$\bar{x} + z = 45$ — (ii)

$2\bar{x} = 48$

$\bar{x} = \frac{48}{2} = 24$

$\boxed{\bar{x} = 24}$ ← Put in eq. (i)

$\bar{x} - z = 3$

$24 - z = 3$

$-z = 3 - 24$

$+z = +21$

$\boxed{z = 21}$

We know that,

$z = 3M - 2\bar{x}$

$21 = 3M - 2(24)$

$21 + 48 = 3M$

$3M = 69$

$M = \frac{69}{3} = 23$

27

		+		+		+		+		=	

$M = 23$

35. Total outcomes = 6

(A) Getting a prime number $\{2, 3, 5\}$

$$P(A) = \frac{\text{Favourable outcomes}}{\text{Total outcomes}}$$

$$P(A) = \frac{3}{6} = \frac{1}{2}$$

$$P(A) = \frac{1}{2}$$

(2)

(B) Getting a number lying between 2 and 6.

$$P(B) = \frac{\text{Favourable outcomes}}{\text{Total outcomes}}$$

$$P(B) = \frac{3}{6} = \frac{1}{2}$$

$$P(B) = \frac{1}{2}$$

37. Given,

Probability of 2 student not having same birthday $(P(\bar{A})) = 0.992$

$\square + \square + \square + \square + \square = \square$

$\therefore P(\bar{A}) = 0.992$

We know that,

$P(A) + P(\bar{A}) = 1$

$P(A) + 0.992 = 1$

$P(A) = 1 - 0.992$

$\boxed{P(A) = 0.008}$

(2)

પ્રશ્ન નંબર | ☐ + ☐ + ☐ + ☐ + ☐ = ☐

Sec-C

(18)

~~38. We know that,~~

~~HCF × LCM~~

38. Given,

HCF (306, 657) = 9
LCM (306, 657) = ?

We know that,

HCF × LCM = Product of two numbers
9 × LCM = 306 × 657
LCM = $\frac{306^{102} \times 657}{9_3}$
LCM = $\frac{102^{34} \times 657}{3_1}$
LCM = 34 × 657

LCM = 22338

3

39. $p(x) = x^2 - 2x - 8 \Rightarrow a = 1, b = -2, c = -8$

$\therefore x^2 - 2x - 8 = 0$
$\therefore x^2 - 4x + 2x - 8 = 0$
$\therefore x(x-4) + 2(x-4) = 0$
$\therefore (x-4)(x+2) = 0$

પ્રશ્ન પેટા પ્રશ્ન ક્રમાંક

[ ] + [ ] + [ ] + [ ] + [ ] = [ ]

$\therefore x - 4 = 0 \quad ; \quad x + 2 = 0$

$x = 4 \quad ; \quad x = -2$

$\alpha = 4 \quad ; \quad \beta = -2$

(i) Sum of zeros,

$$\alpha + \beta = \frac{-b}{a}$$

$$4 + (-2) = \frac{-(-2)}{1}$$

$$4 - 2 = \frac{2}{1}$$

$$\boxed{2 = 2}$$

3)

(ii) Product of zeros,

$$\alpha \cdot \beta = \frac{c}{a}$$

$$(4)(-2) = \frac{-8}{1}$$

$$\boxed{-8 = -8}$$

40. $p(x) = x^2 - 3$

so, $a = 1, \quad b = 0, \quad c = -3$

$\therefore x^2 - 3 = 0$

$\therefore x^2 - (\sqrt{3})^2 = 0$

$[\because a^2 - b^2 = (a-b)(a+b)]$

$\therefore (x-\sqrt{3})(x+\sqrt{3}) = 0$

$\therefore x - \sqrt{3} = 0 \quad ; \quad x + \sqrt{3} = 0$

$x = \sqrt{3} \quad ; \quad x = -\sqrt{3}$

$\alpha = \sqrt{3} \quad ; \quad \beta = -\sqrt{3}$

3)

(i) Sum of zeros,

$$\alpha + \beta = \frac{-b}{a}$$

$$(\sqrt{3}) + (-\sqrt{3}) = \frac{-(0)}{1}$$

$$\sqrt{3} - \sqrt{3} = 0$$

$$0 = 0$$

(ii) Product of zeros,

$$\alpha \cdot \beta = \frac{c}{a}$$

$$(\sqrt{3})(-\sqrt{3}) = \frac{-3}{1}$$

$$-(\sqrt{3})^2 = -3$$

$$-3 = -3$$

પ્રશ્ન પેટા પ્રશ્ન ક્રમાંક

[ ] + [ ] + [ ] + [ ] + [ ] = [ ]

4). $2x + 3y = 11$ — (i)

$2x - 4y = -24$ — (ii)

Add eq (i) and (ii),

$2x + 3y = 11$ — (i)

$2x - 4y = -24$ — (ii)

$- \quad + \quad -$

$7y = 35$

$y = \frac{35}{7} = 5$

$y = 5$ Put in eq (i)

3)

$2x + 3y = 11$

$2x + 3(5) = 11$

$2x + 15 = 11$

$2x = 11 - 15$

$2x = -4$

$x = \frac{-4}{2}$

$x = -2$

Also, $y = mx + 3$

$5 = m(-2) + 3$

$5 = -2m + 3$

$5 - 3 = -2m$

પ્રશ્ન પેટા પ્રશ્ન ક્રમાંક

□ + □ + □ + □ + □ = □

$2 = -2m$

$\frac{-2}{-2} = m$

$-1 = m$

$\boxed{m = -1}$

Q2. $s - t = 3$ — (i)

$\frac{s}{3} + \frac{t}{2} = 6$

$\frac{2s + 3t}{6} = 6$

$2s + 3t = 36$ — (ii)

By using eq (i)

$s - t = 3$

$s = 3 + t$ — put in eq (ii)

3)

$2s + 3t = 36$

$2(3 + t) + 3t = 36$

$6 + 2t + 3t = 36$

$5t = 36 - 6$

$5t = 30$

$t = \frac{30}{5}$ 6

પ્રશ્ન
પેટા પ્રશ્ન
ક્રમાંક

□ + □ + □ + □ + □ = □

$t = 6$ — put in (5)

$S = 3 + t$

$S = 3 + 6$

$S = 9$

43.

class	fi	cf
40 - 45	2	2
45 - 50	3	5
50 - 55	8	13
55 - 60	6	19
60 - 65	6	25
65 - 70	3	28
70 - 75	2	30

median class, 55 - 60

$\frac{n}{2} = \frac{30}{2} = 15$ ...

$l = 55$

$f = 6$

પ્રશ્ન પેટા પ્રશ્ન ક્રમાંક

□ + □ + □ + □ + □ = □

$cf = 13$

$h = 5$

$\therefore M = l + \left(\frac{n/2 - cf}{f}\right) \times h$

9)

$M = 55 + \left(\frac{15 - 13}{6}\right) \times 5$

$M = 55 + \left(\frac{18}{63}\right) \times 5$

$M = 55 + \frac{5}{3}$

$M = 55 + 1.67$

$\boxed{M = 56.67}$

45. Total out comes = 90

(A) Getting a two-digit number,

$P(A) = \frac{\text{Favourable outcomes of event A}}{\text{Total outcomes of event A}}$

$P(A) = \frac{8}{90} \mid \frac{9}{10}$

પ્રશ્ન પેટા પ્રશ્ન ક્રમાંક

[ ] + [ ] + [ ] + [ ] + [ ] = [ ]

$$P(A) = \frac{9}{10} \text{ or } 0.9$$

(B) Getting a perfect square number.

$$P(B) = \frac{\text{Favourable outcomes of event B}}{\text{Total outcomes of event B}}$$

$$P(B) = \frac{1}{10}$$

$$P(B) = \frac{1}{10} \text{ or } 0.1$$

(3)

(C) Getting a number divisible by 5.

$$P(C) = \frac{\text{Favourable outcomes of event C}}{\text{Total outcomes of event C}}$$

$$P(C) = \frac{1}{5}$$

$$P(C) = \frac{1}{5}$$

or

$$P(C) = 0.20$$

પ્રશ્ન
પેટા પ્રશ્ન
ક્રમાંક

□ + □ + □ + □ + □ = □

46. Total outcomes = 36

(1,1)	(1,2)	(1,3)	(1,4)	(1,5)	(1,6)
(2,1)	(2,2)	(2,3)	(2,4)	(2,5)	(2,6)
(3,1)	(3,2)	(3,3)	(3,4)	(3,5)	(3,6)
(4,1)	(4,2)	(4,3)	(4,4)	(4,5)	(4,6)
(5,1)	(5,2)	(5,3)	(5,4)	(5,5)	(5,6)
(6,1)	(6,2)	(6,3)	(6,4)	(6,5)	(6,6)

(A) getting Sum of two digit 8

$$P(A) = \frac{\text{Favourable outcomes}}{\text{Total outcomes}}$$

$$\boxed{P(A) = \frac{5}{36}}$$

(3)

(B) getting Sum of two digit 13

$$P(B) = \frac{\text{Favourable outcomes}}{\text{Total outcomes}}$$

$$P(B) = \frac{0}{36}$$

$$\boxed{P(B) = 0}$$

પ્રશ્ન પેટા પ્રશ્ન ક્રમાંક

(c) getting sum of two digit less than or equal to 12,

$$P(c) = \frac{\text{Favourable outcomes}}{\text{Total outcomes}}$$

$$P(c) = \frac{36}{36}$$

$$\boxed{P(c) = 1}$$

શ્રી વસિષ્ઠ વિદ્યાલય વાવ.

ધોરણ : 10th વર્ગ : F વિષય : Maths તારીખ : 2-7-26 બેઠક નંબર : 21

પૂરક પુરવણી ક્રમ : ◯ ખંડ-નિરીક્ષકની સહી : 21/7/26

અહીથી લખાણ શરૂ કરવું.....

Q ☐ ☐

Sec-D

47. Let's Assume that $\sqrt{3}$ is rational,

$\therefore \sqrt{3} = \frac{a}{b}$ (where a and b are co-prime numbers)

$\therefore \sqrt{3}b = a$

$\therefore a = \sqrt{3}b$

$\therefore (a)^2 = (\sqrt{3}b)^2$

$\therefore a^2 = 3b^2$

$\Rightarrow$ 3 is a factor of a^2

$\Rightarrow$ Thus, 3 is also a factor of 'a' (Theorem 1-2)

Suppose,

$a = 3c$ (c is any integer)

$\therefore (a)^2 = (3c)^2$

4)

પ્રશ્ન પેટા પ્રશ્ન ક્રમાંક

☐ + ☐ + ☐ + ☐ + ☐ = ☐

Q ☐ ☐

$a^2 = 9c^2$

$3b^2 = 9c^2 \quad (\because a^2 = 3b^2)$

$b^2 = \frac{3}{\cancel{9}}c^2$

$\boxed{b^2 = 3c^2}$

$\Rightarrow$ 3 is a factor of b^2

$\Rightarrow$ Thus, 3 is also a factor of 'b' (Theorem 1-2)

→ therefore, a and b have common factor 3 other than 1

→ Thus, a and b are not co-prime number

→ so, our Assumption is wrong

→ So, we can conclude that $\sqrt{3}$ is irrational.

Q8 $p(x) = x^2 + 5x + 6$

where, $a = 1, \ b = 5, \ c = 6$

$\alpha + \beta = \frac{-b}{a}$

$\alpha + \beta = \frac{-5}{1}$

$\boxed{\alpha + \beta = -5}$

પ્રશ્ન પેટા પ્રશ્ન ક્રમાંક

[ ] + [ ] + [ ] + [ ] + [ ] = [ ]

Q [ ]
[ ]

$\alpha - \beta = \frac{c}{a}$

$\alpha - \beta = \frac{6}{1}$

$\boxed{\alpha - \beta = 6}$

(i) $\alpha^2 + \beta^2$

$\alpha^2 + \beta^2 = (\alpha+\beta)^2 - 2\alpha\beta$

$= (-5)^2 - 2(6)$

$= 25 - 12$

$\boxed{\alpha^2 + \beta^2 = 13}$

4

(ii) $\alpha^2\beta + \alpha\beta^2$

$\alpha^2\beta + \alpha\beta^2 = \alpha\beta(\alpha+\beta)$

$= (6)(-5)$

$\boxed{\alpha^2\beta + \alpha\beta^2 = -30}$

□ + □ + □ + □ + □ = □

Q □ □

(iii) $\frac{1}{\alpha} + \frac{1}{\beta}$

$$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\beta + \alpha}{\alpha \cdot \beta}$$

$$= \frac{\alpha + \beta}{\alpha \cdot \beta}$$

$$\boxed{\frac{1}{\alpha} + \frac{1}{\beta} = \frac{-5}{6}}$$

(iv) $\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$

$$\frac{\alpha}{\beta} + \frac{\beta}{\alpha} = \frac{\alpha^2 + \beta^2}{\alpha \cdot \beta}$$

$$\boxed{\frac{\alpha}{\beta} + \frac{\beta}{\alpha} = \frac{13}{6}}$$

શ્રી વસિષ્ઠ વિદ્યાલય વાવ.

ધોરણ :_____ વર્ગ : _____ વિષય : _____ તારીખ : _____ બેઠક નંબર :_____

પૂરક પુરવણી ક્રમ : ◯ ખંડ-નિરીક્ષકની સહી : _____

અહીથી લખાણ શરૂ કરવું.....

Q ☐
☐

49. Suppose,

numerator digit = x

denominator digit = y

Fraction number = $\frac{x}{y}$

If 2 is added,

numerator = $x+2$

denominator = $y+2$

$$\frac{x+2}{y+2} = \frac{9}{11}$$

$$11(x+2) = 9(y+2)$$

$$11x+22 = 9y+18$$

$$11x-9y = 18-22$$

$$\boxed{11x-9y = -4} \quad \text{(i)}$$

Q

If 3 is added,

numerator = $x+3$

denominator = $y+3$

$$\frac{x+3}{y+3} = \frac{5}{6}$$

$$6(x+3) = 5(y+3)$$

$$6x+18 = 5y+15$$

$$6x - 5y = 15 - 18$$

$$\boxed{6x-5y = -3} \quad \text{(ii)}$$

By using eq (ii)

$$6x - 5y = -3$$

$$6x = -3+5y$$

$$x = \frac{5y-3}{6} \quad \text{put in eq (i)}$$

$$11x - 9y = -4$$

$$11\left(\frac{5y-3}{6}\right) - 9y = -4$$

$$\frac{55y-33}{6} - 9y = -4$$

$$\frac{55y-33-54y}{6} = -4$$

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[ ] + [ ] + [ ] + [ ] + [ ] = [ ]

Q [ ]
[ ]

$y - 33 = -24$

$y = -24 + 33$

$\boxed{y = 9}$ — Put in (x)

$x = \frac{5y - 3}{6}$

$x = \frac{5(9) - 3}{6}$

$x = \frac{45 - 3}{6}$

$x = \frac{42}{6}$ 7

$\boxed{x = 7}$

→ So, numerator digit = $x = 7$
denominator digit = $y = 9$

∴ Fraction number = $\frac{x}{y}$

$\boxed{\therefore \text{ Fraction number} = \frac{7}{9}}$

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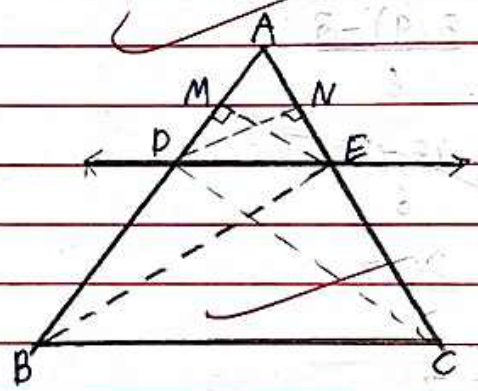
So. Theorem: If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio.

Given: In ΔABC, a line parallel to side BC, intersect the other side AB and AC at D and E respectively

To prove: $\frac{AD}{DB} = \frac{AE}{EC}$

Figure:



4

proof: Join BE and CD and also draw $EM \perp AD$ and $DN \perp AE$

Area of triangle = $\frac{1}{2}$ x Base x Altitude (Height)

$ar(\Delta ADE) = \frac{1}{2} \times AD \times EM$

$ar(\Delta EDB) = \frac{1}{2} \times DB \times EM$

$\therefore \frac{ar(\Delta ADE)}{ar(\Delta EDB)} = \frac{\frac{1}{2} \times AD \times EM}{\frac{1}{2} \times DB \times EM} = \frac{AD}{DB}$ ——①

Q

$$ar(\triangle ADE) = \frac{1}{2} \times AE \times DN$$

$$ar(\triangle DEC) = \frac{1}{2} \times EC \times DN$$

$$\therefore \frac{ar(\triangle ADE)}{ar(\triangle DEC)} = \frac{\frac{1}{2} \times AE \times DN}{\frac{1}{2} \times EC \times DN} = \frac{AE}{EC} \quad \text{---} ②$$

Now, $\triangle EDB$ and $\triangle DEC$ are triangle on Same Base DE and between the Parrallels BC // DE.

$$\therefore ar(\triangle EDB) = ar(\triangle DEC) \quad \text{---} ③$$

Thus, From eq ①, ② and ③ we get,

$$\boxed{\frac{AD}{DB} = \frac{AE}{EC}}$$

Hence proved.

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Q

52.

class	fi	cf
0 - 10	5	5
10 - 20	x	5+x
20 - 30	20	25+x
30 - 40	15	40+x
40 - 50	y	40+x+y
50 - 60	5	45+x+y
	$\Sigma fi = 45+x+y$	

Given,

$M = 28.5$

median class 20 - 30

$l = 20$

$\frac{n}{2} = \frac{60}{2} = 30$

$f = 20$

$cf = 5+x$

$h = 10$

$\Sigma fi = 60$

$45+x+y = 60$

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Q

$x + y = 60 - 45$

$x + y = 15$ — (i)

Now,

$$M = l + \left(\frac{n/2 - cf}{f}\right) \times h$$

$$28.5 = 20 + \left(\frac{30 - (5+x)}{20}\right) \times 10$$

$$28.5 - 20 = \frac{30 - 5 - x}{2}$$

$$8.5 = \frac{30 - 5 - x}{2}$$

$$8.5 \times 2 = 25 - x$$

$$17 = 25 - x$$

$$x = 25 - 17$$

$$\boxed{x = 8}$$ — put in eq (i)

$x + y = 15$

$8 + y = 15$

$y = 15 - 8$

$\boxed{y = 7}$

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□ + □ + □ + □ + □ = □

Q □ □

53. Total out comes = 52

(A) Getting a king of red colour,

$$P(A) = \frac{\text{Favourable out comes}}{\text{Total outcomes}}$$

$$P(A) = \frac{2}{52} \quad \frac{1}{26}$$

$$\boxed{P(A) = \frac{1}{26}}$$

4)

(B) Getting a face card,

$$P(B) = \frac{\text{Favourable outcomes}}{\text{Total outcomes}}$$

$$P(B) = \frac{12}{52} \quad \frac{3}{13}$$

$$\boxed{P(B) = \frac{3}{13}}$$

(C) Getting a red face card,

$$P(c) = \frac{\text{Favourable outcomes}}{\text{Total outcomes}}$$

Q

$$P(C) = \frac{3}{26}$$

$$\boxed{P(C) = \frac{3}{26}}$$

(D) Getting the Jack of heart

$$P(D) = \frac{\text{Favourable outcomes}}{\text{Total outcomes}}$$

$$\boxed{P(D) = \frac{1}{52}}$$