NTSE STAGE – I (HARYANA STATE)
(2020 – 21)
(For Class – X)
SCHOLASTIC APTITUDE TEST
ANSWER KEYS

1.	4	2.	4	3.	1	4.	3
5	2	6.	4	7.	3	8.	2
9.	2	10.	2	11.	4	12.	1
13.	1	14.	3	15.	3	16.	4
17.	3	18.	3	19.	2	20.	3
21.	4	22.	4	23.	2	24.	1
25.	4	26.	1	27.	1	28.	2
29.	4	30.	1	31.	4	32.	4
33.	3	34.	2	35.	4	36.	4
37.	3	38.	2	39.	4	40.	2
41.	3	42.	2	43.	1	44.	2
45.	2	46.	4	47.	2	48.	3
49.	1	50.	2	51.	4	52.	3
53.	3	54.	3	55.	3	56.	2
57.	4	58.	1	59.	1	60.	4
61.	4	62.	2	63.	4	64.	2
65.	3	66.	1	67.	2	68.	3
69.	2	70.	1	71.	3	72.	1
73.	2	74.	4	75.	4	76.	2
77.	2	78.	1	79.	3	80.	3
81.	4	82.	3	83.	3	84.	1
85.	2	86.	3	87.	3	88.	3
89.	2	90.	2	91.	4	92.	3
93.	3	94.	1	95.	4	96.	3
97.	3	98.	4	99.	3	100.	1

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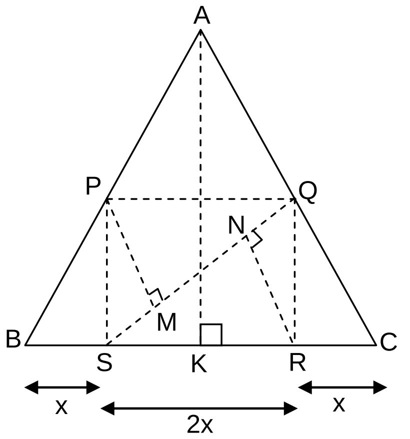
HINTS & SOLUTIONS

1. 4

Sol.



AB = 10

AC = 10

P, Q are mid points of AB & AC

$\Rightarrow$ AP = PB = 5

AQ = QC = 5

BC = 12

$\therefore$ x + 2x + x = 12 $\Rightarrow$ x = 3

$\therefore$ BS = 3, SR = 6, RC = 3

$\because$ ΔABC is isosceles

AK $\perp$ BC and BK = KC

$\therefore$ BS = SK = KR = RC = 3

$\because$ PQ || BC

$\Delta\ ABK \rightarrow \dfrac{BS}{SK} = \dfrac{BP}{PA} \Rightarrow SP\,||\,AK \Rightarrow \Delta PSB \sim \Delta AKB$

$\therefore$ PS $\perp$ BC and $\dfrac{PS}{AK} = \dfrac{1}{2}$

$PS = \dfrac{1}{2}AK$

Similarly, QR $\perp$ BC

$\Delta ACK \rightarrow AK = \sqrt{10^2 - 6^2} = 8$

$\because PS = \dfrac{1}{2}AK \Rightarrow PS = 4$

and similarly QR = 4

Now in $\Delta QRS \rightarrow \angle QRS = 90°$

$\Rightarrow SQ = \sqrt{SR^2 + RQ^2} = \sqrt{6^2 + 4^2} = 2\sqrt{13}$

□ PQRS will be a rectangle

[PQRS] = 6 × 4 = 24

$\therefore$ [PQS] = [SRQ] = 12

Now [PSQ] $= \frac{1}{2} \times SQ \times PM = 12$

$\frac{1}{2} \times 2\sqrt{13} \times PM = 12$

$PM = \frac{12}{\sqrt{13}}$

Similarly, $RN = \frac{12}{\sqrt{13}}$

Now, In right angle triangle ΔPSM

$SM = \sqrt{PS^2 - PM^2} = \sqrt{4^2 - \left(\frac{12}{\sqrt{13}}\right)^2} = \frac{8}{\sqrt{13}}$

Similarly, $QN = \frac{8}{\sqrt{13}}$

Now, MN = SQ – SM – QN

$= 2\sqrt{13} - \frac{8}{\sqrt{13}} - \frac{8}{\sqrt{13}} = \frac{26-16}{\sqrt{13}} = \frac{10}{\sqrt{13}}$

4. 3

Sol. Thyroxin regulates carbohydrate, protein and fat metabolism in the body so as to provide the best balance for growth.

6. 4

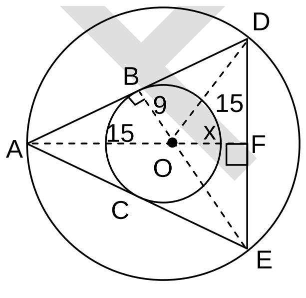
Sol. Fertilisation takes place in fallopian tube.

8. 2

Sol. Hibiscus and mustard are bisexual flowers.

9. 2

Sol.



$AB = \sqrt{15^2 - 9^2} = 12\text{ cm} = BD = AC = CE$

Let OF = x cm then $DE = 2\sqrt{225 - x^2}$

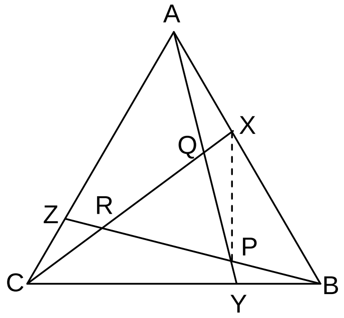
Using $R = \frac{abc}{4\Delta}$

$$15 = \frac{24 \times 24 \times 2\sqrt{225 - x^2}}{4 \times \frac{1}{2} \times (15 + x)\left(2\sqrt{225 - x^2}\right)}$$

$\Rightarrow x = 4.2$ cm

12. 1

Sol.



By using Menalau's theorem

CR : RQ : QX = BP : PR : RZ = AQ : QP : PY = 3 : 3 : 1

Now, AX : XB = 1 : 2

$\Rightarrow [BXC] = \frac{2}{3}[ABC]$

CR : RX = 3 : 4

$\Rightarrow [BRX] = \frac{4}{7}[BXC] = \frac{8}{21}[ABC]$

Join P to X, Since RP : PB = 1:1

$\Rightarrow [XPR] = \frac{1}{2}[BRX] = \frac{4}{21}[ABC]$

RQ : QX = 3 : 1

$\Rightarrow [PQR] = \frac{3}{4}[XPR] = \frac{1}{7}[ABC]$

$\Rightarrow ar(PQR) = \frac{1}{7} \times \frac{\sqrt{3}}{4} \times 14 \times 14 = 7\sqrt{3}\ cm^2$

15. 3

Sol. Arteries always carry blood away from heart, while veins always carry blood towards the heart.

16. 4

Sol. 0.001 M NaOH $\Rightarrow [OH^-] = 10^{-3}$ M

$\Rightarrow$ pOH = 3, so pH = 11

17. 3

Sol. Draw AQ $\perp$ ED

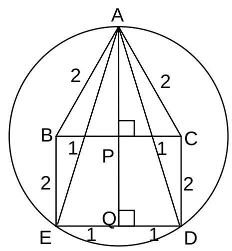
Then EQ = QD = 1 cm

Also, BP = PC = 1 cm

Join A to D and E

Now $AP = \sqrt{3}$ cm, $PQ = 2$ cm

$\Rightarrow AQ = (\sqrt{3}+2)$ cm



By Pythagoras theorem $AD = AE = \sqrt{(\sqrt{3}+2)^2 + 1}$

Now, given circle is circumcircle of ΔAED

$\Rightarrow \text{Radius} = \frac{(AE)(ED)(AD)}{4 \times ar(AED)}$

$= \frac{\left[(\sqrt{3}+2)^2 + 1\right](2)}{4 \times \frac{1}{2} \times 2 \times (\sqrt{3}+2)} = 2$ cm

Circumference = 4π cm

19. 2

Sol. Tall (**TT**) — dwarf (**tt**)

↓

Tt × Tt — **F_1 generation**

↓

	T	t
T	TT	Tt
t	Tt	tt

Homozygous tall – 1
Heterozygous tall – 2
Homozygous dwarf – 1

20. 3

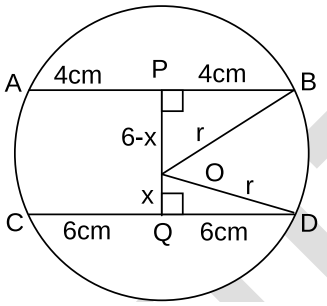
Sol. One mole SO_2 means 64 g of it = 6.022×10^{23} molecules.

21. 4

Sol. Growing two or more crops but indefinite row pattern is known as mixed cropping.

23. 2

Sol.



Let radius of circle = r cm
and OQ = x cm then OP = (6 – x) cm
By Pythagoras theorem,
$r^2 = x^2 + 36$ and $r^2 = 16 + (6 - x)^2$
on solving both equations we get,

$x = \frac{4}{3}$ and $r^2 = \frac{340}{9}$

Distance of chord EF from centre $= 3 - \frac{4}{3} = \frac{5}{3}$ cm

So, length of chord EF

$= 2\sqrt{r^2 - \left(\frac{5}{3}\right)^2}$

$= 2\sqrt{\frac{340}{9} - \frac{25}{9}} = 2\sqrt{35}$

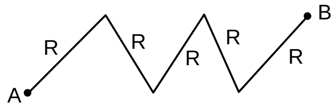
$= \sqrt{140} \Rightarrow K = 140$

26. 1

Sol. Case-I:

All resistance are in series

$R_1 = 5R = 5\Omega$

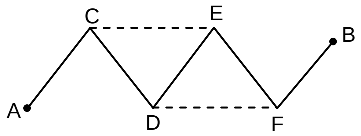


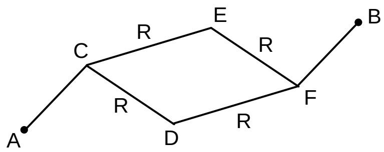
Case-II:

C & F balanced wheat stone bridge is formed.

$R_2 = 3R = 3\Omega$

Charge in resistance = 5 – 3 = 2Ω.





27. 1

Sol. When sound changes its medium frequency remains same since frequency depends on source.

28. 2

Sol. $C(s) + O_2(g) \longrightarrow CO_2(g) + \text{Heat} + \text{Light}$

$1\text{mol} + 1\text{mol} \longrightarrow 1\text{mol}$

Given C = 9 g

$= \frac{9}{12} = \frac{3}{4}\text{mol} = 0.75 \text{ mol}$

O_2 = 16 g

$= \frac{16}{32} = \frac{1}{2} \text{ mol } = 0.50 \text{ mol}$

So CO_2 formed is 0.5 mol = 0.5 × 44 g = 22 g

29. 4

Sol. Tin is more reactive than hydrogen.

30. 1

Sol. A. Formaldehyde is H – CHO

B. Propanal is $CH_3 - CH_2 - CHO$

C. Butanol is $CH_3 - CH_2 - CH_2 - CH_2 - OH$

D. Pentane-3-one is $CH_3 - CH_2 - \overset{\overset{\displaystyle O}{||}}{C} - CH_2 - CH_3$

E. 3-Methyl hexanal is $CH_3 - CH_2 - CH_2 - \overset{\overset{\displaystyle CH_3}{|}}{CH} - CH_2 - CHO$

33. 3

Sol. $NaCl \xrightarrow{\text{electrolysis}} Na(s) + \underset{(A)}{Cl_2(g)}$

$Cl_2(A) + B(\text{soln}) \longrightarrow C$

$\underset{A}{Cl_2} + \underset{B}{Ca(OH)_2} \longrightarrow \underset{C}{CaOCl_2} + H_2O$

35. 4

Sol. Total possible outcomes = 8 × 8 × 8 = 512

Favourable outcomes

= {(1, 1, 1), (1, 2, 2), (2, 1, 2), (1, 3, 3), (3, 1, 3), (1, 4, 4), (4, 1, 4), (2, 2, 4), (1, 5, 5), (5, 1, 5), (1, 6, 6), (6, 1, 6), (2, 3, 6), (3, 2, 6), (1, 7, 7), (7, 1, 7), (8, 1, 8), (1, 8, 8), (2, 4, 8), (4, 2, 8) }

= 20

Required Probability $= \frac{20}{512} = \frac{5}{128}$

37. 3

Sol. $B_1 = B_2$

$v_1dg = v_2dg$

$\Rightarrow\ v_1 = v_2$

where v_1 & v_2 are volume

39. 4

Sol. $\frac{\sqrt{28-10\sqrt{3}}+\sqrt{7+4\sqrt{3}}}{\sqrt{16+6\sqrt{7}}} = a + b\sqrt{7}$

$\Rightarrow \frac{\sqrt{\left(5-\sqrt{3}\right)^2}+\sqrt{\left(2+\sqrt{3}\right)^2}}{\sqrt{\left(3+\sqrt{7}\right)^2}} = a + b\sqrt{7}$

$\Rightarrow \frac{5-\sqrt{3}+2+\sqrt{3}}{3+\sqrt{7}} = a + b\sqrt{7}$

$\Rightarrow \frac{7}{3+\sqrt{7}} \times \frac{\left(3-\sqrt{7}\right)}{\left(3-\sqrt{7}\right)} = a + b\sqrt{7}$

$\Rightarrow \frac{7}{2}\left(3-\sqrt{7}\right) = a + b\sqrt{7}$

$\Rightarrow \frac{21}{2} - \frac{7\sqrt{7}}{2} = a + b\sqrt{7}$

$\Rightarrow a = \frac{21}{2}, b = \frac{-7}{2}\ \therefore 2a + b = 21 - \frac{7}{2} = 17\frac{1}{2}$

40. 2

Sol. From 0° to 4° density increases and when temperature is increased beyond 4° density decreases.

41. 3

Sol. Number of neutrons = 27 – 13 = 14

42. 2

Sol. Involuntary, unstriated, spindle shaped, smooth, uninucleated.

44. 2

Sol.

$$\begin{array}{r|l} & ax - ad \\ \hline x^2 + dx + 1 & ax^3 + bx + c \\ & ax^3 + adx^2 + ax \\ & - \quad\ - \qquad - \\ \hline & -adx^2 - ax + bx + c \\ & -adx^2 - ad^2x - ad \\ & + \qquad + \qquad + \\ \hline & (ad^2 - a + b)x + (c + ad) \end{array}$$

$\because$ $ax^3 + bx + c$ is divisible by $x^2 + dx + 1$
$\therefore$ remainder should be zero
$\therefore$ $(ad^2 - a + b)x + (c + ad) = 0 \times x + 0$
$\Rightarrow ad^2 - a + b = 0$ …(i)
and $c + ad = 0 \Rightarrow d = -c/a$
by equation (i)

$$a\left(\frac{-c}{a}\right)^2 - a + b = 0$$

$$\frac{c^2}{a} - a + b = 0$$

$$\Rightarrow c^2 - a^2 + ab = 0$$

$$\Rightarrow a^2 - c^2 = ab$$

45. 2

Sol. $4HNO_3 + C \longrightarrow 4NO_2 + CO_2 + 2H_2O \rightarrow$ Oxidation-reduction

$2KClO_3(s) \xrightarrow[MnO_2]{Heat} 2KCl + 3O_2 \rightarrow$ Decomposition

$NaCl + AgNO_3 \longrightarrow AgCl + NaNO_3 \rightarrow$ Double displacement

$N_2 + 3H_2 \xrightarrow[410^oC]{Fe} 2NH_3 \rightarrow$ Combination

$Na + CuSO_4 \longrightarrow Na_2SO_4 + Cu(s) \rightarrow$ Displacement

46. 4

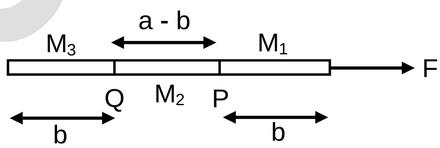
Sol. The function of body controlled by medulla oblongata is heart beat, rate of respiration, and secretion of saliva.

47. 2

Sol. $T_Q = M_3A$

$T_P = (m_2 + m_3) A$

$$\frac{T_P}{T_Q} = \frac{m_2 + m_3}{m_3} = \frac{a - b}{b}$$



49. 1

Sol. 5 to 8% ethanoic acid is present in vinegar

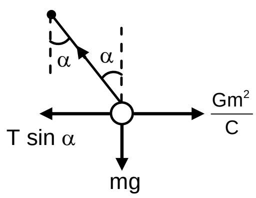
50. 2

Sol. $T \sin\alpha = \dfrac{Gm^2}{C}$

$T \cos\alpha = mg$

$\tan\alpha = \dfrac{mG}{c^2g}$

$$\Rightarrow \alpha = \tan^{-1}\left(\frac{mG}{C^2g}\right)$$



51. 4

Sol. $\sin\theta = \dfrac{m^2 + 2mn}{m^2 + 2mn + 2n^2} \Rightarrow \operatorname{cosec}\theta = \dfrac{m^2 + 2mn + 2n^2}{m^2 + 2mn}$

$$\cot\theta = \sqrt{\operatorname{cosec}^2\theta - 1} = \sqrt{\left(\frac{m^2 + 2mn + 2n^2}{m^2 + 2mn}\right)^2 - 1}$$

$$= \frac{2(m+n)n}{m^2+2mn} = \frac{2\left(mn+n^2\right)}{m^2+2mn}$$

Now, $\frac{1}{\sec\theta - \tan\theta} - \frac{1}{\cos\theta} = \frac{\sec^2\theta - \tan^2\theta}{\sec\theta - \tan\theta} - \sec\theta$

$$= \tan\theta = \frac{m^2+2mn}{2\left(mn+n^2\right)}$$

52. 3

Sol. $x^2 - y^2 = 45$, x and y are positive integer
$\Rightarrow (x-y)(x+y) = 45$
Different possibilities are
$x + y = 45, x - y = 1 \Rightarrow x = 23, y = 22$
$x + y = 15, x - y = 3 \Rightarrow x = 9, y = 6$
$x + y = 9, x - y = 5 \Rightarrow x = 7, y = 2$
So, 3 pairs are possible.

56. 2

Sol. Time to fill vessel

$$= \frac{\frac{1}{3}\times\pi\times 50\times 50\times 45}{\pi\times 1\times 1\times 1000} \text{minutes}$$

= 37.5 minutes

57. 4

Sol. Elements of s-block forms basic oxides
'Mg' with atomic number 12 and
'K' with atomic number 19 will form basic oxides

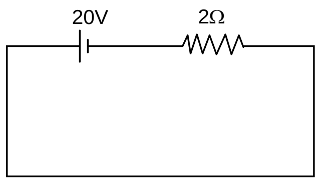
58. 1

Sol. Oxygen is more electronegative so form H-Bonding.

60. 4

Sol. $i = \frac{V}{R}$ = 10 A

P = VI = 20 × 10
= 200 W



(4Ω & 6Ω are short circuited)

61. 4

Sol. The root hairs absorb water, when salt concentration of cell sap is high.

62. 2

Sol. $$\frac{(\sec\theta + \tan\theta)(1-\sin\theta)\sec\theta}{(1+\tan\theta+\sec\theta)(1+\cot\theta-\operatorname{cosec}\theta)}$$

$$= \frac{\left(\frac{1+\sin\theta}{\cos\theta}\right)\left(\frac{1-\sin\theta}{\cos\theta}\right)}{\begin{array}{l}1+\cot\theta-\operatorname{cosec}\theta+\tan\theta+1-\tan\theta\operatorname{cosec}\theta\\ +\sec\theta+\sec\theta\cot\theta+\sec\theta\operatorname{cosec}\theta\end{array}}$$

$$= \frac{1}{1+\frac{\cos\theta}{\sin\theta}-\frac{1}{\sin\theta}+\frac{\sin\theta}{\cos\theta}+1-\frac{1}{\cos\theta}+\frac{1}{\cos\theta}+\frac{1}{\sin\theta}-\frac{1}{\sin\theta\cos\theta}}$$

$$= \frac{1}{2} = 0.5$$

Which lies between 0.4 and 0.6

64. 2

Sol. Slope of momentum time graph gives force.
Slope at A is minimum while slope at C is maximum.

65. 3

Sol. $x^2 - 3x + 1 = 0$

$$\Rightarrow x + \frac{1}{x} = 3 \qquad \ldots(i)$$

Squaring

$$x^2 + \frac{1}{x^2} + 2 = 9 \Rightarrow x^2 + \frac{1}{x^2} = 7 \qquad \ldots(ii)$$

Now cubing equation (i)

$$x^3 + \frac{1}{x^3} + 3\left(x + \frac{1}{x}\right) = 27$$

$$\Rightarrow x^3 + \frac{1}{x^3} + 3 \times 3 = 27 \Rightarrow x^3 + \frac{1}{x^3} = 18 \qquad \ldots(iii)$$

Now (ii) × (iii)

$$\Rightarrow \left(x^2 + \frac{1}{x^2}\right)\left(x^3 + \frac{1}{x^3}\right) = 18 \times 7$$

$$\Rightarrow x^5 + \left(x + \frac{1}{x}\right) + \frac{1}{x^5} = 126 \Rightarrow x^5 + \frac{1}{x^5} = 126 - 3 = 123$$

68. 3

Sol. Height = 4 cm, Radius = r cm

Case – I

$\pi(r + 12)^2 (4) - x = 4\pi r^2$ …(i)

Case – II

$\pi(r)^2 (16) - x = 4\pi r^2$ …(ii)

From equation (i) and (ii)

r = 12 cm

So, CSA = 96 π cm^2

69. 2

Sol. A plant that produces spores and embryos but lacks seeds and vascular tissues belongs to bryophytes.

72. 1

Sol. Development and formation of pollen grains in anther of the stamen is known as microsporogenesis.

73. 2

Sol. Carbon dioxide is not a pollutant by its nature.

78. 1

Sol. A person decides to live exclusively on a diet of milk, egg and bread. He would suffer from scurvy as vitamin C is not included in his diet.

81. 4

Sol. $V^2 = V^2 + 2gh$

$V = \sqrt{2gh}$

$\frac{V_a}{V_b} = \sqrt{\frac{a}{b}}$

82. 3

Sol. Given: $\sqrt{x^2 + x^{4/3}y^{2/3}} + \sqrt{y^2 + x^{2/3}y^{4/3}} = K$

$\Rightarrow \sqrt{x^{4/3}\left(x^{2/3} + y^{2/3}\right)} + \sqrt{y^{4/3}\left(y^{2/3} + x^{2/3}\right)} = K$

$\Rightarrow \sqrt{\left(x^{2/3} + y^{2/3}\right)}\left[\sqrt{x^{4/3}} + \sqrt{y^{4/3}}\right] = K$

$\Rightarrow \left(x^{2/3} + y^{2/3}\right)^{3/2} = K$

$\Rightarrow x^{2/3} + y^{2/3} = K^{2/3}$

84. 1

Sol. $T = 2\pi\sqrt{\frac{\ell}{g}}$

$\frac{T_{smaller}}{T_{longer}} = \frac{1}{5}$

So they will repeat after $\frac{5}{4}$ oscillations.

85. 2

Sol. $_{20}X^{2} + {}_{17}Y^{1} \longrightarrow Z$

$\Rightarrow$ Z is XY_2 ($CaCl_2$)

86. 3

Sol. $a_4 + a_7 + a_{10} = 17$

$(a + 3d) + (a + 6d) + (a + 9d) = 17$

$\Rightarrow 3a + 18d = 17$

$\Rightarrow a + 6d = \frac{17}{3}$ …(i)

and $(a_1 + a_2 + \ldots.. + a_{14}) - (a_1 + a_2 + a_3) = 77$

$\Rightarrow (a + a + d + a + 2d + \ldots.. + a + 13d) - (a + a + d + a + 2d) = 77$

$\Rightarrow 14a + d\,(1 + 2 + \ldots.. + 13) - (3a + 3d) = 77$

$\Rightarrow 14a + d \times \frac{13 \times 14}{2} - 3a - 3d = 77$

$\Rightarrow 14a + 91d - 3a - 3d = 77$

$\Rightarrow 11a + 88d = 77$

$\Rightarrow a + 8d = 7$ …(ii)

(ii) – (i)

$\Rightarrow 2d = 7 - \frac{17}{3} = \frac{4}{3} \Rightarrow d = \frac{2}{3}$

$\because a + 6d = \frac{17}{3}$

$\Rightarrow a + 6\left(\frac{2}{3}\right) = \frac{17}{3}$

$a = \frac{5}{3}$

Now, $T_k = 13$

$\therefore$ a + (k – 1)d = 13

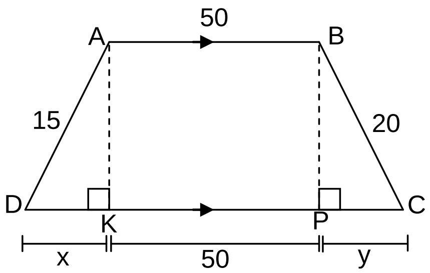
$\frac{5}{3} + (k - 1)\frac{2}{3} = 13$

$1 + \frac{2k}{3} = 13$

$\Rightarrow \frac{2k}{3} = 12 \Rightarrow k = 18$

87. 3

Sol.



$\because$ AK = BP (AB || DC)

$\Rightarrow AK^2 = BP^2$

$\Rightarrow 15 - x^2 = 20^2 - y^2$

$\Rightarrow y^2 - x^2 = 20^2 - 15^2 = 35 \times 5$

$\Rightarrow (y + x)(y - x) = 35 \times 5$

Case – I

$(y + x)(y - x) = 35 \times 5$

$y + x = 35,\ y - x = 5$

$\Rightarrow 2y = 40 \Rightarrow y = 20$ and $x = 15$

Case – II

$(y + x)(y - x) = 35 \times 5 = 7 \times 5 \times 5$

$(y + x)(y - x) = 25 \times 7$

$\Rightarrow y + x = 25,\ y - x = 7$

$\Rightarrow y = 16,\ x = 9$

At x = 9

$AK = \sqrt{15^2 - 9^2} = 12$

and at x = 15, AK will be zero

Hence only case – II is acceptable.

$\therefore$ Height AK = 12

Now area $= \frac{1}{2} \times$ sum of parallel sides × height

$= \frac{1}{2} \times (100 + x + y) \times 12$

$= \frac{1}{2} \times (100 + 16 + 9) \times 12$

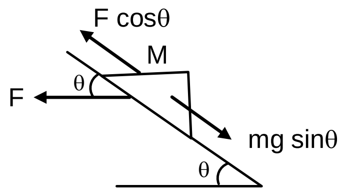
$= 125 \times 6 = 750\ cm^2$

89. 2

Sol. FBD of block

given F = mg

Since block is at rest wrt incline



$F \cos\theta = mg \sin\theta$

$mg \cos\theta = mg \sin\theta$

$\Rightarrow \quad \theta = 45°$

92. 3

Sol. $\Delta V = V\gamma\Delta T$

or $\Delta V \propto \Delta T$

Q Material and temperature difference are same for both spheres.

So expansion are equal.

93. 3

Sol. The metal atom which is present in superphosphate is Calcium(Ca).

94. 1

Sol. Let say these numbers are such that x < y < z.

ATQ,

$\text{Mean} = \frac{x+y+z}{3} = x + 11 = z - 15$

and given median = 10

Hence y = 10

$\therefore \frac{x+y+z}{3} = x + 11$

x + 10 + z = 3x + 33

$\Rightarrow -2x + z = 23$ …(i)

$\frac{x+y+z}{3} = z - 15$

$\Rightarrow x + 10 + z = 3z - 45$

$\Rightarrow x - 2z = -55$ …(ii)

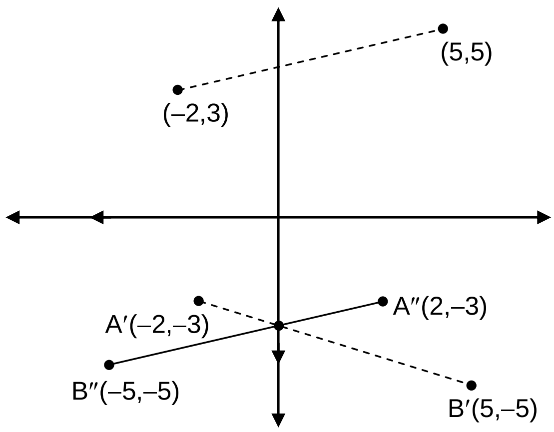
By (i) and (ii),

z = 29, x = 3

$\therefore$ x + y + z = 3 + 10 + 29 = 42

96. 3

Sol. A(–2, 3), B (5, 5) is reflected in x – axis.



Hence new coordinates will be:

A′(–2, –3) and B′(5, –5)

Now it is reflected in y-axis

So, coordinates will be

A″(2, –3) and B″(–5, –5)

$\therefore$ Midpoint of A″ and B″ is: $\left(-\frac{3}{2}, -4\right)$

$\therefore$ Sum of coordinates of midpoint of final image $= \frac{-3}{2} - 4$

$= -\frac{11}{2}$

$= -5\frac{1}{2}$

97. 3

Sol. Kidney removes N_2 waste such as urea and uric acid from the blood.

98. 4

Sol. Gravitational field inside hollow sphere is zero. Hence gravitational force is zero.

99. 3

Sol. |x| + y = 4

At y-axis, |x| = 0

$\therefore$ y = 4 $\Rightarrow$ coordinates (0, 4)

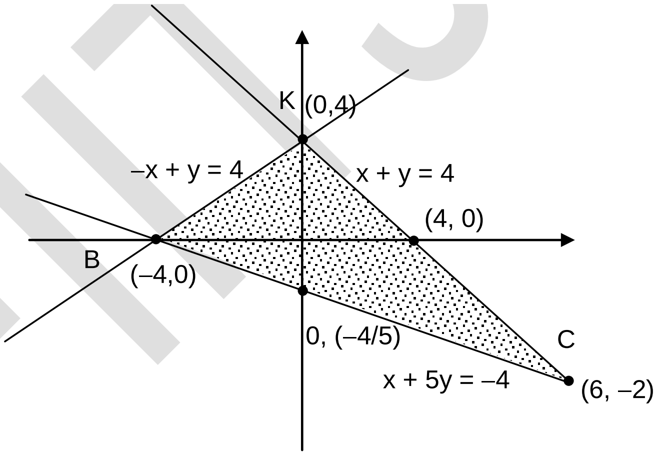
At x-axis, y = 0, $\therefore$ |x| = 4 $\Rightarrow$ x = ± 4

$\therefore$ Coordinates of points (4, 0), (–4, 0)

Now the line x + 5y = –4

Again at x-axis, y = 0 $\Rightarrow$ coordinate of point (–4, 0) and at Y axis x = 0 $\Rightarrow$ $y = \frac{-4}{5}$

$\therefore$ coordinate of point = (0, $\frac{-4}{5}$)



$\therefore$ Intersection point of line.

x + y = 4 and x + 5y = –4 will be (6, –2)

Now we need to find the area of ΔKBC.

where K(0, 4), B(–4, 0) and C(6, –2)

$$\Delta = \frac{1}{2}\left|x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)\right|$$

$$= \frac{1}{2}\left|0(y_2 - y_3) + (-4)(-2-4) + 6(4-0)\right|$$

$$= \frac{1}{2}\left|24 + 24\right| = \frac{48}{2} = 24$$