CLASS TEST

S.No.: 02SK_BCDEFGHI_100925

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REASONING AND APTITUDE

EC + EE

Date of Test : 10/09/2025

ANSWER KEY

1.	(c)	7.	(a)	13.	(a)	19.	(c)	25.	(c)
2.	(a)	8.	(d)	14.	(b)	20.	(b)	26.	(a)
3.	(b)	9.	(c)	15.	(a)	21.	(b)	27.	(c)
4.	(c)	10.	(b)	16.	(c)	22.	(a)	28.	(a)
5.	(c)	11.	(a)	17.	(a)	23.	(d)	29.	(a)
6.	(b)	12.	(b)	18.	(c)	24.	(a)	30.	(a)

DETAILED EXPLANATIONS

1. (c)

$$C = \frac{A+D}{2}, D > B > C$$

$$B = \frac{A+E}{2}$$

$$A + D = 2C$$

$$A + E = 2B$$

Since $B > C \Rightarrow E > D$

$$C < B < D < E$$

Since C is average of A and D, so $A < C$

$\Rightarrow$ The correct sequence is $A < C < B < D < E$

The middle number is B.

2. (a)

Let the age of Rohini in 2014 is x years,

His brother's age = $x - 6$ years

In 2004,

$$3(x - 6 - 10) = x - 10$$

$$3x - 48 = x - 10$$

$$2x = 38$$

$$x = 19$$

Rohini's age in 2014 is 19 years.

$\Rightarrow$ She was born in 2014-19 = 1995

3. (b)

Let, The full fare = ₹ x

The reservation charge = ₹ y

$$x + y = 362$$

$$\frac{3}{2}x + 2y = 554$$

From here, $x = 340$ and $y = 22$

$\Rightarrow$ Reservation charge is ₹ 22.

4. (c)

Let their present ages are $4x$, $5x$. Eighteen years ago, their ages were = $4x - 18$, $5x - 18$

$$\frac{4x-18}{5x-18} = \frac{11}{16}$$

$$64x - 288 = 55x - 198$$

$$9x = 90$$

$$x = 10$$

Sum of their present ages = $4x + 5x = 9x = 9 \times 10 = 90$ years

5. (c)

$$378 = 2 \times 3^3 \times 7$$

$$675 = 3^3 \times 5^2$$

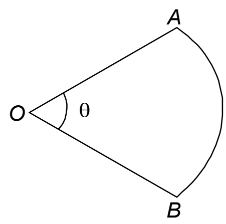
HCF of 378 and 675 is, $3^3 = 27$

The minimum number of sections is given by,

$$= \frac{378}{27} + \frac{675}{27}$$

$$= 14 + 25 = 39 \text{ sections}$$

6. (b)



The area of sector $OAB = \pi r^2 \times \frac{\theta}{360°} = \pi(10)^2 \times \frac{\theta}{360°} = 80$

From here, $\left(\frac{\theta}{360°}\right) = \frac{80}{\pi \times (10)^2}$

Length of arc $AB = 2\pi r \times \frac{\theta}{360°}$

$$= 2\pi \times 10 \times \frac{80}{\pi \times (10)^2} = 16 \text{ cm}$$

Perimeter of platform = 16 + 10 + 10 = 36 cm

Length of the wire required = 3 × 36 = 108 cm

7. (a)

According to the given information,

$$\frac{23}{100} = \frac{10\times 2 + 20\times 3 + 30\times x}{100\times(2+3+x)}$$

$$23 = \frac{20 + 60 + 30\times x}{5 + x}$$

$$23(5 + x) = 80 + 30x$$

$$7x = 35$$

$$x = 5$$

8. (d)

$$(7 + 2) \times 4 = 36$$

$$(6 + 8) \times 3 = 42$$

$$(9 + 4) \times x = 26$$

From here, $x = 2$

9. (c)

The number of boys in 6^{th} class

$$= \frac{20}{100}\times\frac{3}{5}\times 1000 = 120$$

The number of boys in 9^{th} class

$$= \frac{18}{100}\times\frac{3}{5}\times 1000 = 108$$

Total boys in 6^{th} & 9^{th} class= 120 + 108 = 228

10. (b)

$$\begin{matrix} \bullet & \bullet & \bullet & \bullet & \bullet \\ E & B & A & C & D \end{matrix}$$

$\therefore$ A is sitting in between B and C.

11. (a)

$$\begin{aligned} \text{First month's saving} &= ₹\ 20 \\ \text{Second month's saving} &= ₹\ 20 + 4 \\ \text{Saving after } n \text{ months} &= ₹\ 20 + (n-1)4 \\ \frac{n}{2}(2\times 20 + (n-1)\times 4) &\geq 1000 \\ 40n + n(n-1)\times 4 &\geq 2000 \\ 40n + 4n^2 - 4n &\geq 2000 \\ 4n^2 + 36n - 2000 &\geq 0 \\ n &\geq 18.30, -27.30 \\ \Rightarrow \qquad n &= 19 \end{aligned}$$

$\Rightarrow$ After 19 months his savings will be greater than ₹ 1000.

12. (b)

Let the cost prices are x, $2x$, $4x$

Let the quantities are $2y$, $5y$, $2y$

$$\text{Total cost price} = 2\,xy + 10\,xy + 8\,xy = 20\,xy$$

$$\text{Total profit} = \frac{10}{100}\times 2xy + \frac{20}{100}\times 10xy + \frac{25}{100}\times 8xy$$

$$= 0.2\,xy + 2\,xy + 2\,xy = 4.2\,xy$$

$$\text{Profit percentage} = \frac{4.2xy}{20xy}\times 100 = 21\%$$

13. (a)

According to given data,

$$20\times t + 12(10-t) = 150$$

$$8t + 120 = 150$$

$$t = \frac{30}{8} = \frac{15}{4}$$

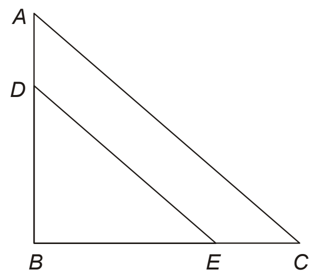
The ratio of distance,

$$20\times\frac{15}{4} : 12\times\left(10-\frac{15}{4}\right)$$

$$75 : 75$$

$$1 : 1$$

14. (b)



ΔABC is similar to ΔDBE

$\Rightarrow$ If $DE = 0.65\ AC$

$DB = 0.65\ AB$

$BE = 0.65\ BC$

$$\text{Initially area} = \frac{1}{2}\times AB\times BC = 34\text{ cm}^2$$

$$\text{Changed area} = \frac{1}{2}\times BE\times DB = \frac{1}{2}\times 0.65AB\times 0.65BC$$

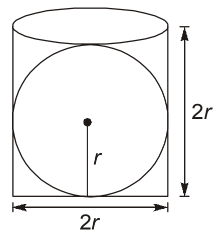
$$= \frac{1}{2}\times (0.65)^2\times AB\times BC$$

$$= (0.65)^2 \times 34 = 14.365\text{ cm}^2$$

15. (a)

$$\text{Volume of total wood} = \pi r^2 \times h$$

$$= \pi r^2 \times 2r \qquad [\because h = \text{diameter} = 2r]$$



The radius of largest sphere possible = r

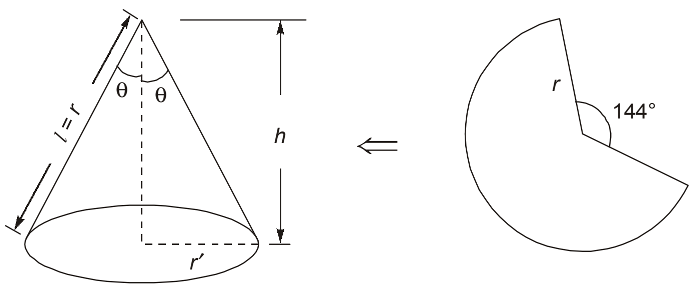
volume of sphere = volume of wood used

$$= \frac{4}{3}\pi r^3$$

$$\text{Volume of wood wasted} = 2\pi r^3 - \frac{4}{3}\pi r^3 = \frac{2}{3}\pi r^3$$

$$\text{Required ratio} = \frac{4}{3}\pi r^3 : \frac{2}{3}\pi r^3 = 2:1$$

16. (c)



Height of cone formed be h

Slant height of cone so formed = radius of given circle

$\Rightarrow$ $l = r$

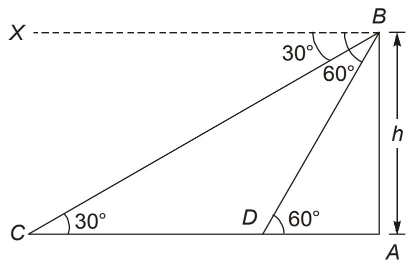
Now circumference of base of cone = Circumference of given sector of circle

$$\Rightarrow \quad 2\pi r' = 2\pi r \times \frac{360° - 144°}{360°}$$

$$\Rightarrow \quad r' = \frac{3}{5}r$$

$$\text{Now vertex angle} = 2\theta = 2\sin^{-1}\left[\frac{r'}{l}\right] = 2\sin^{-1}\left[\frac{3}{5}\right]$$

17. (a)



From figure, $\tan 30° = \dfrac{h}{AC}$

$$AC = h\sqrt{3} \quad \text{...(i)}$$

$$\tan 60° = \frac{h}{AD}$$

$$AD = \frac{h}{\sqrt{3}} \quad \text{...(ii)}$$

Also, $CD = AC - AD$

$$= h\sqrt{3} - \frac{h}{\sqrt{3}} = \frac{2h}{\sqrt{3}}$$

Time taken to cover CD is 10 min,

$$\text{we know speed} = \frac{\text{Distance}}{\text{time}}$$

$$\therefore \quad S = \frac{\frac{2h}{\sqrt{3}}}{10} = \frac{h}{5\sqrt{3}}$$

$$\therefore \text{ time taken to cover, } AD = \frac{(\text{Distance } AD)}{\text{Speed}} = \frac{\left(\frac{h}{\sqrt{3}}\right)}{\frac{h}{(5\sqrt{3})}} = 5 \text{ minutes}$$

18. (c)

Probability that either one of them is lying

$$= \frac{90}{100}\times\frac{20}{100}+\frac{10}{100}\times\frac{80}{100}$$

Chances that he is first one$= \dfrac{\frac{10}{100}\times\frac{80}{100}}{\frac{90}{100}\times\frac{20}{100}+\frac{10}{100}\times\frac{80}{100}}\times 100 = \dfrac{\frac{800}{10000}}{\frac{1800}{10000}+\frac{800}{10000}} = \dfrac{800}{2600} = \dfrac{8}{26} = \dfrac{4}{13}$

19. (c)

Let the number of trucks to be used initially = x

$$\begin{aligned}
\text{Let capacity of one truck} &= y \\
xy &= 60 \\
(x+4)(y-0.5) &= 60 \\
xy + 4y - 0.5x - 2 &= 60 \\
4y - 0.5x - 2 &= 0 \qquad \because xy = 60 \\
4\left(\frac{60}{x}\right) - 0.5x - 2 &= 0 \\
240 - 0.5x^2 - 2x &= 0 \\
x^2 + 4x - 480 &= 0 \\
x &= 20, -24
\end{aligned}$$

By neglecting the negative value, we get, $x = 20$.

20. (b)

Let B can do the work in x days. A can do the work in $x - 6$ days.

$$\begin{aligned}
\frac{1}{x}+\frac{1}{x-6} &= \frac{1}{x-8} \\
\frac{x-6+x}{x^2-6x} &= \frac{1}{x-8} \\
(2x-6)(x-8) &= (x^2-6x) \\
2x^2 - 22x + 48 - x^2 + 6x &= 0 \\
x^2 - 16x + 48 &= 0 \\
x &= 12, 4
\end{aligned}$$

$x \neq 4$ because for $x = 4$, $x - 6$ will be negative which is not possible. So, $x = 12$.

21. (b)

Let the cost price of the item = ₹ x

$$\begin{aligned}
\text{selling price} &= x\times\frac{125}{100} = 1.25x \\
\text{discount} &= 25\% \\
\Rightarrow \quad \text{marked price} &= 1.25x\times\frac{100}{75} = ₹\,\frac{5}{3}x \\
\text{New rate of discount} &= 10\% \\
\text{New selling price} &= \frac{5x}{3}\times\frac{90}{100} = ₹\,\frac{3x}{2}
\end{aligned}$$

$$\text{New profit} = \frac{3x}{2} - x = \frac{x}{2}$$

$$\text{Profit percentage} = \frac{x/2}{x} \times 100 = 50\%$$

22. (a)

Let Pradeep alone can do the work in x days.

$$\frac{1}{24} + \frac{1}{30} + \frac{1}{x} = \frac{1}{12}$$

$$\frac{1}{x} = \frac{1}{12} - \frac{1}{24} - \frac{1}{30}$$

$$x = 120$$

Payment is in inverse ratio of number of days they required to do the work alone.

Ratio of payment

Ajay		Vijay		Pradeep
$\frac{1}{24}$	:	$\frac{1}{30}$	:	$\frac{1}{120}$
5	:	4	:	1

$\Rightarrow$ Pradeep gets the amount $= \frac{1}{5+4+1} \times 200$ = ₹ 20

23. (d)

Let the number of fruits be $2k$, $5k$ and $8k$

Given, $5k - 2k$ = multiple of 6 and 8

LCM of 6 and 8 is 24

Let's say $5k - 2k = 24n$

$3k = 24n$

For k to be a natural number and have minimum value, n should be equal to 1

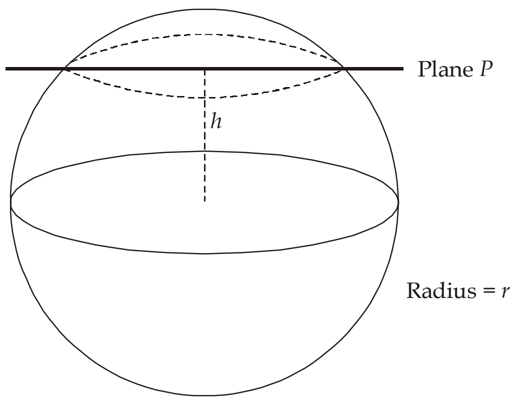
$3k = 24$

Or $k = 8$

Hence, the minimum number of fruits $= 2k + 5k + 8k = 15 \times 8 = 120$

24. (a)

$$\text{Area} = 4\pi r^2$$

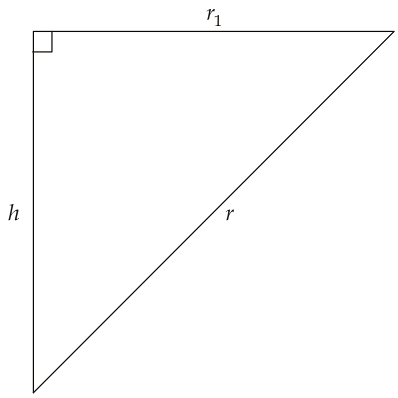


Cumulative area of the two pieces = 25% more than that of sphere = $1.25 \times 4\pi^2 = 5\pi r^2$

$$\text{Extra area} = \text{area of two new circles} = \pi r^2$$

Let radius of new circle be r_1.

$$\text{Now, } \pi r_1^2 = \pi r^2/2$$



$$r_1 = r/\sqrt{2}$$

Now, r_1, h and r form a right angled triangle.

$$h^2 + r_1^2 = r^2$$

$$h = r/\sqrt{2}$$

25. (c)

Given, $x^2 + 5x - 7 = 0$ has roots a and b. We know that,

Sum of roots in a quadratic equation = $a + b = \frac{(-5)}{1} = -5$

Product of the roots = $ab = \frac{(-7)}{1} = -7$.

Now, The second equation $2x^2 + px + q = 0$ has roots $a + 1$ and $b + 1$.

Sum of the roots = $a + 1 + b + 1 = a + b + 2 = \frac{(-p)}{2} = -5 + 2 \Rightarrow -3 = \frac{(-p)}{2} \Rightarrow -p = -6 \Rightarrow p = 6$

Product of the roots = $(a + 1)(b + 1) = ab + a + b + 1 = \frac{q}{2}$.

We know the values of ab and $a + b$. Substituting this, we get, $-7 + (-5) + 1 = \frac{q}{2} \Rightarrow q = -22$.

$\therefore$ $p + q = 6 - 22 = -16$

26. (a)

First, the n^{th} term of *L.H.S* need to be defined by observing the pattern :–

It is $\log_{2^n} 2.2^n$

$\log_2 4 \times \log_4 8 \times \log_8 16 \times \ldots\ldots\ldots\ldots \log_{2^n} 2.2^n = 49$

Whenever solving a logarithm equation, generally one should approach towards making the base same.

Making the base 2 :–

$$\log_2 4 \times \frac{\log_2 8}{\log_2 4} \times \frac{\log_2 16}{\log_2 8} \times \ldots\ldots \frac{\log_2 2.2^n}{\log_2 2^n}$$

$$\log_{2^n} 2 + \log_{2^n} 2^n = 49$$

$$\Rightarrow \quad 1 + n = 49$$

$$\Rightarrow \quad n = 48$$

27. (c)

Let the sum = 100, Time = 3 years

Amount due in 3 years = 200

$$100\left(1 + \frac{r}{100}\right)^3 = 200$$

$$\Rightarrow \quad \left(1 + \frac{r}{100}\right)^3 = 2$$

$$\Rightarrow \quad \left(1 + \frac{r}{100}\right) = 2^{1/3} \quad \ldots(i)$$

Let the amount become 16 times in n years.

$$100\left(1 + \frac{r}{100}\right)^n = 1600$$

$$\left(1 + \frac{r}{100}\right)^n = 16 \quad \ldots(ii)$$

From eq. (i) and eq. (ii), we get

$$(2^{1/3})^n = 16 = 2^4$$

$$\frac{n}{3} = 4$$

$$n = 12 \text{ years}$$

28. (a)

Ways to select 2 females = $^5C_2$

Ways to select 1 male = $^7C_1$

$$\therefore \quad \text{Required probability} = \frac{^5C_2 \times {}^7C_1}{^{12}C_3} = \frac{7}{22}$$

29. (a)

Sum of angles in n sided polygon = $(n - 2)\ 180°$

In hexagon $n = 6$

$\therefore$ Sum = $(6 - 2)180 = 720°$

$$\text{Each angle} = \frac{720°}{6} = 120°$$

Now, in ΔCDE. $CD = DE$, so it is an isosceles triangle. The angle at $D = 120°$, so other two angles must be 30° each. So $\angle DEC = \angle DCE = 30°$.

Now, $\angle CDG = \angle DCG = 30°$

$\therefore$ $\angle DGC = 180° - 30° - 30° = 120°$

$\angle DGE = 180° - \angle DGC = 180° - 120° = 60°$

30. (a)

With no restrictions, the six children can be arranged in 6! ways i.e. 720 ways.

In all these arrangements it is just as likely for E to be on the left of F as it is for E to be on the right of F.

Therefore, exactly half must have E to the right of F, and exactly half must have E to the left of F.

Therefore, exactly $\frac{720}{2} = 360$ of the arrangements have E to the left of F.

■■■■