



# ABHYASAM DEFENCE GROUP



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**RIMC**

**ANSWER KEY**

1ST DECEMBER 2024

सबसे पहले, सबसे सटीक



**LIVE** 1ST DECEMBER 2024 AT 4 PM.

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① let  $x$  is added.

$$x + 2x \frac{7}{5} = \frac{3}{7}$$

$$\Rightarrow x + \frac{14}{5} = \frac{3}{7}$$

$$\Rightarrow x = \frac{3}{7} - \frac{14}{5} = \frac{15 - 98}{35} = -\frac{83}{35}$$

②

$$\begin{array}{r|l} 3x-2y & 3x^3+6x^2y-17xy^2+6y^3 \\ \hline & 3x^3-2x^2y \\ \hline & 12x^2y-17xy^2 \\ & 12x^2y-8xy^2 \\ \hline & -9xy^2+6y^3 \\ & -9xy^2+6y^3 \\ \hline & 0 \end{array}$$

③

$$2x^2 = y^2$$

$$(x, y) = (2, 4)$$

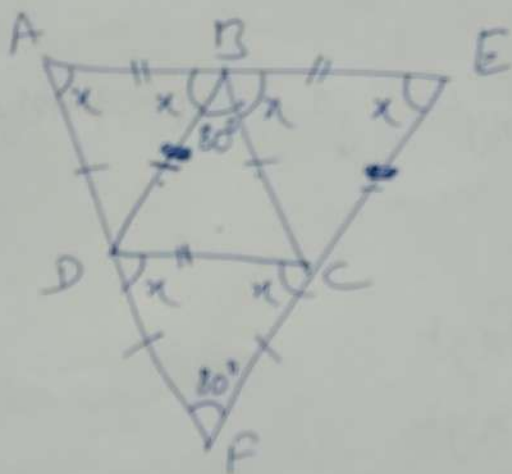
$$a) 2 \times 2^3 = 16 = 4^2$$

$$(x, y) = (32, 56)$$

$$2 \times 32^3 = 65536 = (256)^2$$

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④



$$\angle F = 80^\circ$$

$$x + 80 + x = 180^\circ$$

$$2x = 100^\circ$$

$$x = 50^\circ$$

$$\therefore \angle A = \angle E = 50^\circ$$

In both cases, distance  $d$  is travelled is same. when he travels at  $5 \text{ km/hr}$  he reached the station  $58 \text{ min.}$  earlier than when he travelled by  $4 \text{ km/hr}$ .

$$t = \frac{d}{s}$$

$$\Rightarrow \frac{d}{4} - \frac{d}{5} = \frac{58}{60}$$

$$\Rightarrow \frac{5d - 4d}{20} = \frac{58}{60}$$

$$\Rightarrow \frac{d}{20} = \frac{58}{60}$$

$$\therefore d = \frac{58 \text{ km}}{3}$$

$\therefore$  time taken when travelled with  $4 \text{ km/hr}$

$$= \frac{\frac{58}{3}}{4} \text{ hr} = \frac{29}{2 \times 2} \text{ hr} = \frac{29}{6} \text{ hr}$$

& he is late by  $1 \text{ hr}$ .

$$\therefore \text{actual time} = \frac{29}{6} + 1 = \frac{29-6}{6} = \frac{23}{6} \text{ hr}$$

$$\therefore \text{required speed} = \frac{\frac{58}{3}}{\frac{23}{6}} = \frac{58}{3} \times \frac{6}{23} = \frac{116}{23} \text{ km/hr} \approx \underline{\underline{5.04 \text{ km/hr}}}$$

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⑥ Let Principal =  $P$ ,  $R = 5\%$ ,  $T = 2$  yrs

$$P \left(1 + \frac{5}{100}\right)^2 = 3000 \left(1 + \frac{5}{100}\right) + 2362.5$$

$$\Rightarrow P \times \left(\frac{21}{20}\right)^2 = 300 \times 1.05 + 2362.5$$

$$\Rightarrow P \times \frac{21}{20} \times \frac{21}{20} = 3150 + 2362.5$$

$$\Rightarrow P = \frac{5512.5 \times 20 \times 20}{21 \times 21} = \underline{\underline{5000}} \text{ Rs}$$

⑦ HCF of  $(1657-6)$  &  $(2037-5)$   
 $=$  HCF of  $1651$  &  $2032$   
 $= 127$

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⑧ Final = initial  $\times$  Change

$$48400 = 40000 \times \left(\frac{100+x}{100}\right)^2$$

$$\Rightarrow \frac{48400}{40000} = \left(\frac{100+x}{100}\right)^2$$

$$\Rightarrow \sqrt{\frac{484}{400}} = \frac{100+x}{100}$$

$$\Rightarrow \frac{22}{20} = \frac{100+x}{100}$$

$$\Rightarrow 110 = 100 + x$$

$$\Rightarrow x = 10\%$$

$$\text{LCM } 16, 24, 36 \text{ \& } 54 = 432$$

$$\text{Smallest no of 5 digits} = 10000$$

$$\begin{array}{r} \therefore 432 \overline{) 10000} \quad | \quad 23 \\ \underline{-864} \\ 1360 \\ \underline{-1296} \\ \hline 64 \end{array}$$

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$$\begin{aligned} \therefore \text{req. no.} &= (10000 - 64) + 432 \\ &= 10368 \end{aligned}$$

10

$$\text{Length of wire} = \text{perimeter of Square}$$

$$\begin{aligned} &= 4a \\ &= 4 \times 22 = 88 \end{aligned}$$

$$= \text{Circumference of circle}$$

$$\Rightarrow 2\pi r = 88$$

$$\frac{2 \times 22}{7} \times r = 88 \quad 2$$

$$r = 14$$

$$\text{Area of Square} = 484$$

$$a^2 = 484$$

$$a = 22$$

let  
side @

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

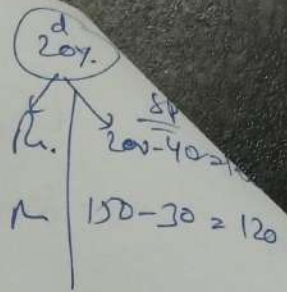
$$= \frac{22}{7} \times 14^2$$

$$= \underline{616 \text{ cm}^2}$$

(11) let the C.P. of article is 100 Rs.

$$\text{M.P. of first article} = 100 + 100 = 200 \text{ Rs.}$$

$$\& \text{ M.P. of 2nd article} = 100 + 50 = 150 \text{ Rs.}$$



$$\therefore \text{Total CP} = 200 \quad \left. \begin{array}{l} \\ \end{array} \right\} 80 \\ \text{Total SP} = 280$$

$$\therefore \text{P\%} = \frac{80}{200} \times 100\% = 40\%$$

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(12) Greeta  $\longrightarrow$  1 day work  $\longrightarrow \frac{1}{20}$

Meen  $\longrightarrow$  1 day work  $\longrightarrow \frac{1}{25}$

$$\therefore \text{Together} = \frac{1}{20} + \frac{1}{25} = \frac{5+4}{100} = \frac{9}{100}$$

$$\text{Together 5 day work} = 5 \times \frac{9}{100} = \frac{9}{20}$$

$$\therefore \text{rem. work} = 1 - \frac{9}{20} = \frac{11}{20}$$

$$\therefore \text{Greeta finish rem. work in} = \frac{\frac{11}{20}}{\frac{1}{20}}$$

$$= \underline{\underline{11 \text{ days}}}$$

~~11 x 25 = 275~~  
~~20 = 4~~  
~~275 / 4 = 68.75 days~~  
~~4~~

$$\begin{aligned}
 \checkmark \text{ no. of Cubes} &= \frac{36\text{m} \times 15\text{m} \times 8\text{m}}{6\text{m} \times 6\text{m} \times 6\text{m}} \\
 &= \frac{2^2 \cdot 3^2 \cdot 36 \times 10^3 \times 5 \times 10^3 \times 8 \times 10^3}{6 \times 6 \times 6 \times 10^9} \\
 &= 20000000
 \end{aligned}$$

14

$$\text{Sum of angles} = (n-2) \times 180^\circ$$

$$\Rightarrow 1026 \times 90^\circ = (n-2) \times 180^\circ$$

$$\Rightarrow 10^6 = n-2$$

$$\therefore n = 12$$

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15

$$\text{S.P.} = 1000/3 \text{ Apple}$$

$$= \text{S.P. of } 300 \text{ Apple} = \frac{10}{3} \times 300 = 1000 \text{ Rs.}$$

$$\text{gain} = 400 \text{ Rs.}$$

$$\therefore \text{C.P. of } 300 \text{ Apple} = 1000 - 400 = 600 \text{ Rs.}$$

$$\therefore \text{C.P. Rate} = \frac{600}{300} = \underline{\underline{2 \text{ Rs/Apple}}}$$

$$\therefore \text{Gain \%} = \frac{400}{3000} \times 100\% = \frac{200}{3}\% = 66\frac{2}{3}\%$$



16) let total =  $x + y + z + w$   
 $\swarrow$   $\uparrow$   $\uparrow$   $\uparrow$   
 boy Mother Father Grandpa

$$(y+z+w+2x) = \frac{105}{100} \times (x+y+z+w)$$

$$(x+z+w+2y) = \frac{115}{100} \times (x+y+z+w)$$

$$(x+y+w+2z) = \frac{125}{100} \times (x+y+z+w)$$

$$(x+y+z+2w) = \left( \frac{100+x}{100} \right) \times (x+y+z+w)$$

$$5(x+y+z+w) = \left( \frac{445+x}{100} \right) (x+y+z+w)$$

$$500 = 445 + x$$

$$\underline{\underline{55 = 2x}}$$

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$$268 \times 74 = 19832$$

$$\therefore 2.68 \times 0.74$$

$$= \frac{268 \times 74}{100 \times 100}$$

$$= \frac{19832}{10000} = \frac{1.9832}{1}$$

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(18) let integers are  $x, x+1, x+2$

$$\therefore x + x+1 + x+2 = S$$

$$\Rightarrow 3x + 3 = S \quad \text{--- (1)}$$

ATQ.  $\left(x \times \frac{110}{100}\right) + 2(x+1) + (x+2) \times \frac{80}{100} = S + 22$

$$\Rightarrow \frac{11x}{10} + 2x + 2 + \frac{8x + 16}{10} = 3x + 3 + 22$$

$$\Rightarrow \frac{11x + 20x + 20 + 8x + 16}{10} = 3x + 25$$

$$\Rightarrow 39x + 36 = 30x + 250$$

$$\Rightarrow 9x = 214$$

$$x = \frac{214}{9}$$

It seems there's,

which is  
impossible

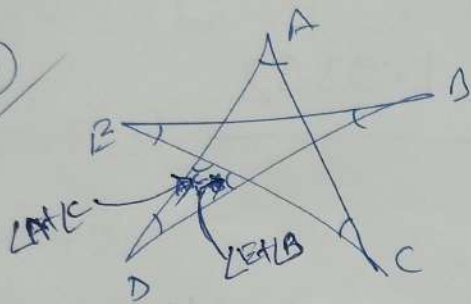
19

$$V = \sqrt{A_1 \times A_2 \times A_3}$$

$$= \sqrt{20 \times 32 \times 40}$$

$$= \sqrt{25600} = 160 \text{ m}^3$$

20



$$\angle ADE + \angle BDF + \angle CDE = 180^\circ$$

$$\angle A + \angle B + \angle C = 180^\circ$$

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$$2 + 2^2 + 2^3 + \dots + 2^{10}$$

$$= 2 + 4 + 8 + 16 + 32 + 64 + 128 + 256 + 512 + 1024$$

$$= 2046$$

22

$$n_1 : n_2 = 1 : 2, \quad n_1 = x, \quad n_2 = 2x$$

$$\frac{(x-2) \times 180^\circ}{x}$$

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

$$\frac{(2x-2) \times 180^\circ}{2x}$$

$$\Rightarrow \frac{(x-2)}{1} \times \frac{2}{(2x-2)} = \frac{3}{5}$$

$$\Rightarrow \frac{(x-2) \times 2}{1 \times 2(x-1)} = \frac{3}{5}$$

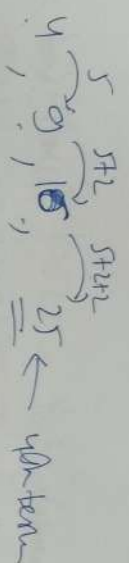
$$\Rightarrow 5(x-2) = 3(x-1)$$

$$\Rightarrow 5x - 10 = 3x - 3$$

$$\Rightarrow 2x = 7$$

$$\Rightarrow x = \frac{7}{2} = \underline{\underline{3.5}}$$

$$\underline{\underline{2x = 7}}$$



$$\text{Median} = 4 + 5 + \frac{(n-1) \times 2}{2}$$

$$= 9 + (2n-1)$$

$$a_{10} = 4 + (10-1) \times 5$$

$$\frac{n}{2} [10 + (n-1) \times 5]$$

$$= \frac{n}{2} [10 + 5n - 5]$$

$$= \frac{n}{2} (5 + 5n)$$

$$= \frac{n \times 5 \times (n+1)}{2}$$

$$= \frac{5n(n+1)}{2}$$

24

$$\text{Sum of 20 students} = 20 \times 15 = 1500$$

$$\text{Sum of 15 students} = 15 \times 10 = 1050$$

a

$$\text{Score of 5 scores} = \frac{450}{5}$$

b

$$\text{avg} = \frac{1050 - 60}{14} = \frac{990}{14} = 70 \frac{5}{7}$$

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$$4 - \frac{5}{1 + \frac{1}{3 + \frac{1}{2 + \frac{1}{4 + \frac{1}{5}}}}}$$

$$4 - \frac{5}{1 + \frac{1}{2 + \frac{1}{3 + \frac{1}{4 + \frac{1}{5}}}}}$$

$$4 - \frac{5}{1 + \frac{1}{3 + \frac{1}{4 + \frac{1}{5}}}}$$

$$4 - \frac{5}{1 + \frac{1}{2 + \frac{1}{3 + \frac{1}{4 + \frac{1}{5}}}}}$$

$$4 - \frac{5}{1 + \frac{1}{3 + \frac{1}{4 + \frac{1}{5}}}}$$

$$4 - \frac{5 \times 31}{40} = 4 - 15 \times \frac{31}{40} = \frac{1}{8}$$

$$4 \xrightarrow{+5} 9 \xrightarrow{+2} 11 \xrightarrow{+2} 13 \dots \xrightarrow{+2} 25 \leftarrow 4^{\text{th}} \text{ term}$$

$$\begin{aligned} n^{\text{th}} \text{ term} &= 4 + 5 + (n-1) \times 2 \\ &= 9 + (2n-2) \\ &= 2n+7 \end{aligned}$$

$$a_{n+1} = a_n + (2n+3)$$

$$\begin{aligned} &\frac{n}{2} (10 + (n-1)2) \\ &= \frac{n}{2} (10 + 2n - 2) \\ &= \frac{n}{2} (2n + 8) \\ &= \frac{n}{2} \times 2(n+4) \\ &= n(n+4) \end{aligned}$$

$$\begin{aligned} &5, 7, 9, \dots \\ &5 + (n-1)2 \\ &= 5 + 2n - 2 \\ &= 2n + 3 \end{aligned}$$

24

$$\text{Sum of 20 Students} = 20 \times 75 = 1500$$

$$\text{Sum of 15 Students} = 15 \times 70 = 1050$$

a

$$\text{Score of 5 Scoren} = 450$$

b

$$\text{new avg} = \frac{1050 - 60}{14} = \frac{990}{14} = 70 \frac{5}{7}$$

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25

$$4 - \frac{5}{1 + \frac{1}{3 + \frac{1}{2 + \frac{1}{4}}}}$$

$$= 4 - \frac{5}{1 + \frac{1}{3 + \frac{1}{9/4}}}$$

$$= 4 - \frac{5}{1 + \frac{1}{3 + \frac{4}{9}}}$$

$$= 4 - \frac{5}{1 + \frac{1}{3 + \frac{4}{9}}}$$

$$= 4 - \frac{5}{1 + \frac{9}{31}}$$

$$= 4 - \frac{5}{\frac{40}{31}}$$

$$= 4 - 15 \times \frac{31}{408}$$

$$= \frac{1}{8}$$

26

a)

Exp: Royalty cost = 15%  
 Printing cost = 20%  
 Transportation = 10%  
 Paper cost = 25%

Printing Cost = 20%  
 Promotion cost = 10%

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b)

Printing cost = 20600

20% ——— p 20600

1% ——— p 20600/20

Royalty 15% ——— p  $\frac{20600 \times 15}{100} = 22950$

c)

Central angle of exp. of Royalty

$$= \frac{15}{100} \times 360^\circ = \underline{\underline{54^\circ}}$$

d)

M.P. = 120% ——— p 180

1% ——— p  $\frac{180}{120}$

C.P. ——— p  $\frac{180 \times 100}{120} = \underline{\underline{150}}$

e)

Transport cost = 82500  $\therefore$  CP = 100% ——— p 825000

$\therefore$  SP =  $\frac{5125}{400} \times 82500 = 1031250$  R.

f)

20% — 15% = 5%

Cuboid Volume = 7 x Cylinder Volume = n x Cubes

$$\Rightarrow 49 \times 22 \times 14 = 7 \times \pi \times 7^2 \times h = n \times h^3$$

$$\therefore \frac{49}{7} \times \frac{22}{2} \times 14 = \frac{7 \times 22}{7} \times 7 \times 7 \times h$$

$$h = 14$$

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$$7 \times \frac{22}{2} \times 7 \times 7 \times 14 = n \times 14^2 \times 14^2 \times 14^2$$

~~$$\frac{7}{7} \times 22 \times 14 = n \times 14^2 \times 14^2 \times 14^2$$~~

$$n = \frac{22}{4} = \frac{11}{2} \approx \underline{\underline{5 \frac{1}{2}}}$$

28

$$\frac{4}{5}x - 6 + 4 = \frac{3}{4}x$$

$$\Rightarrow \frac{4}{5}x - \frac{3}{4}x = 2$$

$$\Rightarrow \frac{16x - 15x}{20} = 2$$

$$\therefore x = 40$$

$$\text{no. of boys} = \frac{9}{10} \times 100 \times 350 \times \frac{50}{100} \times \frac{25}{100}$$

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$$= \frac{22 \times 10 \times 7}{2} = \underline{\underline{9000}}$$

(30)

Max. in Maths = 200

Science = 150

SST = 150

Eng. = 100

600

Scored = 90% of 200  
= 180

Scored = 85% of 150  
= 127.5

Scored = 80% of 150  
= 120

Scored = 75% of 100  
= 75

$$\therefore \text{aggregate} = \frac{502.5}{600} \times 100\%$$

$$= \underline{\underline{83.75\%}}$$

502.5

Eng. increased by 2% then scored should be 102

$$\therefore 2\% \text{ of } 100 = 2$$





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**RASTRIYA MILITARY SCHOOL**  
**2025-2026 ACADEMIC SESSION**

**NOTIFICATION RELEASED**

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Sector 40C, Chandigarh

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