

# Why Aspirants Love Us



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7. The ratio of sides of two regular polygons is 1 : 2 and the ratio of their internal angles is 4 : 5. The number of sides of the polygons are:
- A. 3, 6                                      B. 4, 8                                      C. 6, 18                                      D. 6, 12
8. Cost price and marked price of an article are in the ratio of 2 : 3 while selling price and marked price are in the ratio of 3 : 4. If the profit attained on the article was Rs. 65 then find the discount percent?
- A. 40%                                      B. 25%                                      C. 10%                                      D. 20%
9. The average marks scored by Rakesh in 6 out of seven subjects in an examination is 76. To get an average of 70 in seven subjects together, what is the score that Rakesh must get in seventh subject?
- A. 54                                      B. 84                                      C. 24                                      D. 34
10. A milkman has 35 litres of milk in one container and 105 litres of milk in another container. Find the maximum capacity of container in  $\text{cm}^3$  which can measure milk of either containers in whole number.

- A. 30,000                                      B. 40,000                                      C. 35,000                                      D. 45,000



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**Correct Answers:**

1	2	3	4	5	6	7	8	9	10
A	A	A	D	C	A	D	B	D	C



## Explanations :

1. The total change factor of population of 6 years is given as

$$\frac{6}{5} \times \frac{4}{5} \times \frac{6}{5} \times \frac{4}{5} \times \frac{6}{5} \times \frac{4}{5}$$

$$\Rightarrow \frac{13824}{15625}$$

$$\text{The new population} = \frac{13824}{15625} \times 31250 = 27648$$

$$\text{Population of women after 6 years} = \frac{5}{9} \times 27648 = 15360$$

Hence, Option A is correct.

2. Here the ratio of efficiencies of P and R is 7 : 4.

So, the number of days taken by P and R be  $4x$  and  $7x$ .

And we know that P takes 9 days less than R to complete the work.

$$\Rightarrow 7x - 4x = 9$$

$$\Rightarrow 3x = 9$$

$$\therefore x = 3 \text{ days}$$

So, time taken by P and R to complete the work is 12 days and 21 days respectively.

We have the ratio of the no. of days taken by Q and R to complete the work = 2 : 3

$$\text{Now, time taken by Q to complete the work} = \frac{2}{3} \times 21 = 14 \text{ days}$$

Now, work done by Q and R together in 1 day

$$\left(\frac{1}{14} + \frac{1}{21}\right) = \frac{3+2}{42} = \frac{5}{42}$$

$$\text{So, work done by Q and R in 2 days} = 2 \times \frac{5}{42} = \frac{5}{21}$$

$$\text{Remaining work} = 1 - \frac{5}{21} = \frac{16}{21}$$

$$\text{Time taken by P to complete } \frac{16}{21} \text{ of the work} = 12 \times \frac{16}{21} = \frac{64}{7} \text{ days}$$

Thus, P will take  $\frac{64}{7}$  days to complete the remaining work.

Hence, Option A is correct.

3. Let the speeds be  $2x$  and  $x$  with the lengths  $l_1$  and  $l_2$  respectively.

We have

$$l_1 = 2x \times 5 = 10x$$

$$l_2 = x \times 8 = 8x$$

Now, let the time taken by them to cross each other be  $t$

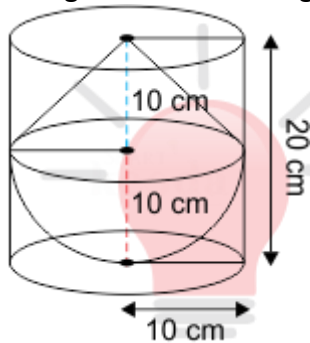
$$\text{Therefore, } 2x + x = \frac{10x + 8x}{t}$$

$$\Rightarrow 3x = \frac{18x}{t}$$

$$\text{Or, } t = 6 \text{ sec}$$

Hence, Option A is correct.

4. Using the information given we can create a following figure



We have,

$$\text{Height of cone} = 10 \text{ cm}$$

$$\text{Radius of cone} = \frac{20}{2} \text{ cm} = 10 \text{ cm}$$

$$\text{So, Radius of Cylinder} = 10 \text{ m}$$

$$\text{Radius of hemisphere} = 10 \text{ cm and, Total height of cylinder} = 10 + 10 = 20 \text{ cm}$$

Now, Volume of object = Volume of hemisphere + volume of cone

$$= \frac{2}{3} \pi \times (10)^3 + \frac{1}{3} \pi \times (10)^2 \times 10$$

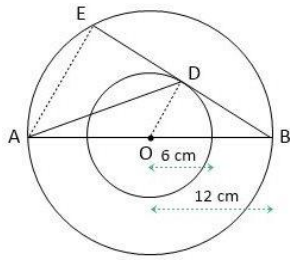
$$= \frac{2}{3} \pi \times 1000 + \frac{1}{3} \pi \times 1000 = 1000 \pi \text{ cm}^3$$

$$\text{Volume of cylinder} = \pi \times (10)^2 \times (20) = 200\pi \text{ cm}^3$$

$$\text{Vacant space left in the cylinder} = (2000\pi - 1000\pi) \text{ cm}^3 = 1000\pi \text{ cm}^3$$

Hence, option D is correct.

5. Let the centre of the circle be O.



Given  $OB = 12$  cm and  $OD = 6$  cm

clearly,  $\angle ODB = 90^\circ$  and

$$BE = \frac{1}{2} DB = \frac{1}{2} DE,$$

$AB = 24$  cm.

From  $\triangle ODB$ ,

$$\text{So, } DB^2 = OB^2 - OD^2 = 12^2 - 6^2 = 108$$

$$\Rightarrow DB = 6\sqrt{3} \text{ cm}$$

Then,  $BE = 12\sqrt{3}$  cm

Again, from  $\triangle AEB$

As,  $\angle AEB = 90^\circ$

$$AB^2 = AE^2 + BE^2$$

$$\Rightarrow AE^2 = AB^2 - BE^2$$

And, from  $\triangle AED$ ,

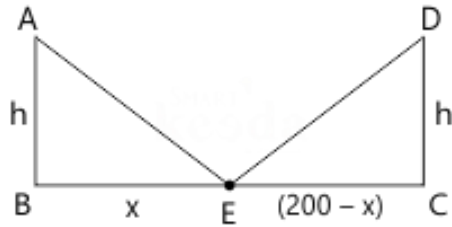
$$AD^2$$

$$= AE^2 + DE^2 = AB^2 - BE^2 + DE^2 = 24^2 - (12\sqrt{3})^2 + 108 \quad [\text{Since } DE = BD] = 576 - 432 + 108 = 252$$

$\therefore$  The length of  $AD = 252 = 6\sqrt{7}$  cm.

Hence, Option (C) is correct.

6.



$AB = CD = h$  meter (height of pole)

From  $\Delta ABE$ ,

$$\tan 30^\circ = \frac{h}{x} \Rightarrow \frac{1}{\sqrt{3}} = \frac{h}{x}$$

$$x = h\sqrt{3} \dots\dots\dots(\text{i})$$

From  $\Delta DEC$ ,

$$\tan 60^\circ = \frac{h}{200 - x} \Rightarrow \sqrt{3} = \frac{h}{200 - x}$$

$$h = \sqrt{3} (200 - x) \dots\dots\dots(\text{ii})$$

putting  $x = h\sqrt{3}$  in eq. (ii)

$$h = \sqrt{3} (200 - h\sqrt{3})$$

$$h = 200\sqrt{3} - 3h$$

$$4h = 200\sqrt{3}$$

$$h = 50\sqrt{3} \text{ meters}$$

Hence, Option A is correct.



7.

$$\text{Internal angle of a regular polygon} = \frac{(n-2) \times 180}{n}$$

It's given that the sides of the two polygons are in the ratio 1 : 2 and the ratio of the internal angles are 4 : 5.

$$\text{Hence, } \frac{\frac{(n-2) \times 180}{n}}{\frac{(2n-2) \times 180}{2n}} = \frac{4}{5}$$

$$\Rightarrow \frac{2n-4}{2n-2} = \frac{4}{5}$$

$$\Rightarrow 10n - 20 = 8n - 8$$

$$2n = 12 \Rightarrow n = 6$$

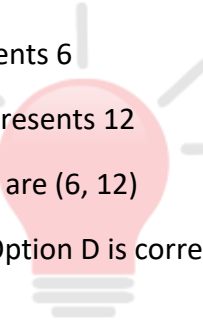
They are in the ratio 1 : 2

1 represents 6

So, 2 represents 12

So, sides are (6, 12)

Hence, Option D is correct.



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8. Here, ratio of cost price and market price = 2 : 3 and, ratio of selling price and marked price = 3 : 4

Thus, ratio of cost price : selling price : marked price = 8 : 9 : 12

So, the cost price = 8x

Selling price = 9x

Marked price = 12x

We know that the profit attained after the article is Rs. 65

$$\Rightarrow 9x - 8x = 65$$

$$\therefore x = \text{Rs. } 65$$

$$\Rightarrow \text{Cost price} = \text{Rs. } 520$$

$$\Rightarrow \text{Selling price} = \text{Rs. } 585$$

$$\Rightarrow \text{Marked price} = \text{Rs. } 780$$

$$\text{Now, Discount \%} = \frac{780 - 585}{780} \times 100 = 25\%$$

Here, Percent discount offered was 25%

Hence, Option B is correct.



9. Total marks of 6 subjects at an average of 76 marks per subject =  $6 \times 76 = 456$

Total marks of 7 subjects at an average of 70 marks per subject =  $7 \times 70 = 490$

Therefore, marks in seventh subject =  $490 - 456 = 34$

Hence, Option D is correct.

10. In such questions, we have to find HCF

HCF of 35 and 105 is 35.

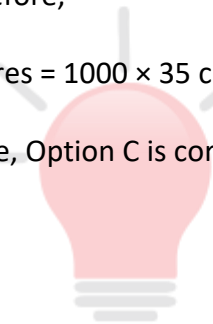
Therefore the maximum capacity of container = 35 litres

We know that  $1000 \text{ cm}^3 = 1 \text{ litre}$

Therefore,

$35 \text{ litres} = 1000 \times 35 \text{ cm}^3 = 35000 \text{ cm}^3$

Hence, Option C is correct.



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