

**Quant Mega Quiz for SSC Tier-1 (Solutions)**

**S1. Ans.(c)**

**Sol.**

Let capital of A = x

Then, capital of B = 2x

Capital of C = 2.5x

A : B : C = x × 4 : 2x × 6 : 2.5x × 12 = 2 : 6 : 15

∴ Share of B =  $\frac{6}{2+6+15} \times 5819 = \text{Rs } 1,518/-$

**S2. Ans.(b)**

**Sol.**

Perimeter of square = Twice the perimeter of rectangle

4 side = 2 × 2 (length + breadth)

56 = 4 (9 + breadth) ⇒ 9 + breadth = 14

Breadth of rectangle = 5 cm

∴ Perimeter of square = 4 × side

56 = 4 × side

Side of square = 14 cm

Difference between side of square and breadth of square

= side – breadth = 14 – 5

∴ Required difference = 9 cm

**S3. Ans.(b)**

**Sol.**

T = 2 years

P = Rs 16,250/-

C.I. = Rs 5,616/-

R = ?

$$A = P \left(1 + \frac{R}{100}\right)^T$$

$$P + \text{C.I.} = P \left(1 + \frac{R}{100}\right)^T$$

$$16250 + 5616 = 16250 \left(1 + \frac{R}{100}\right)^2$$

$$\frac{21866}{16250} = \left(1 + \frac{R}{100}\right)^2$$

$$\frac{841}{625} = \left(1 + \frac{R}{100}\right)^2$$

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$$\Rightarrow \left(\frac{29}{25}\right)^2 = \left(1 + \frac{R}{100}\right)^2$$

$$\frac{29}{25} = 1 + \frac{R}{100}$$

$$\frac{29}{25} = \frac{100 + R}{100}$$

$$2900 = 2500 + 25R$$

$$25R = 400$$

$$\Rightarrow R = 16\%$$

**S4. Ans.(d)**

**Sol.**

Let quantity of milk in mixture = 4x litre

Quantity of water in mixture = 3x litre

According to question,

$$\frac{4x}{3x + 6} = \frac{8}{7}$$

$$28x - 24x = 48$$

$$X = 12$$

∴ Quantity of milk in original mixture

$$= 4x = 4 \times 12 = 48 \text{ litre}$$

**S5. Ans.(b)**

**Sol.**

Area of square = (Side)<sup>2</sup>

$$3136 = (\text{Side})^2$$

$$\text{Side} = 56 \text{ cm}$$

$$\text{Perimeter of square} = 4 \times \text{Side} = 4 \times 56$$

$$= 224 \text{ cm}$$

According to question,

Diameter of circle = Perimeter of square

$$2r = 224$$

$$\therefore \text{Circumference of circle} = 2\pi r = 224 \times \frac{22}{7}$$

$$= 704 \text{ cm}$$

**S6. Ans.(a)**

**Sol.**

Let the amount to be distributed = Rs x

$$\text{B's original share} = \frac{3}{9} \times x = \frac{x}{3}$$

$$\text{B got} = \frac{2}{14} \times x = \frac{x}{7}$$

According to the question

$$\frac{x}{3} - \frac{x}{7} = 40$$

$$\frac{7x - 3x}{21} = 40$$

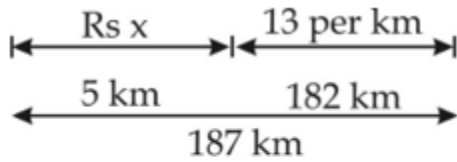
$$\Rightarrow 4x = 840 \quad \Rightarrow x = 210$$

∴ Amount to be distributed among A, B and C

$$= \text{Rs } 210/-$$

S7. Ans.(c)

Sol.



Total fare of bus =  $x + 13 \times 182$

$$2402 = x + 2366$$

$$x = 36$$

∴ Value of  $x = \text{Rs } 36/-$

S8. Ans.(c)

Sol.

Perimeter of Semi Circle

$$= 36 \text{ cm}$$

$$\pi r + 2r = 36$$

$$r = \frac{36}{(\pi + 2)} = \frac{36 \times 7}{22 + 14}$$

$$= 7$$

$$\text{Area} = \frac{1}{2} \pi r^2$$

$$= \frac{1}{2} \times \frac{22}{7} \times 7 \times 7$$

$$= 77 \text{ cm}^2$$

S9. Ans.(d)

Sol.

A juice centre requires guavas for 28 days

$$= 35 \text{ dozen}$$

$$\text{For 1 day it requires guavas} = \frac{35}{28} \text{ dozen}$$

$$\therefore \text{For 36 days it requires guavas} = \frac{35}{28} \times 36$$

$$= 45 \text{ dozen}$$

S10. Ans.(a)

Sol.

Let two-digit number =  $10x + y$

According to question

$$x + y = 12 \quad \dots(i)$$

$$\text{and } |x - y| = 6 \Rightarrow x - y = \pm 6 \quad \dots(ii)$$

By solving equation (i) and (ii)

$$x = 9 \text{ or } x = 3$$

$$y = 3 \text{ or } y = 9$$

∴ Required two-digit number

$$= 10x + y = 10 \times 9 + 3 \text{ Or } 10x + y = 10 \times 3 + 9$$

$$= 90 + 3 = 93 \text{ or } 30 + 9 = 39$$

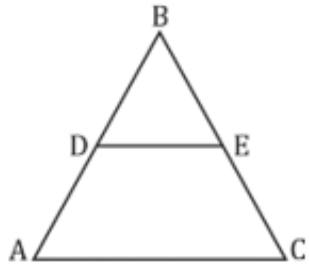
93 & 39 both can be the answers

So, Either (a) or (c)

The advertisement features a circular portrait of Neetu Singh, a woman with dark hair wearing a pink and white patterned top. To the right of the portrait, the text 'BILINGUAL' is written in a small orange box. Below the portrait, the text 'ENGLISH BY NEETU SINGH' is written in large white letters, followed by '12<sup>th</sup> May' in a slightly smaller white font. At the bottom, two orange boxes contain the text 'Tue, Thr, Sat' and '5 pm - 7 pm'.

S11. Ans.(a)

Sol.



$$\frac{BC}{BE} = \frac{AB}{BD}$$

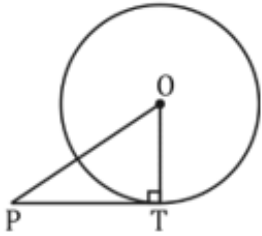
$$= \frac{5}{2}$$

$$\frac{EC}{BE} = \frac{3}{2}$$

$$\frac{BE}{EC} = \frac{2}{3}$$

S12. Ans.(a)

Sol.

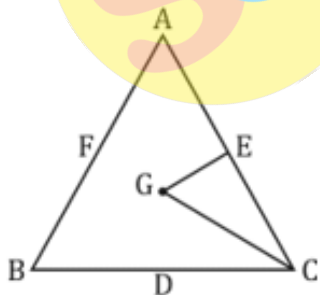


$$PT = 8 \text{ cm}, OT = 6 \text{ cm}$$

$$OP = \sqrt{64 + 36} = 10$$

S13. Ans.(b)

Sol.



$$\text{Area } \Delta CGE$$

$$= \frac{1}{6} \Delta ABC$$

$$= \frac{1}{6} \times 36$$

$$= 6 \text{ cm}^2$$

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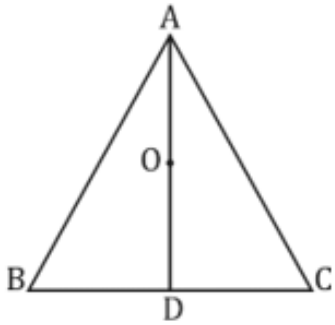
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S14. Ans.(a)

Sol.



$$AO : OD \Rightarrow 2 : 1$$

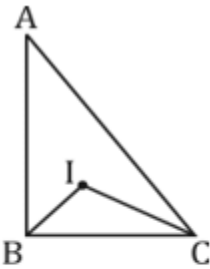
$$2r \rightarrow 10$$

$$1r \rightarrow 5 \text{ cm}$$

$$OD = 5 \text{ cm}$$

S15. Ans.(b)

Sol.



$$\angle A = 180 - (90 + 70)$$

$$= 180 - 160$$

$$= 20^\circ$$

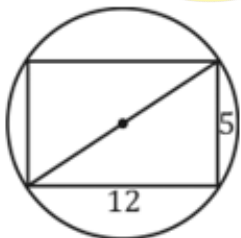
$$\angle BIC = 90 + \frac{20}{2}$$

$$= 90 + 10$$

$$= 100^\circ$$

S16. Ans.(b)

Sol.



$$\text{Diagonal} = \sqrt{144 + 25}$$

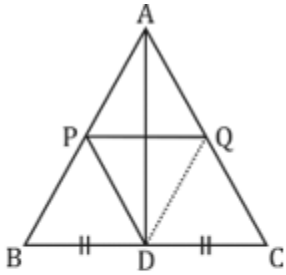
$$= \sqrt{169}$$

$$= 13$$

$$\text{Radius} = \frac{13}{2} = 6.5 \text{ cm}$$

S17. Ans.(b)

Sol.



$AD \perp BC$

$$\angle ADC = 90^\circ$$

$$\angle ADQ = \frac{90}{2} = 45^\circ$$

$$\angle ADP = \frac{90}{2} = 45^\circ$$

$$\angle PDQ = 45^\circ + 45^\circ = 90^\circ$$

S18. Ans.(c)

Sol.

Initial  $\rightarrow 2 : 3 : 5$

New  $\rightarrow 4 : 5 : 7$

$(4 - 2)$  or  $(5 - 3)$  or  $(7 - 5)$

2 ratio  $\Rightarrow 40$

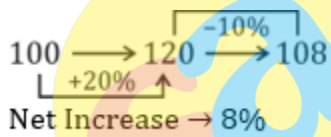
1 ratio  $\rightarrow 20$

Initial no. of students =  $10 \times 20$

= 200

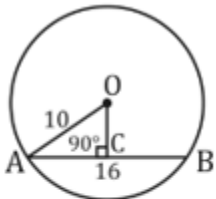
S19. Ans.(c)

Sol.



S20. Ans.(b)

Sol.



$$AC = 16/2 = 8$$

$$10^2 = 8^2 + OC^2$$

$$100 = 64 + OC^2$$

$$OC^2 = 36$$

$$OC = 6 \text{ cm}$$

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S21. Ans.(c)

Sol.

$$\sec^2 \theta + \tan^2 \theta = \sqrt{3} \quad \dots(i)$$

$$\sec^2 \theta - \tan^2 \theta = 1 \quad \dots(ii)$$

Multiplying (i) & (ii)

$$\sec^4 \theta - \tan^4 \theta = \sqrt{3} \times 1$$

$$\sec^4 \theta - \tan^4 \theta = \sqrt{3}$$

S22. Ans.(b)

Sol.

$$\sin A = \cos B$$

$$A = B = 45^\circ$$

$$\angle C = 180^\circ - 90^\circ = 90^\circ$$

$$\cos 90^\circ = 0$$

S23. Ans.(a)

Sol.

$$2 \sin \theta \cos \theta = 1$$

$$\sin 2\theta = 1$$

$$\sin 2\theta = \sin 90^\circ$$

$$2\theta = 90^\circ$$

$$\theta = 45^\circ$$

$$\sin 45^\circ - \cos 45^\circ$$

$$= 0$$

S24. Ans.(b)

Sol.

$$\cos^2 20^\circ + \cos^2 70^\circ$$

$$\Rightarrow \cos^2 (90^\circ - 70^\circ) + \cos^2 70^\circ$$

$$\Rightarrow \sin^2 70^\circ + \cos^2 70^\circ$$

$$\Rightarrow 1$$

S25. Ans.(d)

Sol.

$$\frac{\sin \theta}{1 + \cos \theta} + \frac{\sin \theta}{1 - \cos \theta}$$
$$\Rightarrow \frac{\sin \theta - \sin \theta \cos \theta + \sin \theta + \sin \theta \cos \theta}{1 - \cos^2 \theta}$$

$$\Rightarrow \frac{2 \sin \theta}{1 - \cos^2 \theta}$$

$$\Rightarrow \frac{2 \sin \theta}{\sin^2 \theta}$$

$$\Rightarrow 2 \operatorname{cosec} \theta$$

S26. Ans.(c)

Sol.

$$\tan \theta = \frac{8 \rightarrow P}{15 \rightarrow B}$$

$$H = \sqrt{225 + 64} \\ = 17$$

$$\sin \theta = \frac{8}{17}$$

$$\frac{\sqrt{1 - \sin \theta}}{\sqrt{1 + \sin \theta}} = \frac{\sqrt{1 - \frac{8}{17}}}{\sqrt{1 + \frac{8}{17}}}$$

$$= \frac{\frac{\sqrt{9}}{\sqrt{17}}}{\frac{\sqrt{25}}{\sqrt{17}}} \\ = \frac{3}{5}$$

S27. Ans.(a)

Sol.

$$\frac{\cos \theta + \sin \theta \cos \theta + \cos \theta - \sin \theta \cos \theta}{1 - \sin^2 \theta} = 4$$

$$\frac{2 \cos \theta}{\cos^2 \theta} = 4$$

$$\sec \theta = 2$$

$$\theta = 60^\circ$$

S28. Ans.(d)

Sol.

$$\sec 15\theta = \operatorname{cosec} 15\theta$$

$$\sin 15\theta = \cos 15\theta$$

$$15\theta = 45^\circ$$

$$\theta = 3^\circ$$

S29. Ans.(c)

Sol.

$$\tan \theta = \frac{1}{\sqrt{3}} \times \sqrt{3}$$

$$\tan \theta = 1$$

$$\tan \theta = \tan 45^\circ$$

$$\theta = 45^\circ$$

$$2\theta = 90^\circ$$



S30. Ans.(d)

Sol.

$$x^2 = \sin^2 30^\circ + 4\cot^2 45^\circ - \sec^2 60^\circ$$

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

$$x^2 = \left(\frac{1}{2}\right)^2$$

$$x = 1/2$$

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