

Quant Mega Quiz for SSC Tier-1 (Solutions)

S1. Ans.(b)

Sol.

$$\text{Sum} = \frac{50}{2} (2 + (50 - 1)2)$$

$$\text{Average} = \frac{2+98}{2} = 50$$

S2. Ans.(d)

Sol.

$$\frac{xy}{100} = 140$$

$$\frac{yz}{100} = 270$$

$$\frac{x}{z} = \frac{14}{27}$$

$$z = 1.92x$$



S3. Ans.(d)

Sol.

$$\left[ (49)^{\frac{3}{2}} + \frac{1}{(49)^{\frac{3}{2}}} \right]$$

$$= \left[ 7^3 + \frac{1}{7^3} \right] = \left[ \frac{7^6+1}{7^3} \right] = \frac{117650}{343}$$

S4. Ans.(c)

Sol.

Let side of equilateral triangle = a

∴ height of equilateral triangle is =  $\frac{\sqrt{3}}{2}a$

$$\frac{\sqrt{3}}{2}a = 2\sqrt{3}$$

$$a = 4$$

$$\text{Area of the triangle} = \frac{\sqrt{3}}{4}a^2 = \frac{\sqrt{3}}{4} \times 4 \times 4 = 4\sqrt{3}$$

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S5. Ans.(b)

Sol.

Let length & breadth of the rectangle = 10

$$\text{Area} = 10 \times 10 = 100 \text{ cm}^2$$

$$\text{New length} = \frac{10 \times 110}{100} = 11$$

$$\text{New breadth} = \frac{10 \times 120}{100} = 12$$

$$\text{New area} = 11 \times 12 = 132 \text{ cm}^2$$

$$\text{Increase \%} = \frac{132-100}{100} \times 100 = 32\%$$

S6. Ans.(a)

Sol.

Let, value of sum = x

Atq,

$$\frac{x \times [5 \times 10 + 3 \times 15]}{100} = 47500$$

$$x = 50000$$

S7. Ans.(b)

Sol.

Cost price = selling price + loss

$$\text{cost price} = \frac{\text{selling price}}{(100 - \text{loss}\%)} \times 100$$

Atq,

$$\text{cost price} = \frac{1386}{(100 - 23)} \times 100 = 1800$$

S8. Ans.(b)

Sol.

Selling price after 1st discount

$$= \frac{48000 \times 87}{100} = 41760$$

$$\therefore \text{real selling price} = 39672$$

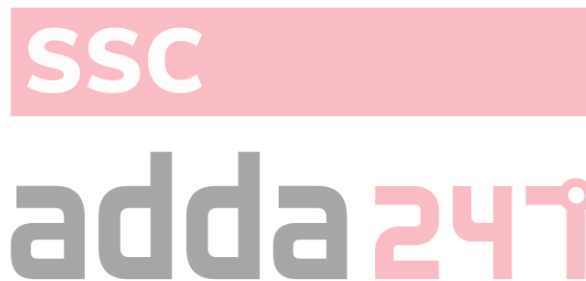
$$\therefore \text{second discount} = 41760 - 39672 = 2088$$

$$\begin{aligned} \text{Required second discount percentage} &= \frac{2088}{41760} \times 100 \\ &= 5\% \end{aligned}$$

S9. Ans.(c)

Sol.

$$\text{Required percentage} = \frac{1500}{7500} \times 100 = 20\%$$



S10. Ans.(a)

Sol.

Avg. no of failure in last 3 years

$$= \frac{2500+1000+1000}{3} = \frac{4500}{3} = 1500$$

S11. Ans.(c)

Sol.

Ram	Rohit	Sam	Rohan	Ravi
$x-25$	$x$	$x-45$	75	
85	110	65		119

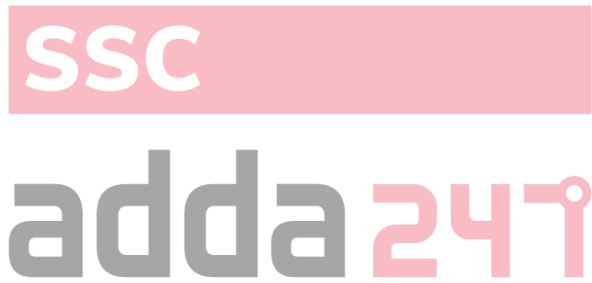
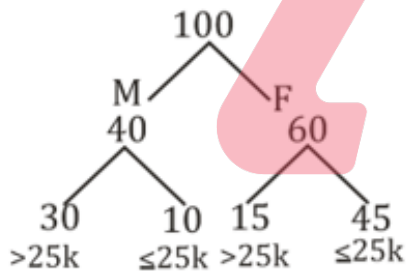
+34

$$M.M = 169$$

$$\frac{119}{169} \times 100 = 70\%$$

S12. Ans.(b)

Sol.



$$\frac{45}{60} = \frac{3}{4}$$

S13. Ans.(b)

Sol.

A	B
$2(20-x)$	$2x$

$$2(a(20-x)) = 2(B + x)$$

$$\frac{A}{B} = \frac{x}{20-x}$$

$$\frac{2(x) \cdot x(20-x)}{20} = \frac{15}{2}$$

$$x = 5$$

$$\frac{2(5)(15)}{5} = 30$$

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**S14. Ans.(c)**

**Sol.**

$$42.84\% = \frac{3}{7}$$

$$6.25\% = \frac{1}{16}$$

CP	SP
7x3	10x3
16x2	15x2
CP	SP
21	30
<u>32</u>	<u>30</u>
53	60

7

$$\text{Loss}\% = \frac{7}{53} \times 100 = 13.20\%$$

**S15. Ans.(d)**

**Sol.**

Downstream :

upstream

S	62	:
	31	:
T	24	:
	x16	
384	496	

49660=8.2hrs

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	48
	24
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	x16

**S16. Ans.(c)**

**Sol.**

Let the volume of cube initially = 64 unit<sup>3</sup>

⇒ side length = 4 units

Surface area = 6×4×4 = 96 unit<sup>2</sup>

Cutting them in 64 parts

Each part have volume = 1 unit<sup>3</sup>

Surface area = 6 unit<sup>2</sup>

Total surface area = 6×64

$$\% \text{ increase} = \left( \frac{6 \times 64 - 96}{96} \right) \times 100$$

$$= (4-1)100 = 300\%$$

S17. Ans.(c)

Sol.

Perimeter = P

Sum of length = m

Let the diagonals be =  $d_1$  and  $d_2$

ATQ  $d_1 + d_2 = m$

$$\sqrt{(d_1^2 + d_2^2)}/4 = \text{side of a rhombus}$$

$$\sqrt{d_1^2 + d_2^2} = \text{perimeter}$$

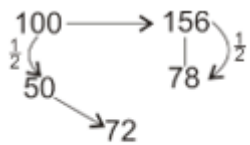
$$d_1^2 + d_2^2 = P^2$$

$$d_1^2 + d_2^2 + 2d_1d_2 = m^2$$

$$\frac{d_1d_2}{2} = \frac{1}{4}(m^2 - p^2)$$

S18. Ans.(a)

Sol.



$$\frac{22}{50} \times 100 = 44\%$$

S19. Ans.(c)

Sol.

full canvas  $\rightarrow [2:3]_{18} \rightarrow 5 \times 18 = 90$

Half canvas  $\rightarrow [2:7]_{\times 5} \rightarrow 9 \times 5 = 45$

$$\begin{array}{r} 36 : 54 \\ 10 : 35 \end{array}$$

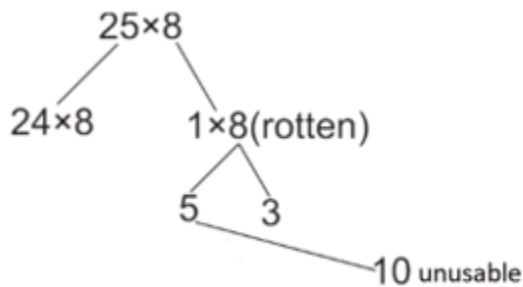
Remaining - 26 : 19

Pink      Blue

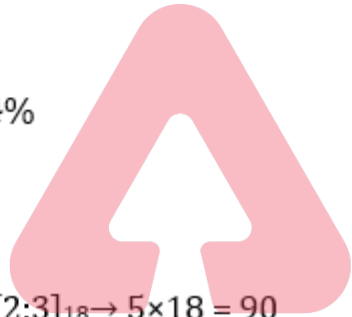
$$\text{Other half blue} = \frac{19 \times 1800}{90} = 380$$

S20. Ans.(b)

Sol.



$$\text{Total eggs} = 25 \times 8 \times 2 = 400$$



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**S21. Ans.(a)****Sol.** Let the length of each train = L meter

$$2L = (72 + 108) \times \frac{5}{18} \times 10$$

$$2L = 500$$

$$L = 250\text{m}$$

$$\text{Req. time} = \frac{250+350}{72 \times \frac{5}{18}} = 30 \text{ seconds}$$

**S22. Ans.(a)****Sol.**

$$x^3 + y^3 + z^3 - 3xyz = (x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx)$$

$$= 19 [133 - (xy + yz + zx)]$$

We know

$$(x + y + z)^2 = x^2 + y^2 + z^2 + 2(xy + yz + zx)$$

$$xy + yz + zx = \frac{361-133}{2}$$

$$xy + yz + zx = 114$$

$$= 19 [133-114]$$

$$= 19 \times 19$$

$$= 361$$

**S23. Ans.(a)****Sol.** We Know,

$$a^3 - b^3 = (a - b)(a^2 + b^2 + ab)$$

$$(2x + 2y)^3 - (x - y)^3 = (2x + 2y - x + y)[(2x + 2y)^2 + (x - y)^2 + (2x + 2y)(x - y)]$$

$$= (x + 3y)[4x^2 + 4y^2 + 8xy + x^2 + y^2 - 2xy + 2x^2 - 2y^2]$$

$$= (x + 3y)(7x^2 + 3y^2 + 6xy)$$

by comparing,

$$A = 7$$

$$B = 6$$

$$C = 3$$

$$A - B - C = 7 - 6 - 3 = -2$$

**S24. Ans.(a)****Sol.**

$$\text{loss}\% = \frac{CP - SP}{CP} \times 100$$

$$\frac{20}{100} = \frac{CP - \frac{x}{8}}{CP}$$

$$\frac{5x}{3} = 4CP$$

$$\frac{CP}{x} = \frac{5}{12}$$

When  $x$  = selling price

$$\frac{CP}{SP} = \frac{5}{12} \times 7 \rightarrow \text{Profit}$$

$$\text{Profit}\% = \frac{7}{5} \times 100 = 140\%$$

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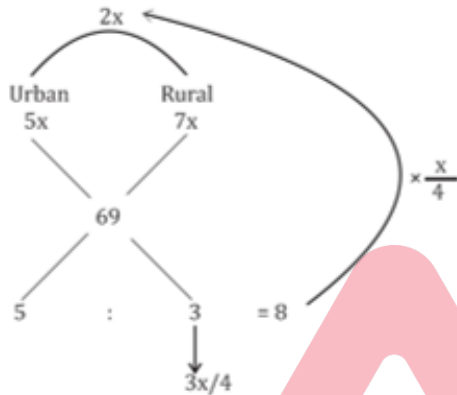
S25. Ans.(a)

Sol.

$$\begin{aligned}
 &= 5 \div 100 \times 4 + 4 \div 16 \times 10 - 6 \div 16 \times 4 \\
 &= \frac{1}{5} + \frac{5}{2} - \frac{3}{2} \\
 &= \frac{2+25-15}{10} \\
 &= \frac{12}{10} \\
 &= 1.2
 \end{aligned}$$

S26. Ans.(d)

Sol.



$$\begin{aligned}
 5x + \frac{3x}{4} &= 69 \\
 \frac{23x}{4} &= 69 \\
 x &= 12
 \end{aligned}$$

Avg. of Rural students =  $7 \times 12 = 84$

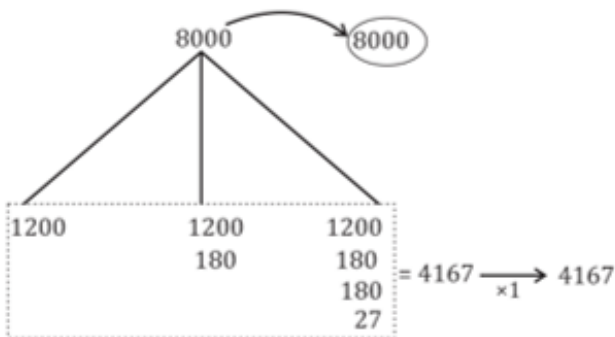


S27. Ans.(d)

Sol.

$$15\% = \frac{3}{20}$$

let P = 8000



$$\begin{aligned}
 SI &= 8000 \times \frac{15}{100} \times \frac{24}{5} \\
 &= 5760 \text{ Rs.}
 \end{aligned}$$

S28. Ans.(d)

Sol.

$$\text{Avg income} = \frac{225+280+325+350+350}{5}$$

$$= \frac{1530}{5}$$

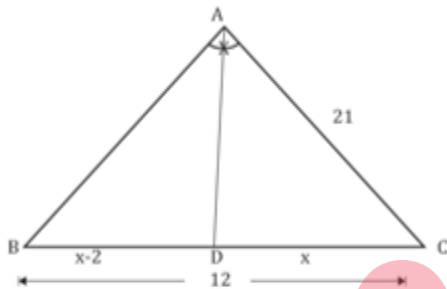
$$= 306$$

expenditure in 2015 = 250

$$\text{Req. \%} = \frac{56}{250} \% = 22.4 \%$$

S29. Ans.(b)

Sol.



$$x + x - 2 = 12$$

$$x = 7$$

We know Angle bisector divides opposite side, in the ratio of Adjacent side.

$$\frac{AB}{AC} = \frac{BD}{DC}$$

$$\frac{AB}{21} = \frac{5}{7}$$

$$AB = 15 \text{ cm.}$$

S30. Ans.(d)

Sol.

$$= \frac{4 \times \frac{1}{3} + \frac{1}{4} \times 1 + \frac{1}{8} \times \frac{1}{3} + \frac{1}{4} \times \frac{1}{2}}{\frac{1}{2}}$$

$$= 2 \left( \frac{4}{3} + \frac{1}{4} + \frac{1}{24} + \frac{1}{8} \right)$$

$$= 2 \left( \frac{32+6+1+3}{24} \right)$$

$$= \frac{7}{2}$$

$$= 3 \frac{1}{2}$$

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