SEBI Grade A Quantitative Aptitude (Solutions)

S1. Ans.(b)

Sol. Let total journey $= x\ Km$

$\frac{x}{2\times12} + \frac{x}{2\ X\ 18} = 20$

$\frac{x}{24} + \frac{x}{36} = 20$

$\frac{5x}{72} = 20$

$x = 288\ Km$

S2. Ans.(d)

Sol. Both trains are of same length.

Let speed of 1st and 2nd trains are S_1 and S_2 m/sec. respectively.

then,

$7S_1 + 9S_2 = 1260$

and $7S_1 = 9S_2$

so, $7S_1 = 9S_2 = \left(\frac{1260}{2}\right)$

$S_1 = 90$ m/s

$S_2 = 70$ m/s

So, difference of speed of both trains =90-70 = 20 m/s

S3. Ans.(c)

Sol. Downstream speed = Speed of boat + speed of current

Downstream speed = Speed of boat + 3

Speed of boat = 8 km/h

Upstream speed = Speed of boat – speed of current

$x = 8 - 3$

$= 5$ km/h

S4. Ans.(b)

Sol. Pipe A can fill the tank = 5 hours

Pipe B can fill the tank = 6 hours

Pipe C can fill the tank = 30 hours

LCM of (5, 6, 30) = 30

	A	B	C
Efficiency	6	5	1

So, time taken pipe A + B + C together to fill the tank

$= \frac{30}{12} = 2\frac{1}{2}$ hours

S5. Ans.(a)

Sol. Area of rectangle =l × b

$294 = 3x \times 2x$

$x^2 = 49$

$x = 7$

length of rectangle $= 3x = 3 \times 7 = 21$ cm

side of square $= 3 \times 21 = 63$ cm

perimeter of square $= 4 \times 63 = 252$ cm.

S6. Ans.(a)

Sol. $x^2=144$

$\therefore\ x = \pm 12$

$\therefore y^2-24y+144=0$

$\therefore y^2-12y-12y+144=0$

$\therefore y(y-12)- 12(y-12)=0$

$\therefore (y-12)\ (y-12)=0$

$\therefore y = 12,12$

$\therefore x \leq y$

S7. Ans.(a)

Sol. $2x^2-9x+10=0$

$\therefore 2x^2-4x-5x+10=0$

$\therefore 2x(x-2)-5(x-2)=0$

$\therefore (x-2)(2x-5)=0$

$\therefore x = 2, \frac{5}{2}$

$\therefore 2y^2-13y+20=0$

$\therefore 2y^2-8y-5y+20=0$

$\therefore 2y(y-4)-5(y-4)=0$

$\therefore (y-4)(2y-5)=0$

$\therefore y=4, \frac{5}{2}$

$\therefore x \leq y$

S8. Ans.(d)

Sol. $2x^2+15x+27=0$

$\therefore 2x^2+6x+9x+27=0$

$\therefore 2x(x+3) +9(x+3)=0$

$\therefore (x+3)(2x+9)=0$

$\therefore x = \frac{-9}{2}, -3$

$2y^2+7y+6=0$
$\therefore 2y^2+4y+3y+6=0$
$\therefore 2y(y+2)+3(y+2)$
$\therefore (y+2)(2y+3)=0$
$\therefore y = \frac{-3}{2}, -2$
$\therefore x < y$

S9. Ans.(c)
Sol. $3x^2-13x+12=0$
$\therefore 3x^2-9x-4x+12=0$
$\therefore 3x(x-3)-4(x-3)=0$
$\therefore (x-3)\ (3x-4)=0$
$\therefore x = \frac{4}{3}, 3$
$3y^2-13y+14=0$
$\therefore 3y^2-6y-7y+14=0$
$\therefore 3y(y-2)-7(y-2)=0$
$\therefore (y-2)(3y-7)=0$
$\therefore y = \frac{7}{3}, 2$
$\therefore$ No relation

S10. Ans.(b)
Sol. $5x^2+8x+3=0$
$\therefore 5x^2+5x+3x+3=0$
$\therefore 5x(x+1)+3(x+1)=0$
$\therefore (x+1)(5x+3)=0$
$\therefore\ x = \frac{-3}{5}, -1$
$3y^2+7y+4=0$
$\therefore 3y^2+3y+4y+4=0$
$\therefore 3y(y+1)+4(y+1)=0$
$\therefore (y+1)(3y+4)=0$
$\therefore y = -1, \frac{-4}{3}$
$\therefore x \geq y$

S11. Ans.(b)
Sol. $578 + (9^2 + 1) = 679$
$679 + (10^2 + 1) = 801$
$801 + (11^2 + 1) = 946$
$946 + (12^2 + 1) = 1116$
So, $? + (8^2 + 1) = 578$
$? = 513$

S12. Ans.(d)

Sol. There are 2 series

2,4,8,16 and 3,6,15,?

2+2=4

$4 + 2^2 = 8$

$8 + 2^3 = 16$

And

3+3=6

$6 + 3^2 = 15$

$15 + 3^3 = 72$

So, ?=72

S13. Ans.(c)

Sol. $(9^3 - 1) = 728$

$(10^3 - 1) = 999$

$(11^3 - 1) = 1330$

$(12^3 - 1) = 1727$

$(13^3 - 1) = 2196$

$(14^3 - 1) = 2743$

$(15^3 - 1) = 3374$

So, ?=3374

S14. Ans.(a)

Sol. $31 + 2^2 = 35$

$35 + 3^2 = 44$

$44 + 4^2 = 60$

$60 + 5^2 = 85$

$85 + 6^2 = 121$

$121 + 7^2 = 170$

So, ?=170

S15. Ans.(e)

Sol. Series is sum of previous 2 terms

1+3=4

3+4=7

4+7=11

7+11=18

11+18=29

18+29=47

So, ? = 47

S16. Ans.(a)

Sol. required ratio $= \frac{2000}{(4000-2500)} = \frac{2000}{1500} = \frac{4}{3}$

S17. Ans.(d)

Sol. required % $= \frac{(2500-2000)+(4000-2500)}{3000} \times 100 = \frac{2000}{3000} \times 100 = 66.67\%$

S18. Ans.(b)

Sol. required average $= \frac{2000+2000+2500+2500}{4} = \frac{9000}{4} = 2250$

S19. Ans.(c)

Sol. Total girls in school A and B $= (3000 - 2000) + (2500 - 2000)$

$= 1000 + 500 = 1500$

Total girls in school B and D $= (2500 - 2000) + (3500 - 1500)$

$= 500 + 2000 = 2500$

So, required percentage $= \frac{2500-1500}{2500} \times 100$

$= \frac{1000}{2500} \times 100 = 40\%$

S20. Ans.(e)

Sol. Total no. of girls in school A, C and D

$= (3000 - 2000) + (4000 - 2500) + (3500 - 1500)$

$= 1000 + 1500 + 2000 = 4500$

Required difference $= (2000 + 2500) - (4500) = 0$

S21. Ans.(d)

Sol. Let the CP be P then SP is 1.225 P

Now CP = P + 40, SP = 1.225P + 35

$15 = \frac{1.225P+35-P-40}{P+40} \times 100$

$15 = \frac{0.225P-5}{P+40} \times 100$

$15P + 600 = 22.5P - 500$

$1100 = 7.5P$

$P = 146\frac{2}{3}$

S22. Ans.(b)

Sol. Let Shyam invested Rs. x

Then Atq

$\frac{6500 \times 48}{x \times 40} = \frac{13}{12}$

x = 7200

Required Shyam's contribution= *Rs*. 7200

S23. Ans.(c)

Sol. $\frac{3}{5}-\frac{2}{5}=14000$

$\frac{1}{5}=14000$

$\frac{3}{5}=14000\times3=42000$

S24. Ans.(c)

Sol. Let 8 consecutive odd numbers are $x, x+2, x+4, x+6, x+8, x+10, x+12, x+14$

So, $8x+56=656$

$x=\frac{600}{8}=75$

Let 4 consecutive even numbers are $y, y+2, y+4, y+6$

So, $\frac{4y+12}{4}=8$

$y=\frac{336}{4}=84$

Now, $x+y+4=75+84+4=163$

S25. Ans.(b)

Sol. Required probability $=\frac{^{26}C_2\times{}^{26}C_1}{^{52}C_3}=\frac{26\times25\times26\times3\times2}{52\times51\times50\times2}$

$=\frac{13}{34}$

S26. Ans.(b)

Sol. $\sqrt{\sqrt{6400}+\sqrt{1681}}=?^2-5$

$\sqrt{80+41}=?^2-5$

$?^2=16$

$?=\pm4$

So, $?=4$

S27. Ans.(d)

Sol.

$2\frac{1}{17}\times4\frac{6}{7}\div3\frac{1}{3}-2\frac{1}{2}=?-3\frac{1}{2}$

$?=\frac{35}{17}\times\frac{34}{7}\times\frac{3}{10}-\frac{5}{2}+\frac{7}{2}$

$?=4$

S28. Ans.(a)

Sol.

37% of 400 -17% of 180 - ? $=5\frac{2}{5}$

$\frac{37}{100}\times400-\frac{17}{100}\times180-?=\frac{27}{5}$

$?=112$

S29. Ans.(c)

Sol. $\sqrt[3]{1331} \div \sqrt[2]{2401} \times \sqrt[3]{343} = \frac{?}{7}$

$=11 \div 49 \times 7 = \frac{?}{7}$

$= \frac{11}{49} \times 7 = \frac{?}{7}$

So, ?=11

S30. Ans.(b)

Sol. $15\%\ of\ 1500 + 22\%\ of\ 1100 - 13\%\ of\ 1500 = ?$

$\frac{15}{100}\ X\ 1500 + \frac{22}{100}\ X\ 1100 - \frac{13}{100}\ X\ 1500$

$= 225 + 242 - 195$

$= 272$

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