Quantitative Aptitude

Q.111) (c)
Explanation:

$A + B + C + D + E = 100\%$
$2X\% + 20\% + 22\% + X\% + 13\% = 100\%$
$3X\% + 55\% = 100\%$
$3X\% = 45\%$
$X = 15\%$
So, $A = 30\%$
And $D = 15\%$
Now, $E + B + C + D = 100 – A = 70\%$
Also, $A + C + D + E = 100 – B = 80\%$
Required fraction $= 7/8$

Q.112) (b)
Explanation:

Laptops sold by $E = 13\%$ of $200 = 26$
Laptops sold by $K = 1.5 \times 26 = 39$
Non-Gaming laptops sold by $K = 2/3 \times 39 = 26$

Q.113) (d)
Explanation:

Laptops sold by $A = 30\%$
Laptops sold by A (in degrees) $= 30/100 \times 360 = 108$

Q.114) (d)
Explanation:

	Percentage share	Laptops sold
A	30%	120
B	13%	52
C	22%	88
D	15%	60
E	20%	80

Q.115) (b)
Explanation:

In the next month,
Increase in laptops sold by $C = 0.25 \times (22\% \times 200) = 11$
Laptops sold by $D = 1/5 \times (15\% \times 200) = 6$
Net increase in total laptops sold $= 11 – 6 = 5$
So, total laptops sold $= 200 + 5 = 205$
New average $= 205/5 = 41$

Q.116) (e)
Explanation:

The pattern is as follows:

$12 + 3^2 = 21$
$21 + 5^2 = 46$
$46 + 7^2 = 95$
$95 + 9^2 = 176$
$176 + 11^2 = 297 = X$
$297 + 13^2 = 466 = Y$
$X + Y = 297 + 466 = 763$

Q.117) (c)
Explanation:
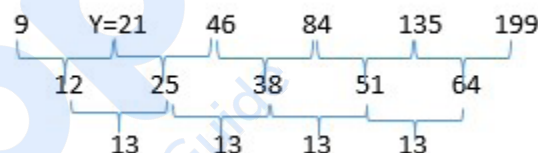
The pattern of series I is as follows:
$158 – 80 = 78$
$78 – 40 = 38$
$38 – 20 = 18$
$18 – 10 = 8$
$8 – 5 = 3 = X$

The pattern of series II is as follows:

So, $X = 3$
And $7Y = 21 \times 7 = 147$
So, $3 \neq 7$
Hence, statement 1 is not true.
$3 < X < Y < 21$ is not true since $X = 3$ and $Y = 21$.
So, statement 2 is not true.
$4(Y + 3.5) = 11(X)^2 – 1$
$4(21 + 3.5) = 11(9) – 1$
$4(24.5) = 98$
$98 = 98$
So, statement 3 is true.

Q.118) (a)
Explanation:

$4x^2 – 16x + C = 0$
Now, substitute 1.5 for x in order to find out the value of 'C'
$4(1.5)^2 – 16(1.5) + C = 0$
$4(2.25) – 16(1.5) + C = 0$
$9 – 24 + C = 0$
$C = 15$
Sum of roots $= -b/a = 16/4 = 4$
So, the other root of equation I $= 4 – 1.5 = 2.5$ (larger root)
Consider $2y^2 – 3y + 1 = 0$
Roots $= \{-b \pm \sqrt{(b^2 – 4ac)}\} / 2a$
$\{3 \pm \sqrt{(9 – 8)}\} / 4$
Roots $= 4/4, 2/4$
Roots $= 1, 0.5$
So, sum of larger roots $= 2.5 + 1 = 3.5$

Q.119) (d)
Explanation:

$4x^2 - 16x + C = 0$
Now, substitute 1.5 for x in order to find out the value of 'C'
$4(1.5)^2 - 16(1.5) + C = 0$
$4(2.25) - 16(1.5) + C = 0$
$9 - 24 + C = 0$
$C = 15$
Sum of digits of $C = 1 + 5 = 6$

Q.120) (e)
Explanation:

	Boys	Girls	Total
A	3x	5x	8x
B	3x – y	y	3x
C	y	5x – y	5x
Total	6x	10x	16x

30% girls are in section C
So, $0.3(10x) = 5x - y$
$3x = 5x - y$
$2x = y$

	Boys	Girls	Total
A	3x	5x	8x
B	x	2x	3x
C	2x	3x	5x
Total	6x	10x	16x

P = number of girls in section B = 2x
Q = number of boys in section A = 3x
P = 2/3 of Q
$2x = 2/3 (3x)$
$2x = 2x$
So, statement I is true.
33 1/3% of total number of girls = 1/3 (10x) = 10x/3
20% of total boys = 0.2(6x) = 1.2x
P = 2x
So, statement II is not true.
3P = 2Q
$3(2x) = 2(3x)$
$6x = 6x$
So, statement III is true.

Q.121) (b)
Explanation:

	Boys	Girls	Total
A	3x	5x	8x
B	X	2x	3x
C	2x	3x	5x
Total	6x	10x	16x

Total boys = 6x
Boys in section B = x
Required percentage = x / 6x = 1/6 = 16.67%

Q.122) (c)
Explanation:

Number of books in regional language = 1.25 x 120 = 150
Number of English books = 200 – 150 = 50
Number of English books in percentage = 50/200 x 100 = 25%
So, X = 25

Q.123) (b)
Explanation:

Equation Y will have the smallest roots when a = 5 and b = 7.
Smallest Root = $(7 - \sqrt{(49 - 20)}) / 10$
QI = Smallest root = 0.161 (approx.)
$d/e + c/f - 1 = 3$
$d/e + c/f = 4$
$6/4 + 5/2 = 1.5 + 2.5 = 4$
Also, $6/3 + 4/2 = 2 + 2 = 4$
So, d = 6
e = 4 or 3
c = 5 or 4
f = 2
So, 'f' is the smallest among the four and its reciprocal is 1/2 = 0.5 = QII
Hence, QII > QI

Q.124) (b)
Explanation:

$1/a + 1/b + 1$
The above expression will have the maximum value when 'a' and 'b' are minimum.
$1/a = 1/4$
$1/b = 1/5$
So, $1/4 + 1/5 + 1 = (5 + 4 + 20) / 20 = 29/20$
$a^3 - b^2 - 4$
The above expression will have minimum value when 'a' is minimum and 'b' is maximum
So, b = 9 and a = 4
$4^3 - 9^2 - 4 = 64 - 81 - 4 = -21$
So, (29/20 – 21) < (- 9)
Or, QI < QII

Q.125) (d)
Explanation:

Interest earned by Anshu = $P\{(1.2)^3 - 1\}$
36 2/5 % of P = 182/500 x P = 91P/250
Interest earned by Ronit = (91P x 10 x T) / (100 x 250)
$P\{6/5 \times 6/5 \times 6/5 - 1\} = 91PT/2500$
$216/125 - 1 = 91T/2500$
$91/125 = 91T/2500$
T = 2500/125 = 20 years

We cannot find out the value of 'P'.

Q.126) (b)
Explanation:

From statement I, X = BA; where A > 1 and A < B
From statement II, A = 5 or 6
So, the number X = B5 or B6
From statement III, B = 7 (7x5 = 35 which is a multiple of 7 and 7x6 = 42 which is also a multiple of 7)
So, X = 75 or 76
Y = 57 or 67
So, 58 is the closest value from the given options.

Q.127) (b)
Explanation:

Original Milk = 3P/4
Original water = P/4
In Statement 1,
New quantity of water = P/4 + P/4 = P/2
New ratio of milk and water = 3/4 : 1/2 = 3/4 : 2/4 = 3 : 2
So, water becomes 40% of the total mixture.
Hence, statement 1 is true.
In statement 2,
New quantity of milk = 3P/4 - 9P/44 = 24P/44
New quantity of milk = P/4 + 9P/44 = 20P/44
New ratio = 24 : 20 = 6 : 5
So, statement 2 is also true.
In statement 3,
New quantity of milk = 3P/4 x 4/5 x 4/5 = 12P/25
New quantity of water = P – 12P/25 = 13P/25
Ratio = 12 : 13 = 24 : 26
So, statement III is false.

Q.128) (d)
Explanation:

Perimeter of circle = 2 x 22/7 x r
Perimeter of rectangle = 2(l + b)
L = Y
B = 2r (since the diameter of the circle is equal to the breadth of the rectangle)
Let cost of fencing per metre be 'P'
(2(Y + 2r) x P) / (2 x 22/7 x r x P) = 8820/4620
(Y + 2r)/(22/7 x r) = 21/11
(Y + 2r)/r = 6
Y + 2r = 6r
Y = 4r
Diagonal of the square = diameter of the circle = 2r
So, side of the square = √2r
Perimeter of the square = 4√2r = √2Y metres

Q.129) (e)
Explanation:
From statement I,
SP = 3162.5 x 0.8 = 2530

Profit% = (2530 – 2200) / 2200 = 15%
From statement II,
CP = 10800/1.5 = 7200
Profit% = (8400 – 7200)/7200 = 16.67%
From statement III,
20% of MP = 1650
MP = 1650/0.2 = 8250
SP = 8250 – 1650 = 6600
CP = 6600 – 1100 = 5500
Profit% = 1100/5500 = 20%
From statement IV,
25% of MP = 1610
MP = 1610/0.25 = 6440
SP = 6440 – 1610 = 4830
Profit% = (4830 – 4200)/4200 = 15%

Q.130) (a)
Explanation:

SP of watch D = 2200 x 0.89 = 1958
CP of D = 1958 + 142 = 2100
CP of A = 2100 x 0.8 = 1680
SP of A = 1800 x 0.77 = 1386
Loss on A = 1680 – 1386 = Rs 294

Q.131) (d)
Explanation:

Average loss on B, C, D and E = 183.25
(140 + 228 + 142 + E) / 4 = 183.25
510 + E = 733
Loss on E = 223
So, average loss = (294 + 140 + 228 + 142 + 223) / 5 = 1027/5 = Rs 205.4

Q.132) (c)
Explanation:

16% of CP of B = 140
CP of B = 875
SP of B = 875 – 140 = 735
MP of B = 735/0.85 = 864.7
Required percentage = 864.7/1200 = 72% (approx.)

Q.133) (e)
Explanation:

Total MP of B, C and D = 2400 x 3 = 7200
Sum of MP of B and C = 7200 – 220 = 5000
MP of B = 16/25 x 5000 = 3200
MP of C = 9/25 x 5000 = 1800
SP of B = 3200 x 0.85 = 2720
SP of C = 1800 x 0.78 = 1404
CP of B = 2720 + 140 = 2860
CP of C = 1404 + 228 = 1632
CP of B + CP of C = 2860 + 1632 = 4492

Q.134) (b)
Explanation:

Let CP be 6y and MP be 7y
So, SP = 6y – 140
Also, SP = 7y x 0.85
Equating both the expressions,
6y – 140 = 7y x 0.85
6y – 140 = 5.95y
0.05y = 140
y = 2800
SP = 6(2800) – 140 = 16660

Q.135) (b)
Explanation:

	Round I	Round II	Round III	
Ball 1	2	6	1	9
Ball 2	4	3	5	12
Ball 3	4	6	5	15
Ball 4	4	3	1	8
	14	18	12	

Required difference = 6 – 1 = 5

Q.136) (d)
Explanation:

	Round I	Round II	Round III	
Ball 1	2	6	1	9
Ball 2	4	3	5	12
Ball 3	4	6	5	15
Ball 4	4	3	1	8
	14	18	12	

Average = 18/4 = 4.5

Q.137) (c)
Explanation:

	Round I	Round II	Round III	
Ball 1	2	6	1	9
Ball 2	4	3	5	12
Ball 3	4	6	5	15
Ball 4	4	3	1	8
	14	18	12	

Q.138) (d)
Explanation:

	Round I	Round II	Round III	

Ball 1	2	6	1	9
Ball 2	4	3	5	12
Ball 3	4	6	5	15
Ball 4	4	3	1	8
	14	18	12	

Q.139) (b)
Explanation:

From statement 1,
R + T = 88
From statement 2,
T + 26 = R
T + 16 = A
R – 26 = A – 16
R – A = 10
From statement 3,
R = 7y; A = 6y
Combining 1 and 2,
T = 31; R = 57
So, 1 and 2 together are sufficient.
Combining 2 and 3,
R – A = 10
So, 7y – 6y = 10
y = 10
So, R = 70 and A = 60
Also, T = R – 26
T = 70 – 26 = 44
So, 2 and 3 together are also sufficient.

Q.140) (c)
Explanation:

Speed of car = x km/hr
So, $x = 2d/8 = d/4$
Or, $d = 4x$
$d/(x-y) + d/(x+y) = 25/3$
or, $4x/(x-y) + 4x/(x+y) = 25/3$
$(4x^2 + 4xy + 4x^2 – 4xy)/(x^2 – y^2) = 25/3$
$8x^2/(x^2 – y^2) = 25/3$
$24x^2 = 25x^2 – 25y^2$
$x^2 = 25y^2$
$x = 5y$
Also, $72/(x+y) = 2 + 24/(x-y)$
$72/6y = 2 + 24/4y$
$12/y = 2 + 6/y$
$6/y = 2$
$y = 3$
So, $x = 5y = 15$
And $d = 4x = 60$
Required time = $108/x = 108/15 = 36/5$ hours
Now check for the expressions:
$(2y(x+y))/x = 6(18)/15 = 108/15$; so (i) holds
$\{3y(x-y)\}/x = 9(12)/15 = 108/15$; so (ii) holds
$\{2x(x+y)\}/y = 30(18)/3 = 180$; so (iii) does not hold