

Quantitative Aptitude

Q.111) (a)

Explanation:

$$CP = 1200$$

$$SP = 1500$$

$$MP = 1740$$

$$Discount = 240$$

$$Discount\% = 240/1740 \times 100 = 13.79\%$$

Q.112) (c)

Explanation:

First of all analyse the pattern:

$$2 \times 1 + 1 = 3$$

$$3 \times 2 + 1 = 7$$

$$7 \times 3 + 1 = 22$$

$$22 \times 4 + 1 = 89$$

$$89 \times 5 + 1 = 446$$

$$446 \times 6 + 1 = 2677$$

$$2677 \times 7 + 1 = 18740$$

$$\text{So, the wrong term (X)} = 445$$

$$\text{Now, } X - 400 = 445 - 400 = 45$$

$$\text{So, LCM of 45 and 25} = 225$$

Q.113) (e)

Explanation:

$$X = 445$$

$$20\% \text{ of } 445 = 89$$

Q.114) (b)

Explanation:

$$X + 4 = 445 + 4 = 449 \text{ (it is a prime number)}$$

Q.115) (c)

Explanation:

	Milk	Water	Total	Ratio
Jar A	40	6	46	20:3
Jar B	60	18	78	10:3
Jar C	100	$24 + 6 = 30$	$124 + 6 = 130$	10:3

$$\text{Percentage of water in Jar C} = 3/13 * 100 = 23\%$$

Q.116) (e)

Explanation:

In statement A, lengths of both the trains are given which is not sufficient to find the speed of train A. Hence, A alone is not sufficient.

From statement B, we can find the relative speed as $400/25 = 16\text{m/s}$. But again, statement B alone is also not sufficient. Even using both the statements together, we can only get the relative speed of train A with respect to train B. But we cannot get the absolute value of speed.

Q.117) (a)

Explanation:

The pattern of the first series is as follows:

$$15 + 2 = 17$$

$$17 - 6 = 11$$

$$11 + 12 = 23$$

$$23 - 20 = 3 (=P)$$

$$3 + 30 = 33$$

The pattern of the second series is as follows:

$$400 \times 0.5 = 200 (=Q)$$

$$200 \times 1.5 = 300$$

$$300 \times 2.5 = 750$$

$$750 \times 3.5 = 2625$$

$$2625 \times 4.5 = 11812.5$$

Now, R can take two values, i.e., 15 and 16 (because R is a composite number)

So, P + R could also take two values, i.e., 18 and 19.

Q.118) (c)

Explanation:

$$(Q - 2) / P \times 3 = ((200 - 2) / 3) \times 3 = 198$$

Q.119) (b)

Explanation:

Roots of a quadratic equation = $(-b \pm \sqrt{(b^2 - 4ac)}) / 2a$

Roots of first equation = $9 \pm \sqrt{(81 - 28a)} / 2a$

Bigger root = $9 + \sqrt{(81 - 28a)} / 2a$

Smaller root = $9 - \sqrt{(81 - 28a)} / 2a$

Roots of second equation = $8 \pm \sqrt{(64 - 16b)} / 2b$

Bigger root = $8 + \sqrt{(64 - 16b)} / 2b$

Smaller root = $8 - \sqrt{(64 - 16b)} / 2b$

Bigger root = $6/b$

$8 + \sqrt{(64 - 16b)} / 2b = 6/b$

$$b = 3$$

Since a is a positive integer and $a < b$, a can either take the value of 1 or 2. By substituting the values, you will get $a = 2$.

Q.120) (c)

Explanation:

Since $a = 2$, the first equation becomes $2x^2 - 9x + 7 = 0$

The roots are 1 and $7/2$.

Q.121) (c)

Explanation:

Since $b = 3$, the second equation becomes $3y^2 - 8y + 4 = 0$

The roots are $2/3$ and 2.

Q.122) (d)

Explanation:

From statement 2: let the present ages of Amit and his daughter be $11x$ and $6x$ years respectively.

From statement 1: 5 years ago, Amit's age = $2 * \text{His daughter's age}$

From statement 3: 35 years hence, Amit's age : Daughter's age = $12 : 7$

Any two of the above three will give Amit's present age.

Q.123) (c)

Explanation:

In these types of questions, we multiply capital by time and then find the mutual profit ratio.

Capital invested by B = 'p'

Then, capital invested by A = '2000 + p'

Now, $A = (200 + p) \times 8 \text{ months} = 16,000 + 8p$

$B = p \times 12 \text{ months} = 12p$

Profit sharing ratio between A and B = $16000 + 8p : 12p = 4000 + 2p : 3p$

$7F^2 = 472 - \sqrt{576}$

$F = 8$

So, $400F = 3200$

Share of A = $400F = ((4000 + 2p) / (4000 + 5p)) \times 6800$

$3200/6800 = (4000 + 2p) / (4000 + 5p)$

$(4000 + 2p) / (4000 + 5p) = 8/17$

$p = \text{investment of B} = 6000$

Q.124) (d)

Explanation:

From statement A, we get

Price of variety A = Rs 36

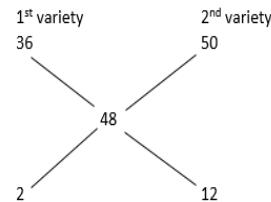
Mean price = $57.6 / 1.2 = \text{Rs } 48$

But statement A alone is not sufficient.

From statement B, we get

Price of variety B = Rs 50

If we combine both A and B,



Ratio = $2 : 12 = 1 : 6$

$1 : 6$ has a gap of 5

This gap of 5 represents 3 kg.

Now we can find out the answer.

Note: We don't need to find the exact value since this is a data sufficiency question.

Q.125) (e)

Explanation:

From the statement A: $P = 1000$ and $A = 1331$ so interest will become $1331 - 1000 = 331$

From the statement B: Time = 3 years but we could not conclude that the rate of interest was compounded annually or half-yearly.

From the statement C: we can conclude that the rate of interest was compounded annually because the simple interest of one year will be equal to the compound interest of the first year only if the rate of interest is compounded annually.

Now $P = 1000$, $CI = 331$ time = 3 years and rate of interest is compounded annually so we can easily find the rate of interest.

So, all the statements are needed to get our answer.

Q.126) (e)

Explanation:

Speed of 1st boat, $b_1 = 21$

Speed of 2nd boat, $b_2 = 28$

Speed of stream, $s = 7$

1st boat downstream speed = $b_1 + s = 28$

1st boat upstream speed = $b_1 - s = 14$

2nd boat downstream speed = $b_2 + s = 35$

2nd boat upstream speed = $b_2 - s = 21$

Let the distance between A to B = 'd'

$d/28 + d/14 - d/35 - d/21 = 6.5$

$d = 210 \text{ km}$

Q.127) (a)

Explanation:

From the Statement A,

Let the CP of each of two cheapest articles = x and the CP of costliest article = $x + 1$

Then, $x + x + x + 1 = 49$,

$x = 16$

Therefore, the CP of costliest article = $16 + 1 = 17$

From the Statement II, we can say that the cost price of two articles is same and from Statement III, we can say that the cost price of costliest article is 6.25% more than the cost price of cheapest article therefore by combining both the statement we can also get our answer.

Q.128 (b)

Explanation:

ABC Bank has a rate of interest of 12% and compounds half yearly. This is the same as having a 6% interest rate per half-year.

So, if Principal P is invested for a year in ABC bank, at the end of the year it becomes $P(1.06)(1.06) = P(1.1236)$

Therefore, the interest rate when viewed as a Simple interest scheme is 12.36% per annum.

Seema invested in GHI Bank, which has twice the interest rate as DEF Bank and the quantum for which the investment is made is also double, hence Seema effectively gets 4 times the interest that Sameer gets for the same investment in ABC Bank.

Let's say Sameer invested Rs 20,000 in DEF Bank.

Since this is the same as investing in ABC Bank for 1 year, his interest would be 12.36% of 20,000 = Rs 2472.

Now, for the same investment, Seema must earn 4 times that of Rs 2472.

So, Seema earns Rs 9888.

Q.129 (b)

Explanation:

Let's assume speed of the bus to be x and the time taken be t. Since speed is reduced to 2/3rd,

New speed = $2x/3$

Since the speed is two-third, time taken = $3t/2$

This $3t/2$ is after the scheduled time, so extra $t/2 = 45$ minutes

$t = 90$ minutes

Bus travels at x km/h & takes 90 min.

And, bus travels at $2x/3$ km/h takes 135 minutes.

So, the bus usually takes 90 minutes to cover the distance.

It travels 10 minutes at the usual speed. That is, it travels 1/9th of the time at the usual speed. So, it covers 1/9th of the distance in 10 minutes.

To reach its destination on time, the bus has to travel the remaining 8/9th of the distance in 80 minutes. Since the bus halts for 5 minutes, it should now cover 8/9th of the distance in 75 (80-5) minutes.

In other words, the bus has to cover the same distance in 75/80th of the usual time. In order to do so, the speed must be $80/75$ th of

the usual speed. Or the increased speed will be 5/75th or 1/15th of the usual speed, which is an increase of 6.67%.

Q.130) (e)

Explanation:

Commodity	Manufactured	Unsold	Sold
A	1,80,000	$40/360 \times 7,20,000 = 80,000$	1,00,000
B	1,20,000	$60/360 \times 7,20,000 = 1,20,000$	0
C	1,50,000	$55/360 \times 7,20,000 = 1,10,000$	40,000
D	2,00,000	$45/360 \times 7,20,000 = 90,000$	1,10,000
E	1,30,000	$70/360 \times 7,20,000 = 1,40,000$	-10,000
F	2,20,000	$90/360 \times 7,20,000 = 1,80,000$	40,000
	10,00,000	7,20,000	2,80,000

There is discrepancy in commodity E due to negative value in the sold column.

Q.131) (d)

Explanation:

Average unsold of B, D and E = $3,90,000/3 = 1,30,000$

Total manufactured of B = 1,20,000

Percentage = $1,30,000/1,20,000 \times 100 = 108.33\%$

Q.132) (c)

Explanation:

Half of A sold = 50,000

One-fourth of C sold = 10,000

One-fifth of D sold = 22,000

Total = 82,000

Required answer = $10,000/82,000 \times 360 = 44^\circ$ (approx.)

Q.133) (d)

Explanation:

$A = 15\% \times 80,000 = 12,000$

$C = 10\% \times 1,10,000 = 11,000$

$F = 5\% \times 1,80,000 = 9,000$

$B = 10\% \times 1,20,000 = 12,000$

$D = 20\% \times 90,000 = 18,000$

$A + C + F = 32,000$

$B + D = 30,000$

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$$\text{Percentage} = 32,000 - 30,000 / 32,000 \times 100 = 6.25\%$$

Q.134) (b)

Explanation:

Q's net salary = Rs. 25850

If the basic salary of Q be Rs. x, then

Total allowance = Rs. (x+3000)

Now,

$$x + x + 3000 - 4350 = 25850$$

$$\Rightarrow x = 13600$$

Q's total allowance = 13600 + 3000 = Rs. 16600

Q.135) (b)

Explanation:

Provident Fund Deduction of S = (11200 x 10)/100 = Rs. 1120

Other deduction of S = (13/7) x 1120 = Rs. 2080

Q.136) (e)

Explanation:

$$\text{Total deduction for P} = (21800 * 10)/100 + 4720 = \text{Rs. 6900}$$

$$P's \text{ net salary} = 21800 + 28600 - 6900 = \text{Rs. 43500}$$

Q.137) (d)

Explanation:

$$\text{Required \%} = (11200 - 10400)/10400 \times 100 = 7(9/13)\%$$

Q.138) (c)

Explanation:

Aug	350	210	140	150	45	105
Sept	300	120	180	400	200	200

In May, Driver A rejects = 20% x 150 = 30

In May, Driver B rejects = 10% x 200 = 20

So, driver A picks = 150 - 30 = 120

And driver B picks = 200 - 20 = 180

$$\text{Required \%} = (180 - 120) / 180 \times 100 = 33.33\%$$

Q.140) (d)

Explanation:

	Driver A			Driver B		
	Total	Female	Male	Total	Female	Male
May	150	45	105	200	100	100
June	250	125	125	350	245	105
July	200	40	160	250	100	150
Aug	350	210	140	150	45	105
Sept	300	120	180	400	200	200

$$\text{Required ratio} = 250 : 300 = 5 : 6$$

$$\text{Required \%} = (11200 - 10400)/10400 \times 100 = 7(9/13)\%$$

Q.138) (c)

Explanation:

	Driver A			Driver B		
	Total	Female	Male	Total	Female	Male
May	150	45	105	200	100	100
June	250	125	125	350	245	105
July	200	40	160	250	100	150
Aug	350	210	140	150	45	105
Sept	300	120	180	400	200	200

$$\text{Required ratio} = 165/2 : 255/2 = 11 : 17$$

Q.139) (e)

Explanation:

	Driver A			Driver B		
	Total	Female	Male	Total	Female	Male
May	150	45	105	200	100	100
June	250	125	125	350	245	105
July	200	40	160	250	100	150