Book For

Railway Protection Force

RPF Woman Constable Exam 2016 Sample Paper [Aptitude]

(1) A can do a certain work in the same time in which B and C together can do it. If A and B together could do it in 10 days and C alone in 50 days, then B alone could do it in:

[A] 15 days

[B] 20 days

[C] 25 days

[D] 30 days

Answer : [C]

Explanation:

(A + B)'s 1 day's work = $\frac{1}{10}$

C's 1 day's work = $\frac{1}{50}$

(A + B + C)'s 1 day's work = $\left(\frac{1}{10} + \frac{1}{50}\right) = \frac{6}{50} = \frac{3}{25}$. .... (i)

A's 1 day's work = (B + C)'s 1 day's work .... (ii)

From (i) and (ii), we get: 2 x (A's 1 day's work) = $\frac{3}{25}$

$\Rightarrow$ A's 1 day's work = $\frac{3}{50}$.

$\therefore$ B's 1 day's work $\left(\frac{1}{10} - \frac{3}{50}\right) = \frac{2}{50} = \frac{1}{25}$.

So, B alone could do the work in 25 days.

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(2) A and B can complete a work in 15 days and 10 days respectively. They started doing the work together but after 2 days B had to leave and A alone completed the remaining work. The whole work was completed in :

[A] 8 days

[B] 10 days

[C] 12 days

[D] 15 days

Answer : [C]

Explanation:

(A + B)'s 1 day's work = $\left(\frac{1}{15} + \frac{1}{10}\right) = \frac{1}{6}$.

Work done by A and B in 2 days = $\left(\frac{1}{6} \times 2\right) = \frac{1}{3}$.

Remaining work = $\left(1 - \frac{1}{3}\right) = \frac{2}{3}$.

Now, $\frac{1}{15}$ work is done by A in 1 day.

$\therefore$ $\frac{2}{3}$ work will be done by a in $\left(15 \times \frac{2}{3}\right)$ = 10 days.

Hence, the total time taken = (10 + 2) = 12 days.

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(3) A can finish a work in 24 days, B in 9 days and C in 12 days. B and C start the work but are forced to leave after 3 days. The remaining work was done by A in:

[A] 5 days

[B] 6 days

[C] 10 days

[D]
$10\frac{1}{2}$ days

Answer : [C]

Explanation:
(B + C)'s 1 day's work = $\left(\frac{1}{9} + \frac{1}{12}\right) = \frac{7}{36}$.

Work done by B and C in 3 days = $\left(\frac{7}{36} \times 3\right) = \frac{7}{12}$.

Remaining work = $\left(1 - \frac{7}{12}\right) = \frac{5}{12}$.

Now, $\frac{1}{24}$ work is done by A in 1 day.

So, $\frac{5}{12}$ work is done by A in $\left(24 \times \frac{5}{12}\right)$ = 10 days.

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(4) The cost price of 20 articles is the same as the selling price of *x* articles. If the profit is 25%, then the value of *x* is:

[A] 15

[B] 16

[C] 18

[D] 25

Answer : [B]

Explanation:
Let C.P. of each article be Re. 1 C.P. of x articles = Rs. x.
S.P. of x articles = Rs. 20.
Profit = Rs. $(20 - x)$.
$\therefore \left(\frac{20 - x}{x} \times 100 = 25\right)$

$\Rightarrow 2000 - 100x = 25x$
$125x = 2000$
$\Rightarrow x = 16$.

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(5) The percentage profit earned by selling an article for Rs. 1920 is equal to the percentage loss incurred by selling the same article for Rs. 1280. At what price should the article be sold to make 25% profit?

[A] Rs. 2000

[B] Rs. 2200

[C] Rs. 2400

[D] Data inadequate

Answer : [A]

Explanation:
Let C.P. be Rs. x.
Then, $\frac{1920 - x}{x} \times 100 = \frac{x - 1280}{x} \times 100$

$\Rightarrow 1920 - x = x - 1280$
$\Rightarrow 2x = 3200$
$\Rightarrow x = 1600$
$\therefore$ Required S.P. = 125% of Rs. 1600 = Rs. $\left(\frac{125}{100} \times 1600\right)$ = Rs 2000.

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(6) A trader mixes 26 kg of rice at Rs. 20 per kg with 30 kg of rice of other variety at Rs. 36 per kg and sells the mixture at Rs. 30 per kg. His profit percent is:

[A] No profit, no loss

[B] 5%

[C] 8%

[D] 10%

[E] None of these

Answer : [B]

Explanation:
C.P. of 56 kg rice = Rs. (26 x 20 + 30 x 36) = Rs. (520 + 1080) = Rs. 1600.
S.P. of 56 kg rice = Rs. (56 x 30) = Rs. 1680.
$\therefore$ Gain = $\left(\frac{80}{1600} \times 100\right)\%$ = 5%.

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(7) Two numbers A and B are such that the sum of 5% of A and 4% of B is two-third of the sum of 6% of A and 8% of B. Find the ratio of A : B.

[A] 2 : 3

[B] 1 : 1

[C] 3 : 4

[D] 4 : 3

Answer : [D]

Explanation:
5% of A + 4% of B = $\frac{2}{3}$ (6% of A + 8% of B)

$\Rightarrow \frac{5}{100}A + \frac{4}{100}B = \frac{2}{3}\left(\frac{6}{100}A + \frac{8}{100}B\right)$

$\Rightarrow \frac{1}{20}A + \frac{1}{25}B = \frac{1}{25}A + \frac{4}{75}B$

$\Rightarrow \left(\frac{1}{20} - \frac{1}{25}\right)A = \left(\frac{4}{75} - \frac{1}{25}\right)B$

$\Rightarrow \frac{1}{100}A = \frac{1}{75}B$

$\frac{A}{B} = \frac{100}{75} = \frac{4}{3}$.

$\therefore$ Required ratio = 4 : 3

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(8) In a certain school, 20% of students are below 8 years of age. The number of students above 8 years of age is $\frac{2}{3}$ of the number of students of 8 years of age which is 48. What is the total number of students in the school?

[A] 72

[B] 80

[C] 120

[D] 150

[E] 100

Answer : [E]

Explanation:
Let the number of students be x. Then,
Number of students above 8 years of age = (100 - 20)% of x = 80% of x.
$\therefore$ 80% of x = 48 + $\frac{2}{3}$ of 48

$\Rightarrow \frac{80}{100}x = 80$

$\Rightarrow x = 100.$

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(9) Three candidates contested an election and received 1136, 7636 and 11628 votes respectively. What percentage of the total votes did the winning candidate get?

[A] 57%

[B] 60%

[C] 65%

[D] 90%

Answer : [A]

Explanation:
Total number of votes polled = (1136 + 7636 + 11628) = 20400.
$\therefore$ Required percentage = $\left(\frac{11628}{20400} \times 100\right)\% = 57\%.$

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(10) How many of the following numbers are divisible by 132 ?
264, 396, 462, 792, 968, 2178, 5184, 6336

[A] 4

[B] 5

[C] 6

[D] 7

Answer : [A]

Explanation:
132 = 4 x 3 x 11
So, if the number divisible by all the three number 4, 3 and 11, then the number is divisible by 132 also.
264 → 11,3,4 (/)
396 → 11,3,4 (/)
462 → 11,3 (X)
792 → 11,3,4 (/)
968 → 11,4 (X)
2178 → 11,3 (X)
5184 → 3,4 (X)
6336 → 11,3,4 (/)
Therefore the following numbers are divisible by 132 : 264, 396, 792 and 6336.
Required number of number = 4.

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(11) (935421 x 625) = ?

[A] 575648125

[B] 584638125

[C] 584649125

[D] 585628125

Answer : [B]

Explanation:

$935421 \times 625 = 935421 \times 5^4 = 935421 \times \left(\frac{10}{2}\right)^4$

$= \frac{935421 \times 10^4}{2^4} = \frac{9354210000}{16}$

= 584638125

(12)
$\frac{(489 + 375)^2 - (489 - 375)^2}{(489 \times 375)} = ?$

[A] 144

[B] 864

[C] 2

[D] 4

[E] None of these

Answer : [D]

Explanation:
Given Exp. = $\frac{(a + b)^2 - (a - b)^2}{ab} = \frac{4ab}{ab} = 4$

(13) Which of the following numbers will completely divide $(3^{25} + 3^{26} + 3^{27} + 3^{28})$?

[A] 11

[B] 16

[C] 25

[D] 30

Answer : [D]

Explanation:
$(3^{25} + 3^{26} + 3^{27} + 3^{28}) = 3^{25} \times (1 + 3 + 3^2 + 3^3) = 3^{25} \times 40$
$= 3^{24} \times 3 \times 4 \times 10$
$= (3^{24} \times 4 \times 30)$, which is divisible by30.

(14) The sum of how many terms of the series 6 + 12 + 18 + 24 + ... is 1800 ?

[A] 16

[B] 24

[C] 20

[D] 18

[E] 22

Answer : [B]

Explanation:
This is an A.P. in which $a = 6$, $d = 6$ and $S_n = 1800$
Then, $\frac{n}{2}[2a + (n - 1)d] = 1800$

$\Rightarrow \frac{n}{2}[2 \times 6 + (n - 1) \times 6] = 1800$

$\Rightarrow 3n\ (n + 1) = 1800$
$\Rightarrow n(n + 1) = 600$
$\Rightarrow n^2 + n - 600 = 0$
$\Rightarrow n^2 + 25n - 24n - 600 = 0$
$\Rightarrow n(n + 25) - 24(n + 25) = 0$
$\Rightarrow (n + 25)(n - 24) = 0$
$\Rightarrow n = 24$
Number of terms = 24.

(15) $2 + 2^2 + 2^3 + ... + 2^9 = ?$

[A] 2044

[B] 1022

[C] 1056

[D] None of these

Answer : [B]

Explanation:

This is a G.P. in which $a = 2$, $r = \frac{2^2}{2} = 2$ and $n = 9$.

$\therefore S_n = \frac{a(r^n - 1)}{(r - 1)} = \frac{2 \times (2^9 - 1)}{(2 - 1)} = 2 \times (512 - 1) = 2 \times 511 = 1022.$

(16) A number when divided successively by 4 and 5 leaves remainders 1 and 4 respectively. When it is successively divided by 5 and 4, then the respective remainders will be

[A] 1, 2

[B] 2, 3

[C] 3, 2

[D] 4, 1

Answer : [B]

Explanation:

4 | x $y = (5 \times 1 + 4) = 9$ -------- 5 | y -1 $x = (4 \times y + 1) = (4 \times 9 + 1) = 37$ -------- | 1 -4 Now, 37 when di

(17) If $a - b = 3$ and $a^2 + b^2 = 29$, find the value of ab.

[A] 10

[B] 12

[C] 15

[D] 18

Answer : [A]

Explanation:

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

$= 29 - 9 = 20$

$\Rightarrow ab = 10.$

(18) A sum of Rs. 1360 has been divided among A, B and C such that A gets $\frac{2}{3}$ of what B gets and B gets $\frac{1}{4}$ of what C gets. B's share is:

[A] Rs. 120

[B] Rs. 160

[C] Rs. 240

[D] Rs. 300

Answer : [C]

Explanation:
Let C's share = Rs. x

Then, B's share = Rs. $\frac{x}{4}$, A's share = Rs. $\left(\frac{2}{3} \times \frac{x}{4}\right)$ = Rs. $\frac{x}{6}$

$\therefore \frac{x}{6} + \frac{x}{4} + x = 1360$

$\Rightarrow \frac{17x}{12} = 1360$

$\Rightarrow x = \frac{1360 \times 12}{17}$ = Rs. 960

Hence, B's share = Rs. $\left(\frac{960}{4}\right)$ = Rs. 240.

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(19) In a regular week, there are 5 working days and for each day, the working hours are 8. A man gets Rs. 2.40 per hour for regular work and Rs. 3.20 per hours for overtime. If he earns Rs. 432 in 4 weeks, then how many hours does he work for ?

[A] 160

[B] 175

[C] 180

[D] 195

Answer : [B]

Explanation:
Suppose the man works overtime for x hours.
Now, working hours in 4 weeks = (5 x 8 x 4) = 160.
$\therefore$ 160 x 2.40 + x x 3.20 = 432
$\Rightarrow 3.20x = 432 - 384 = 48$
$\Rightarrow x = 15$.
Hence, total hours of work = (160 + 15) = 175.

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(20) If 0.75 : x :: 5 : 8, then x is equal to:

[A] 1.12

[B] 1.2

[C] 1.25

[D] 1.30

Answer : [B]

Explanation:
(x x 5) = (0.75 x 8) $\Rightarrow x = \left(\frac{6}{5}\right)$ = 1.20

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(21) If Rs. 782 be divided into three parts, proportional to $\frac{1}{2} : \frac{2}{3} : \frac{3}{4}$, then the first part is:

[A] Rs. 182

[B] Rs. 190

[C] Rs. 196

[D] Rs. 204

Answer : [D]

Explanation:
Given ratio = $\frac{1}{2} : \frac{2}{3} : \frac{3}{4}$ = 6 : 8 : 9.

$\therefore$ 1st part = Rs. $\left(782 \times \frac{6}{23}\right)$ = Rs. 204

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(22) If 40% of a number is equal to two-third of another number, what is the ratio of first number to the second number?

[A] 2 : 5

[B] 3 : 7

[C] 5 : 3

[D] 7 : 3

Answer : [C]

Explanation:

Let 40% of A = $\frac{2}{3}$ B

Then, $\frac{40A}{100} = \frac{2B}{3}$

$\Rightarrow \frac{2A}{5} = \frac{2B}{3}$

$\Rightarrow \frac{A}{B} = \left(\frac{2}{3} \times \frac{5}{2}\right) = \frac{5}{3}$

$\therefore$ A : B = 5 : 3.

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(23) Three numbers which are co-prime to each other are such that the product of the first two is 551 and that of the last two is 1073. The sum of the three numbers is:

[A] 75

[B] 81

[C] 85

[D] 89

Answer : [C]

Explanation:

Since the numbers are co-prime, they contain only 1 as the common factor.
Also, the given two products have the middle number in common.
So, middle number = H.C.F. of 551 and 1073 = 29;
First number = $\left(\frac{551}{29}\right)$ = 19; Third number = $\left(\frac{1073}{29}\right)$ = 37.

$\therefore$ Required sum = (19 + 29 + 37) = 85.

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(24)

The H.C.F. of $\frac{9}{10}$, $\frac{12}{25}$, $\frac{18}{35}$ and $\frac{21}{40}$ is:

[A] $\frac{3}{5}$

[B] $\frac{252}{5}$

[C] $\frac{3}{1400}$

[D] $\frac{63}{700}$

Answer : [C]

Explanation:

Required H.C.F. $= \frac{\text{H.C.F. of 9, 12, 18, 21}}{\text{L.C.M. of 10, 25, 35, 40}} = \frac{3}{1400}$

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(25)

If $\frac{144}{0.144} = \frac{14.4}{x}$, then the value of x is:

[A] 0.0144

[B] 1.44

[C] 14.4

[D] 144

Answer : [A]

Explanation:

$\frac{144}{0.144} = \frac{14.4}{x}$

$\Rightarrow \frac{144 \times 1000}{144} = \frac{14.4}{x}$

$\Rightarrow x = \frac{14.4}{1000} = 0.0144$

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(26) The rational number for recurring decimal 0.125125.... is:

[A] $\frac{63}{487}$

[B] $\frac{119}{993}$

[C] $\frac{125}{999}$

[D] None of these

Answer : [C]

Explanation:

$0.125125... = 0.\overline{125} = \frac{125}{999}$

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(27)

$\frac{5 \times 1.6 - 2 \times 1.4}{1.3} = ?$

[A] 0.4

[B] 1.2

[C] 1.4

[D] 4

Answer : [D]

Explanation:

Given Expression $= \frac{8 - 2.8}{1.3} = \frac{5.2}{1.3} = \frac{52}{13} = 4.$

(28) A father said to his son, "I was as old as you are at the present at the time of your birth". If the father's age is 38 years now, the son's age five years back was:

[A] 14 years

[B] 19 years

[C] 33 years

[D] 38 years

Answer : [A]

Explanation:
Let the son's present age be x years. Then, $(38 - x) = x$
$\Rightarrow 2x = 38$.
$\Rightarrow x = 19$.
$\therefore$ Son's age 5 years back $(19 - 5) = 14$ years.

(29) Sachin is younger than Rahul by 7 years. If their ages are in the respective ratio of 7 : 9, how old is Sachin?

[A] 16 years

[B] 18 years

[C] 28 years

[D] 24.5 years

[E] None of these

Answer : [D]

Explanation:
Let Rahul's age be x years.
Then, Sachin's age = $(x - 7)$ years.
$\therefore \frac{x - 7}{x} = \frac{7}{9}$

$\Rightarrow 9x - 63 = 7x$
$\Rightarrow 2x = 63$
$\Rightarrow x = 31.5$
Hence, Sachin's age $=(x - 7) = 24.5$ years.

(30) The sum of the present ages of a father and his son is 60 years. Six years ago, father's age was five times the age of the son. After 6 years, son's age will be:

[A] 12 years

[B] 14 years

[C] 18 years

[D] 20 years

Answer : [D]

Explanation:
Let the present ages of son and father be x and $(60 - x)$ years respectively.
Then, $(60 - x) - 6 = 5(x - 6)$
$\Rightarrow 54 - x = 5x - 30$
$\Rightarrow 6x = 84$
$\Rightarrow x = 14$.
$\therefore$ Son's age after 6 years = $(x + 6) = 20$ years..

(31) An aeroplane covers a certain distance at a speed of 240 kmph in 5 hours. To cover the same distance in $1\frac{2}{3}$ hours, it must travel at a speed of:

[A] 300 kmph

[B] 360 kmph

[C] 600 kmph

[D] 720 kmph

Answer : [D]

Explanation:
Distance = (240 x 5) = 1200 km.
Speed = Distance/Time

Speed = 1200/(5/3) km/hr. [We can write $1\frac{2}{3}$ hours as 5/3 hours]

$\therefore$ Required speed = $\left(1200 \times \frac{3}{5}\right)_{km/hr}$ = 720 km/hr.

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(32) A car travelling with $\frac{5}{7}$ of its actual speed covers 42 km in 1 hr 40 min 48 sec. Find the actual speed of the car.

[A]
$17\frac{6}{7}$ km/hr

[B] 25 km/hr

[C] 30 km/hr

[D] 35 km/hr

Answer : [D]

Explanation:
Time taken = 1 hr 40 min 48 sec = 1 hr $40\frac{4}{5}$ min = $1\frac{51}{75}$ hrs = $\frac{126}{75}$ hrs.

Let the actual speed be x km/hr.
Then, $\frac{5}{7}x \times \frac{126}{75} = 42$

$\Rightarrow x = \left(\frac{42 \times 7 \times 75}{5 \times 126}\right) = 35$ km/hr.

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(33) A farmer travelled a distance of 61 km in 9 hours. He travelled partly on foot @ 4 km/hr and partly on bicycle @ 9 km/hr. The distance travelled on foot is:

[A] 14 km

[B] 15 km

[C] 16 km

[D] 17 km

Answer : [C]

Explanation:
Let the distance travelled on foot be x km.
Then, distance travelled on bicycle = (61 -x) km.
So, $\frac{x}{4} + \frac{(61-x)}{9} = 9$

$\Rightarrow 9x + 4(61-x) = 9 \times 36$
$\Rightarrow 5x = 80$
$\Rightarrow x = 16$ km.

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(34) A milk vendor has 2 cans of milk. The first contains 25% water and the rest milk. The second contains 50% water. How much milk should he mix from each of the containers so as to get 12 litres of milk such that the ratio of water to milk is 3 : 5?

[A] 4 litres, 8 litres

[B] 6 litres, 6 litres

[C] 5 litres, 7 litres

[D] 7 litres, 5 litres

Answer : [B]

Explanation:
Let the cost of 1 litre milk be Re. 1

Milk in 1 litre mix. in 1st can = $\frac{3}{4}$ litre, C.P. of 1 litre mix. in 1st can Re. $\frac{3}{4}$

Milk in 1 litre mix. in 2nd can = $\frac{1}{2}$ litre, C.P. of 1 litre mix. in 2nd can Re. $\frac{1}{2}$

Milk in 1 litre of final mix. =$\frac{5}{8}$ litre, Mean price = Re. $\frac{5}{8}$

By the rule of alligation, we have:

C.P. of 1 litre mixture in 1st can		C.P. of 1 litre mixture in 2nd can
$\frac{3}{4}$		$\frac{1}{2}$
	Mean Price $\frac{5}{8}$	
$\frac{1}{8}$		$\frac{1}{8}$

$\therefore$ Ratio of two mixtures = $\frac{1}{8} : \frac{1}{8}$ = 1 : 1.

So, quantity of mixture taken from each can = $\left(\frac{1}{2} \times 12\right)$ = 6 litres.

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(35) A container contains 40 litres of milk. From this container 4 litres of milk was taken out and replaced by water. This process was repeated further two times. How much milk is now contained by the container?

[A] 26.34 litres

[B] 27.36 litres

[C] 28 litres

[D] 29.16 litres

Answer : [D]

Explanation:

Amount of milk left after 3 operations = $\left[40\left(1 - \frac{4}{40}\right)^3\right]$ litres

= $\left(40 \times \frac{9}{10} \times \frac{9}{10} \times \frac{9}{10}\right)$ = 29.16 litres.

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(36) A family consists of two grandparents, two parents and three grandchildren. The average age of the grandparents is 67 years, that of the parents is 35 years and that of the grandchildren is 6 years. What is the average age of the family?

[A]
$28\frac{4}{7}$ years

[B]
$31\frac{5}{7}$ years

[C]
$32\frac{1}{7}$ years

[D] None of these

Answer : [B]

Explanation:

Required average $= \left(\frac{67 \times 2 + 35 \times 2 + 6 \times 3}{2 + 2 + 3}\right)$

$= \left(\frac{134 + 70 + 18}{7}\right)$

$= \frac{222}{7}$

$= 31\frac{5}{7}$ years.

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(37) In Arun's opinion, his weight is greater than 65 kg but less than 72 kg. His brother doest not agree with Arun and he thinks that Arun's weight is greater than 60 kg but less than 70 kg. His mother's view is that his weight cannot be greater than 68 kg. If all are them are correct in their estimation, what is the average of different probable weights of Arun?

[A] 67 kg.

[B] 68 kg.

[C] 69 kg.

[D] Data inadequate

[E] None of these

Answer : [A]

Explanation:
Let Arun's weight by X kg.
According to Arun, 65 < X < 72
According to Arun's brother, 60 < X < 70.
According to Arun's mother, X <= 68
The values satisfying all the above conditions are 66, 67 and 68.
∴ Required average $= \left(\frac{66 + 67 + 68}{3}\right) = \left(\frac{201}{3}\right) = 67$ kg.

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(38) The average weight of A, B and C is 45 kg. If the average weight of A and B be 40 kg and that of B and C be 43 kg, then the weight of B is:

[A] 17 kg

[B] 20 kg

[C] 26 kg

[D] 31 kg

Answer : [D]

Explanation:
Let A, B, C represent their respective weights. Then, we have:
A + B + C = (45 x 3) = 135 .... (i)
A + B = (40 x 2) = 80 .... (ii)
B + C = (43 x 2) = 86 ....(iii)
Adding (ii) and (iii), we get: A + 2B + C = 166 .... (iv)
Subtracting (i) from (iv), we get : B = 31.
∴ B's weight = 31 kg.

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(39) A sum of Rs. 12,500 amounts to Rs. 15,500 in 4 years at the rate of simple interest. What is the rate of interest?

[A] 3%

[B] 4%

[C] 5%

[D] 6%

[E] None of these

Answer : [D]

Explanation:
S.I. = Rs. (15500 - 12500) = Rs. 3000.
Rate = $\left(\frac{100 \times 3000}{12500 \times 4}\right)\%$ = 6%

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(40) A man took loan from a bank at the rate of 12% p.a. simple interest. After 3 years he had to pay Rs. 5400 interest only for the period. The principal amount borrowed by him was:

[A] Rs. 2000

[B] Rs. 10,000

[C] Rs. 15,000

[D] Rs. 20,000

Answer : [C]

Explanation:
Principal = Rs. $\left(\frac{100 \times 5400}{12 \times 3}\right)$ = Rs. 15000.
