

Book For
West Central Railway



WCR Ticket Collector Arithmetic Sample Paper



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(1) In a certain store, the profit is 320% of the cost. If the cost increases by 25% but the selling price remains constant, approximately what percentage of the selling price is the profit?

- [A] 30%
- [B] 70%
- [C] 100%
- [D] 250%

Answer : [B]

Explanation:

Let C.P. = Rs. 100. Then, Profit = Rs. 320, S.P. = Rs. 420.

New C.P. = 125% of Rs. 100 = Rs. 125

New S.P. = Rs. 420.

Profit = Rs. (420 - 125) = Rs. 295.

\therefore Required percentage = $\left(\frac{295}{420} \times 100\right)\% = \frac{1475}{21}\% = 70\%$ (approximately).

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(2) 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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(3) 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. $\left(\frac{125}{100} \times 1600\right) = \text{Rs } 2000$.

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(4) A shopkeeper expects a gain of 22.5% on his cost price. If in a week, his sale was of Rs. 392, what was his profit?

[A] Rs. 18.20

[B] Rs. 70

[C] Rs. 72

[D] Rs. 88.25

Answer : [C]

Explanation:

$$\text{C.P.} = \text{Rs.} \left(\frac{100}{122.5} \times 392 \right) = \text{Rs.} \left(\frac{1000}{1225} \times 392 \right) = \text{Rs.} 320$$

$$\therefore \text{Profit} = \text{Rs.} (392 - 320) = \text{Rs.} 72.$$

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(5) Sam purchased 20 dozens of toys at the rate of Rs. 375 per dozen. He sold each one of them at the rate of Rs. 33. What was his percentage profit?

[A] 3.5

[B] 4.5

[C] 5.6

[D] 6.5

Answer : [C]

Explanation:

$$\text{Cost Price of 1 toy} = \text{Rs.} \left(\frac{375}{12} \right) = \text{Rs.} 31.25$$

$$\text{Selling Price of 1 toy} = \text{Rs.} 33$$

$$\text{So, Gain} = \text{Rs.} (33 - 31.25) = \text{Rs.} 1.75$$

$$\therefore \text{Profit \%} = \left(\frac{1.75}{31.25} \times 100 \right) \% = \frac{28}{5} \% = 5.6\%$$

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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:

$$\text{C.P. of 56 kg rice} = \text{Rs.} (26 \times 20 + 30 \times 36) = \text{Rs.} (520 + 1080) = \text{Rs.} 1600.$$

$$\text{S.P. of 56 kg rice} = \text{Rs.} (56 \times 30) = \text{Rs.} 1680.$$

$$\therefore \text{Gain} = \left(\frac{80}{1600} \times 100 \right) \% = 5\%.$$

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(7) The largest 4 digit number exactly divisible by 88 is:

[A] 9944

[B] 9768

[C] 9988

[D] 8888

[E] None of these

Answer : [A]

Explanation:

Largest 4-digit number = 9999 88) 9999 (113 88 ---- 1199 88 ---- 319 264 --- 55

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(8) How many natural numbers are there between 23 and 100 which are exactly divisible by 6 ?

- [A] 8
- [B] 11
- [C] 12
- [D] 13
- [E] None of these

Answer : [D]

Explanation:

Required numbers are 24, 30, 36, 42, ..., 96

This is an A.P. in which $a = 24$, $d = 6$ and $l = 96$

Let the number of terms in it be n .

Then $t_n = 96 \Rightarrow a + (n - 1)d = 96$

$\Rightarrow 24 + (n - 1) \times 6 = 96$

$\Rightarrow (n - 1) \times 6 = 72$

$\Rightarrow (n - 1) = 12$

$\Rightarrow n = 13$

Required number of numbers = 13.

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(9) How many of the following numbers are divisible by 3 but not by 9 ?

2133, 2343, 3474, 4131, 5286, 5340, 6336, 7347, 8115, 9276

- [A] 5
- [B] 6
- [C] 7
- [D] None of these

Answer : [B]

Explanation:

Marking (/) those which are divisible by 3 but not by 9 and the others by (X), by taking the sum of digits, we get:

2133 \rightarrow 9 (X)

2343 \rightarrow 12 (/)

3474 \rightarrow 18 (X)

4131 \rightarrow 9 (X)

5286 \rightarrow 21 (/)

5340 \rightarrow 12 (/)

6336 \rightarrow 18 (X)

7347 \rightarrow 21 (/)

8115 \rightarrow 15 (/)

9276 \rightarrow 24 (/)

Required number of numbers = 6.

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(10) What smallest number should be added to 4456 so that the sum is completely divisible by 6 ?

- [A] 4
- [B] 3
- [C] 2
- [D] 1
- [E] None of these

Answer : [C]

Explanation:

6) 4456 (742 42 --- 25 24 Therefore, Required number = $(6 - 4) = 2$. --- 16 12 --- 4

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(11) When a number is divided by 13, the remainder is 11. When the same number is divided by 17, then remainder is 9. What is the number ?

[A] 339

[B] 349

[C] 369

[D] Data inadequate

Answer : [B]

Explanation:

$$x = 13p + 11 \text{ and } x = 17q + 9$$

$$\therefore 13p + 11 = 17q + 9$$

$$\Rightarrow 17q - 13p = 2$$

$$\Rightarrow q = \frac{2 + 13p}{17}$$

The least value of p for which $q = \frac{2 + 13p}{17}$ is a whole number is $p = 26$

$$\begin{aligned} \therefore x &= (13 \times 26 + 11) \\ &= (338 + 11) \\ &= 349 \end{aligned}$$

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(12) 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:

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

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(13) The difference between a two-digit number and the number obtained by interchanging the digits is 36. What is the difference between the sum and the difference of the digits of the number if the ratio between the digits of the number is 1 : 2 ?

[A] 4

[B] 8

[C] 16

[D] None of these

Answer : [B]

Explanation:

Since the number is greater than the number obtained on reversing the digits, so the ten's digit is greater than the unit's digit.

Let ten's and unit's digits be $2x$ and x respectively.

$$\text{Then, } (10 \times 2x + x) - (10x + 2x) = 36$$

$$\Rightarrow 9x = 36$$

$$\Rightarrow x = 4.$$

$$\therefore \text{ Required difference} = (2x + x) - (2x - x) = 2x = 8.$$

(14) The sum of the squares of three numbers is 138, while the sum of their products taken two at a time is 131. Their sum is:

- [A] 20
- [B] 30
- [C] 40
- [D] None of these

Answer : [A]

Explanation:

Let the numbers be a , b and c .

Then, $a^2 + b^2 + c^2 = 138$ and $(ab + bc + ca) = 131$.

$(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca) = 138 + 2 \times 131 = 400$.

$\Rightarrow (a + b + c) = \sqrt{400} = 20$.

(15) Find a positive number which when increased by 17 is equal to 60 times the reciprocal of the number.

- [A] 3
- [B] 10
- [C] 17
- [D] 20

Answer : [A]

Explanation:

Let the number be x .

Then, $x + 17 = \frac{60}{x}$

$\Rightarrow x^2 + 17x - 60 = 0$

$\Rightarrow (x + 20)(x - 3) = 0$

$\Rightarrow x = 3$.

(16) The product of two numbers is 9375 and the quotient, when the larger one is divided by the smaller, is 15. The sum of the numbers is:

- [A] 380
- [B] 395
- [C] 400
- [D] 425

Answer : [C]

Explanation:

Let the numbers be x and y .

Then, $xy = 9375$ and $\frac{x}{y} = 15$.

$$\frac{xy}{(x/y)} = \frac{9375}{15}$$

$\Rightarrow y^2 = 625$.

$\Rightarrow y = 25$.

$\Rightarrow x = 15y = (15 \times 25) = 375$.

\therefore Sum of the numbers = $x + y = 375 + 25 = 400$.

(17) Seats for Mathematics, Physics and Biology in a school are in the ratio 5 : 7 : 8. There is a proposal to increase these seats by 40%, 50% and 75% respectively. What will be the ratio of increased seats?

[A] 2 : 3 : 4

[B] 6 : 7 : 8

[C] 6 : 8 : 9

[D] None of these

Answer : [A]

Explanation:

Originally, let the number of seats for Mathematics, Physics and Biology be $5x$, $7x$ and $8x$ respectively. Number of increased seats are (140% of $5x$), (150% of $7x$) and (175% of $8x$).

$$\Rightarrow \left(\frac{140}{100} \times 5x \right), \left(\frac{150}{100} \times 7x \right) \text{ and } \left(\frac{175}{100} \times 8x \right)$$

$$\Rightarrow 7x, \frac{21x}{2} \text{ and } 14x.$$

$$\therefore \text{ The required ratio} = 7x : \frac{21x}{2} : 14x$$

$$\Rightarrow 14x : 21x : 28x$$

$$\Rightarrow 2 : 3 : 4.$$

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(18) Two numbers are respectively 20% and 50% more than a third number. The ratio of the two numbers is:

[A] 2 : 5

[B] 3 : 5

[C] 4 : 5

[D] 6 : 7

Answer : [C]

Explanation:

Let the third number be x .

$$\text{Then, first number} = 120\% \text{ of } x = \frac{120x}{100} = \frac{6x}{5}$$

$$\text{Second number} = 150\% \text{ of } x = \frac{150x}{100} = \frac{3x}{2}$$

$$\therefore \text{ Ratio of first two numbers} = \left(\frac{6x}{5} : \frac{3x}{2} \right) = 12x : 15x = 4 : 5.$$

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(19) 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:

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

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(20) 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. $\left(782 \times \frac{6}{23} \right) = \text{Rs. } 204$