

Book For Karnataka State Police



KSP Math Aptitude Sample Paper 2016 PDF Download



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(1) The banker's discount on a bill due 4 months hence at 15% is Rs. 420. The true discount is:

- [A] Rs. 400
 [B] Rs. 360
 [C] Rs. 480
 [D] Rs. 320

Answer : [A]

Explanation:

$$\begin{aligned} \text{T.D.} &= \frac{\text{B.D.} \times 100}{100 + (R \times T)} \\ &= \text{Rs.} \left[\frac{420 \times 100}{100 + \left(15 \times \frac{1}{3}\right)} \right] \\ &= \text{Rs.} \left(\frac{420 \times 100}{105} \right) \\ &= \text{Rs.} 400. \end{aligned}$$

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(2) The banker's gain on a bill due 1 year hence at 12% per annum is Rs. 6. The true discount is:

- [A] Rs. 72
 [B] Rs. 36
 [C] Rs. 54
 [D] Rs. 50

Answer : [D]

Explanation:

$$\text{T.D.} = \frac{\text{B.G.} \times 100}{R \times T} = \text{Rs.} \left(\frac{6 \times 100}{12 \times 1} \right) = \text{Rs.} 50.$$

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(3) The true discount on a bill of Rs. 540 is Rs. 90. The banker's discount is:

- [A] Rs. 60
 [B] Rs. 108
 [C] Rs. 110
 [D] Rs. 112

Answer : [B]

Explanation:

$$\text{P.W.} = \text{Rs.} (540 - 90) = \text{Rs.} 450.$$

$$\therefore \text{S.I. on Rs.} 450 = \text{Rs.} 90.$$

$$\text{S.I. on Rs.} 540 = \text{Rs.} \left(\frac{90}{450} \times 540 \right) = \text{Rs.} 108.$$

$$\therefore \text{B.D.} = \text{Rs.} 108.$$

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(4) If selling price is doubled, the profit triples. Find the profit percent.

- [A] $66\frac{2}{3}$
 [B] 100

[C]
 $105\frac{1}{3}$

[D] 120

Answer : [B]

Explanation:

Let C.P. be Rs. x and S.P. be Rs. y .

Then, $3(y - x) = (2y - x) \Rightarrow y = 2x$.

Profit = Rs. $(y - x) = Rs. (2x - x) = Rs. x$.

$$\therefore \text{Profit \%} = \left(\frac{x}{x} \times 100 \right) \% = 100\%$$

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(5) 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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(6) Alfred buys an old scooter for Rs. 4700 and spends Rs. 800 on its repairs. If he sells the scooter for Rs. 5800, his gain percent is:

[A]
 $4\frac{4}{7}\%$

[B]
 $5\frac{5}{11}\%$

[C] 10%

[D] 12%

Answer : [B]

Explanation:

Cost Price (C.P.) = Rs. $(4700 + 800) = Rs. 5500$.

Selling Price (S.P.) = Rs. 5800.

Gain = (S.P.) - (C.P.) = Rs. $(5800 - 5500) = Rs. 300$.

$$\text{Gain \%} = \left(\frac{300}{5500} \times 100 \right) \% = 5\frac{5}{11}\%$$

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(7) 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:**

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

Selling Price of 1 toy = Rs. 33

So, Gain = Rs. (33 - 31.25) = Rs. 1.75

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

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(8) A man buys a cycle for Rs. 1400 and sells it at a loss of 15%. What is the selling price of the cycle?

[A] Rs. 1090

[B] Rs. 1160

[C] Rs. 1190

[D] Rs. 1202

Answer : [C]**Explanation:**

$$\text{S.P.} = 85\% \text{ of Rs. } 1400 = \text{Rs.} \left(\frac{85}{100} \times 1400 \right) = \text{Rs.} 1190$$

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(9) 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.

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

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(10) A shopkeeper sells one transistor for Rs. 840 at a gain of 20% and another for Rs. 960 at a loss of 4%. His total gain or loss percent is:

[A]

 $5\frac{15}{17}\%$ loss

[B]

 $5\frac{15}{17}\%$ gain

[C]

 $6\frac{2}{3}\%$ gain

[D] None of these

Answer : [B]

Explanation:

$$\text{C.P. of 1}^{\text{st}} \text{ transistor} = \text{Rs.} \left(\frac{100}{120} \times 840 \right) = \text{Rs.} 700.$$

$$\text{C.P. of 2}^{\text{nd}} \text{ transistor} = \text{Rs.} \left(\frac{100}{96} \times 960 \right) = \text{Rs.} 1000$$

So, total C.P. = Rs. (700 + 1000) = Rs. 1700.

Total S.P. = Rs. (840 + 960) = Rs. 1800.

$$\therefore \text{Gain \%} = \left(\frac{100}{1700} \times 100 \right) \% = 5\frac{15}{17}\%$$

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(11) Which one of the following is a prime number ?

[A] 119

[B] 187

[C] 247

[D] 551

[E] None of these

Answer : [E]

Explanation:

$$551 > 22$$

All prime numbers less than 24 are : 2, 3, 5, 7, 11, 13, 17, 19, 23.

119 is divisible by 7; 187 is divisible by 11; 247 is divisible by 13 and 551 is divisible by 19.

So, none of the given numbers is prime.

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(12) The sum all even natural numbers between 1 and 31 is:

[A] 16

[B] 128

[C] 240

[D] 512

Answer : [C]

Explanation:

$$\text{Required sum} = (2 + 4 + 6 + \dots + 30)$$

This is an A.P. in which $a = 2$, $d = (4 - 2) = 2$ and $l = 30$.

Let the number of terms be n . Then,

$$t_n = 30 \Rightarrow a + (n - 1)d = 30$$

$$\Rightarrow 2 + (n - 1) \times 2 = 30$$

$$\Rightarrow n - 1 = 14$$

$$\Rightarrow n = 15$$

$$\therefore S_n = \frac{n}{2}(a + l) = \frac{15}{2} \times (2 + 30) = 240.$$

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(13)

$$\frac{768 \times 768 \times 768 + 232 \times 232 \times 232}{768 \times 768 - 768 \times 232 + 232 \times 232} = ?$$

[A] 1000

[B] 536

[C] 500

[D] 268

[E] None of these

Answer : [A]**Explanation:**

$$\text{Given Exp.} = \frac{(a^3 + b^3)}{(a^2 - ab + b^2)} = (a + b) = (768 + 232) = 1000$$

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(14) $9548 + 7314 = 8362 + (?)$

[A] 8230

[B] 8410

[C] 8500

[D] 8600

[E] None of these

Answer : [C]**Explanation:**

$$9548 \quad 16862 = 8362 + x \quad + 7314 \quad x = 16862 - 8362 \quad \text{-----} \quad = 8500 \quad 16862 \quad \text{-----}$$

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(15) How many terms are there in the G.P. 3, 6, 12, 24, ... , 384 ?

[A] 8

[B] 9

[C] 10

[D] 11

[E] 7

Answer : [A]**Explanation:**

Here $a = 3$ and $r = \frac{6}{3} = 2$. Let the number of terms be n .

$$\text{Then, } t_n = 384 \Rightarrow ar^{n-1} = 384$$

$$\Rightarrow 3 \times 2^{n-1} = 384$$

$$\Rightarrow 2^{n-1} = 128 = 2^7$$

$$\Rightarrow n - 1 = 7$$

$$\Rightarrow n = 8$$

\therefore Number of terms = 8.

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(16) The smallest 5 digit number exactly divisible by 41 is:

[A] 1004

[B] 10004

[C] 10045

[D] 10025

[E] None of these

Answer : [B]**Explanation:**

The smallest 5-digit number = 10000. 41) 10000 (243 82 --- 180 164 ---- 160 123 --- 37

(17) $106 \times 106 - 94 \times 94 = ?$

- [A] 2400
 [B] 2000
 [C] 1904
 [D] 1906
 [E] None of these

Answer : [A]**Explanation:**

$$\begin{aligned}
 106 \times 106 - 94 \times 94 &= (106)^2 - (94)^2 \\
 &= (106 + 94)(106 - 94) \quad [\text{Ref: } (a^2 - b^2) = (a + b)(a - b)] \\
 &= (200 \times 12) \\
 &= 2400.
 \end{aligned}$$

(18) $8796 \times 223 + 8796 \times 77 = ?$

- [A] 2736900
 [B] 2638800
 [C] 2658560
 [D] 2716740
 [E] None of these

Answer : [B]**Explanation:**

$$\begin{aligned}
 8796 \times 223 + 8796 \times 77 &= 8796 \times (223 + 77) \quad [\text{Ref: By Distributive Law}] \\
 &= (8796 \times 300) \\
 &= 2638800
 \end{aligned}$$

(19) 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:**

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

(20) $3 + 33 + 333 + 3.33 = ?$

- [A] 362.3

[B] 372.33

[C] 702.33

[D] 702

[E] None of these

Answer : [B]

Explanation:

3 + 33 + 333 + 3.33 ----- 372.33 -----

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