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BRBNMPL IW Numerical Ability Sample Paper



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(1) A can do a piece of work in 4 hours; B and C together can do it in 3 hours, while A and C together can do it in 2 hours. How long will B alone take to do it?

[A] 8 hours

[B] 10 hours

[C] 12 hours

[D] 24 hours

**Answer : [C]**

**Explanation:**

$$\text{A's 1 hour's work} = \frac{1}{4} ;$$

$$(\text{B} + \text{C})\text{'s 1 hour's work} = \frac{1}{3} ;$$

$$(\text{A} + \text{C})\text{'s 1 hour's work} = \frac{1}{2} .$$

$$(\text{A} + \text{B} + \text{C})\text{'s 1 hour's work} = \left( \frac{1}{4} + \frac{1}{3} \right) = \frac{7}{12} .$$

$$\text{B's 1 hour's work} = \left( \frac{7}{12} - \frac{1}{2} \right) = \frac{1}{12} .$$

∴ B alone will take 12 hours to do the work.

(2) 10 women can complete a work in 7 days and 10 children take 14 days to complete the work. How many days will 5 women and 10 children take to complete the work?

[A] 3

[B] 5

[C] 7

[D] Cannot be determined

[E] None of these

**Answer : [C]**

**Explanation:**

$$1 \text{ woman's 1 day's work} = \frac{1}{70}$$

$$1 \text{ child's 1 day's work} = \frac{1}{140}$$

$$(\text{5 women} + \text{10 children})\text{'s day's work} = \left( \frac{5}{70} + \frac{10}{140} \right) = \left( \frac{1}{14} + \frac{1}{14} \right) = \frac{1}{7}$$

∴ 5 women and 10 children will complete the work in 7 days.

(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:**

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

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

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

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

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

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(4) X can do a piece of work in 40 days. He works at it for 8 days and then Y finished it in 16 days. How long will they together take to complete the work?

[A]

$13\frac{1}{3}$  days

[B] 15 days

[C] 20 days

[D] 26 days

**Answer : [A]**

**Explanation:**

$$\text{Work done by X in 8 days} = \left(\frac{1}{40} \times 8\right) = \frac{1}{5}$$

$$\text{Remaining work} = \left(1 - \frac{1}{5}\right) = \frac{4}{5}$$

Now,  $\frac{4}{5}$  work is done by Y in 16 days.

$$\text{Whole work will be done by Y in } \left(16 \times \frac{5}{4}\right) = 20 \text{ days.}$$

$$\therefore \text{X's 1 day's work} = \frac{1}{40}, \text{ Y's 1 day's work} = \frac{1}{20}$$

$$(X + Y)\text{'s 1 day's work} = \left(\frac{1}{40} + \frac{1}{20}\right) = \frac{3}{40}$$

$$\text{Hence, X and Y will together complete the work in } \left(\frac{40}{3}\right) = 13\frac{1}{3} \text{ days.}$$

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(5) If  $A = x\%$  of  $y$  and  $B = y\%$  of  $x$ , then which of the following is true?

- [A] A is smaller than B.
- [B] A is greater than B
- [C] Relationship between A and B cannot be determined.
- [D] If  $x$  is smaller than  $y$ , then A is greater than B.
- [E] None of these

**Answer : [E]**

**Explanation:**

$$x\% \text{ of } y = \left( \frac{x}{100} \times y \right) = \left( \frac{y}{100} \times x \right) = y\% \text{ of } x$$

$\therefore A = B$ .

(6) A batsman scored 110 runs which included 3 boundaries and 8 sixes. What percent of his total score did he make by running between the wickets?

- [A] 45%
- [B]  $45\frac{5}{11}\%$
- [C]  $54\frac{6}{11}\%$
- [D] 55%

**Answer : [B]**

**Explanation:**

$$\begin{aligned} \text{Number of runs made by running} &= 110 - (3 \times 4 + 8 \times 6) \\ &= 110 - (60) \\ &= 50. \end{aligned}$$

$$\therefore \text{Required percentage} = \left( \frac{50}{110} \times 100 \right) \% = 45\frac{5}{11}\%$$

(7) A fruit seller had some apples. He sells 40% apples and still has 420 apples. Originally, he had:

- [A] 588 apples
- [B] 600 apples
- [C] 672 apples
- [D] 700 apples

**Answer : [D]**

**Explanation:**

Suppose originally he had  $x$  apples.

Then,  $(100 - 40)\%$  of  $x = 420$ .

$$\Rightarrow \frac{60}{100} \times x = 420$$

$$\Rightarrow x = \left( \frac{420 \times 100}{60} \right) = 700.$$

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**(8) If 20% of  $a = b$ , then  $b\%$  of 20 is the same as:**

[A] 4% of  $a$

[B] 5% of  $a$

[C] 20% of  $a$

[D] None of these

**Answer : [A]**

**Explanation:**

$$20\% \text{ of } a = b \Rightarrow \frac{20}{100}a = b.$$

$$\therefore b\% \text{ of } 20 = \left( \frac{b}{100} \times 20 \right) = \left( \frac{20}{100}a \times \frac{1}{100} \times 20 \right) = \frac{4}{100}a = 4\% \text{ of } a.$$

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**(9) 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:**

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

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

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

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

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

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

$\therefore$  Required ratio = 4 : 3

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**(10) What decimal of an hour is a second ?**

[A] .0025

[B] .0256

[C] .00027

[D] .000126

**Answer : [C]**

**Explanation:**

$$\text{Required decimal} = \frac{1}{60 \times 60} = \frac{1}{3600} = .00027$$

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**(11) The expression  $(11.98 \times 11.98 + 11.98 \times x + 0.02 \times 0.02)$  will be a perfect square for  $x$  equal to:**

[A] 0.02

[B] 0.2

[C] 0.04

[D] 0.4

**Answer : [C]**

**Explanation:**

$$\text{Given expression} = (11.98)^2 + (0.02)^2 + 11.98 \times x.$$

For the given expression to be a perfect square, we must have

$$11.98 \times x = 2 \times 11.98 \times 0.02 \text{ or } x = 0.04$$

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**(12)  $3889 + 12.952 - ? = 3854.002$**

[A] 47.095

[B] 47.752

[C] 47.932

[D] 47.95

**Answer : [D]**

**Explanation:**

$$\text{Let } 3889 + 12.952 - x = 3854.002.$$

$$\text{Then } x = (3889 + 12.952) - 3854.002$$

$$= 3901.952 - 3854.002$$

$$= 47.95.$$

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**(13)**

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

[A] 0.4

[B] 1.2

[C] 1.4

[D] 4

**Answer : [D]**

**Explanation:**

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

(14)

$$\frac{0.0203 \times 2.92}{0.0073 \times 14.5 \times 0.7} = ?$$

- [A] 0.8
- [B] 1.45
- [C] 2.40
- [D] 3.25

**Answer : [A]**

**Explanation:**

$$\frac{0.0203 \times 2.92}{0.0073 \times 14.5 \times 0.7} = \frac{203 \times 292}{73 \times 145 \times 7} = \frac{4}{5} = 0.8$$

(15) The correct expression of  $6.\overline{46}$  in the fractional form is:

[A]  
 $\frac{646}{99}$

[B]  
 $\frac{64640}{1000}$

[C]  
 $\frac{640}{100}$

[D]  
 $\frac{640}{99}$

**Answer : [D]**

**Explanation:**

$$6.\overline{46} = 6 + 0.\overline{46} = 6 + \frac{46}{99} = \frac{594 + 46}{99} = \frac{640}{99}$$

(16) A can contains a mixture of two liquids A and B in the ratio 7 : 5. When 9 litres of mixture are drawn off and the can is filled with B, the ratio of A and B becomes 7 : 9. How many litres of liquid A was contained by the can initially?

- [A] 10
- [B] 20
- [C] 21
- [D] 25

**Answer : [C]**

**Explanation:**

Suppose the can initially contains  $7x$  and  $5x$  of mixtures A and B respectively.

$$\text{Quantity of A in mixture left} = \left(7x - \frac{7}{12} \times 9\right) \text{ litres} = \left(7x - \frac{21}{4}\right) \text{ litres.}$$

$$\text{Quantity of B in mixture left} = \left(5x - \frac{5}{12} \times 9\right) \text{ litres} = \left(5x - \frac{15}{4}\right) \text{ litres.}$$

$$\therefore \frac{\left(7x - \frac{21}{4}\right)}{\left(5x - \frac{15}{4}\right) + 9} = 7$$

$$\Rightarrow \frac{28x - 21}{20x + 21} = \frac{7}{9}$$

$$\Rightarrow 252x - 189 = 140x + 147$$

$$\Rightarrow 112x = 336$$

$$\Rightarrow x = 3.$$

So, the can contained 21 litres of A.

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(17) A jar full of whisky contains 40% alcohol. A part of this whisky is replaced by another containing 19% alcohol and now the percentage of alcohol was found to be 26%. The quantity of whisky replaced is:

[A]  
 $\frac{1}{3}$

[B]  
 $\frac{2}{3}$

[C]  
 $\frac{2}{5}$

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

**Answer : [B]**

**Explanation:**

By the rule of alligation, we have:

Strength of first jar	Mean Strength 26%	Strength of 2 <sup>nd</sup> jar
40%		19%
7		14

So, ratio of 1<sup>st</sup> and 2<sup>nd</sup> quantities = 7 : 14 = 1 : 2

$$\therefore \text{Required quantity replaced} = \frac{2}{3}$$

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(18) 8 litres are drawn from a cask full of wine and is then filled with water. This operation is performed three more times. The ratio of the quantity of wine now left in cask to that of water is 16 : 65. How much wine did the cask hold originally?

[A] 18 litres

[B] 24 litres

[C] 32 litres

[D] 42 litres

**Answer : [B]**

**Explanation:**

Let the quantity of the wine in the cask originally be  $x$  litres.

$$\text{Then, quantity of wine left in cask after 4 operations} = \left[ x \left( 1 - \frac{8}{x} \right)^4 \right] \text{ litres.}$$



$$\therefore \left( \frac{x(1 - (8/x)^4)}{x} \right) = \frac{16}{81}$$

$$\Rightarrow \left( 1 - \frac{8}{x} \right)^4 = \left( \frac{2}{3} \right)^4$$

$$\Rightarrow \left( \frac{x-8}{x} \right) = \frac{2}{3}$$

$$\Rightarrow 3x - 24 = 2x$$

$$\Rightarrow x = 24.$$

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**(19) In what ratio must a grocer mix two varieties of tea worth Rs. 60 a kg and Rs. 65 a kg so that by selling the mixture at Rs. 68.20 a kg he may gain 10%?**

[A] 3 : 2

[B] 3 : 4

[C] 3 : 5

[D] 4 : 5

**Answer : [A]**

**Explanation:**

S.P. of 1 kg of the mixture = Rs. 68.20, Gain = 10%.

C.P. of 1 kg of the mixture = Rs.  $\left( \frac{100}{110} \times 68.20 \right) = \text{Rs. } 62.$

By the rule of alligation, we have:

Cost of 1 kg tea of 1 <sup>st</sup> kind.		Cost of 1 kg tea of 2 <sup>nd</sup> kind.
Rs. 60		Rs. 65
	Mean Price	
	Rs. 62	
3		2

$\therefore$  Required ratio = 3 : 2.

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**(20) Tea worth Rs.126 per kg are mixed with a third variety in the ratio 1 : 1 : 2. If the mixture is worth Rs.153 per kg, the price of the third variety per kg will be:**

[A] Rs.169.50

[B] Rs.1700

[C] Rs. 175.50

[D] Rs. 180

**Answer : [C]**

**Explanation:** Since first second varieties are mixed in equal proportions, so their average price =  $\text{Rs.}(126+135/2) = \text{Rs.}130.50$  So, the mixture is formed by mixing two varieties, one at Rs. 130.50 per kg and the other at say, Rs. x per kg in the ratio 2 : 2, i.e., 1 : 1. We have to find x. Cost of 1 kg tea of 1st kind Cost of 1 kg tea of 2nd kind  $x-153/22.50 = 1 \Rightarrow x - 153 = 22.50 \Rightarrow x=175.50$ . Hence, price of the third variety = Rs.175.50 per kg.

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