

**Appolo Study Centre**  
**Labour Officer Exam 29-04-2018**  
**Mental Ability & Aptitude**

1. The mean of the 5 members is 32. If one of the number is excluded, then the mean reduced by 4. Find the excluded number.

(A) 43                      (B) 48                      (C) 46                      (D) 47

Explanation:

$$\text{Excluded number} = (32 \times 5) - (28 \times 4) \Rightarrow 160 - 112 = 48$$

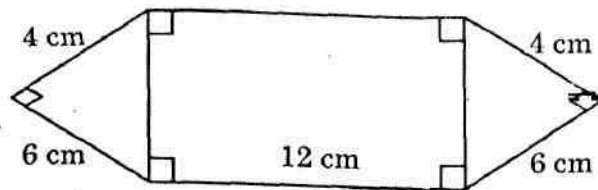
2. Find simple interest for Rs. 6,750 for 219 days at 10% per annum

(A) Rs. 405                      (B) Rs. 155                      (C) Rs. 450                      (D) Rs. 350

Explanation: 219 days =  $\frac{3}{5}$  years

$$S.I = \frac{6750 \times \frac{3}{5} \times 10}{100} = 405$$

3. What is the area of the given figure?



- (A) 98.8 cm<sup>2</sup>                      (C) 120 cm<sup>2</sup>  
 (C) 110.4 cm<sup>2</sup>                      (D) 132.6 cm<sup>2</sup>

In triangle  $a^2 + b^2 = c^2$   
 $4^2 + 6^2 = 52 \Rightarrow c = \sqrt{52}$

$2 \times [\text{Area of Triangles}] + [\text{Area of Rectangle}]$

$\left[ 2 \times \frac{1}{2} \times b \times h \right] + [l \times b]$

$[4 \times 6] + [12 \times \sqrt{52}]$

$24 + [12 \times 7.2]$

$24 + 86.4$

$= 110.4 \text{ cm}^2$

4. A alone can complete a piece of work of Rs. 800 in 8 days; but by engaging an assistant, the work is completed in 5 days. Find the share to be received by the assistant
- (A) 500 (B) 300  
(C) 800 (D) 600

$$\text{Assistant alone} = \frac{5 \times 8}{3} = \frac{40}{3}$$

	A	Assistant
Work Ratio	$\frac{1}{8}$	$\frac{3}{40}$

$$5 : 3$$

$$\Rightarrow \text{Share of Assistant} = \frac{800}{8} \times 3 = 300 \text{Rs.}$$

5. Find the left number in the given series

2, 7, 14, 23, -----, 47

- (A) 30 (B) 34  
(C) 39 (D) 44

**Explanation:**

$$2, \quad 2+5 = 7 \quad 7+7 = 14 \quad 14+9 = 23$$

$$23+11 = 34 \quad 34+13 = 47$$

Ans: 34

6. Find the H.C.F. of 108, 288, 360

- (A) 18 (B) 36  
(C) 24 (D) 12

**Explanation:**

$$108 = 2^2 \times 3^3, 288 = 2^5 \times 3^2 \text{ and } 360 = 2^3 \times 5 \times 3^2.$$

$$\text{H.C.F.} = 2^2 \times 3^2 = 36.$$

7. What is the next term of the sequence 1, 8, 27, 64, 125, 216,.....

- (A) 343 (B) 412  
(C) 400 (D) 250

**Explanation:**

Given series are Cube Numbers.  $\therefore$  Next cube Number is  $7^3 = 343$

8. Find the value of  $\frac{\sqrt[3]{729} - \sqrt[3]{27}}{\sqrt[3]{512} + \sqrt[3]{343}}$

- (A)  $\frac{2}{5}$  (B)  $\frac{3}{7}$   
(C)  $\frac{6}{4}$  (D)  $\frac{5}{2}$

**Explanation:**

$$\frac{\sqrt[3]{729} - \sqrt[3]{27}}{\sqrt[3]{512} + \sqrt[3]{343}} \Rightarrow \frac{9-3}{8+7} \Rightarrow \frac{6}{15} = \frac{2}{5}$$

9. 15 men take 21 days of 8 hours each to do a piece of work. How many days of 6 hours each would 21 women take, if 3 women do as much work as 2 men?

- (A) 20 days (B) 25 days  
(C) 18 days (D) 30 days

$$3W = 2M$$

$$21W = 14M$$

$$M_1 d_1 h_1 = M_2 d_2 h_2$$

$$15 \times 21 \times 8 = 14 \times d_2 \times 6$$

$$d_2 = 30 \text{ days}$$

10. A and B can do a job together in 7 days. A is  $1\frac{3}{4}$  times as efficient as B. The same job can be done by A alone in :

- A.  $9\frac{1}{3}$  B. 11 days C.  $12\frac{1}{4}$  D.  $16\frac{1}{3}$

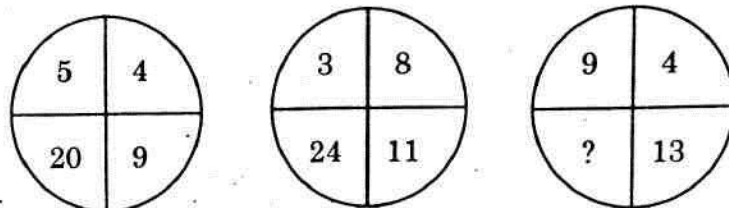
	A	B
Work Efficiency	$\frac{7}{4}$	1
	$7 : 4$	
Days Ratio	4	7

$$\Rightarrow \frac{4x \times 7 \times 7}{112} = 7$$

$$x = \frac{11}{4} \text{ days}$$

$$\therefore A = 4 \times \frac{11}{4} = 11 \text{ days}$$

11. What is the missing number for the following figure?



- (A) 26 (B) 32 (C) 36 (D) 117

$$\text{fig1: } 5 \times 4 = 40 \quad 5 + 4 = 9$$

$$\text{fig2: } 3 \times 8 = 24 \quad 3 + 8 = 11$$

$$\text{fig3: } 9 \times 4 = 36 \quad 9 + 4 = 13$$

Ans: 36

12. Sixty-Five percent of a number is 21 less than four fifths of that number. What is the number?  
(A) 140 (B) 150 (C) 135 (D) 120

**Sol.** Let the number be  $x$ .

$$\text{Then, } 4x/5 - (65\% \text{ of } x) = 21$$

$$4x/5 - 65x/100 = 21$$

$$5x = 2100$$

$$x = 140.$$

13. The L.C.M. of two numbers is 48. The numbers are in the ratio 2:3. The sum of the numbers is

- (A) 28 (B) 32  
(C) 40 (D) 64

Let the numbers be  $2x$  and  $3x$ . Then, their L.C.M. =  $6x$ .

$$\text{So, } 6x = 48 \text{ or } x = 8$$

$\therefore$  The numbers are 16 and 24

$$\text{Hence, required sum} = (16 + 24) = 40$$

14. Find the value of  $(4.9)^2$

- (A) 24.81 (B) 24.09  
(C) 20.01 (D) 24.01

15. The difference between compound interest and simple interest on a sum for 2 years at 8% is Rs. 768. Then the sum is

- (A) Rs. 1,00,000 (B) Rs. 1,10,000  
(C) Rs. 1,20,000 (D) Rs. 1,70,000

Explanation:

$$P = \text{Difference} \times \left( \frac{100}{R} \right)^2 \Rightarrow P = 768 \times \left( \frac{100}{8} \right)^2 = 1,20,000$$

16. Find the value of  $(256)^{5/4}$

- (A) 512 (B) 984  
(C) 1024 (D) 1032

Explanation:

$$(256)^{5/4} \Rightarrow (4^4)^{5/4} \Rightarrow (4)^5 = 1024$$

17. The sum of money placed at compound interest doubles itself in 4 years. In how many years will it amount to 4 times itself?

- (A) 12 years (B) 13 years  
(B) 8 years (D) 16 years

Explanation:

2 Times = 4 years

4 Times = 8 years

18. The sum of the squares of three consecutive natural numbers is 2030. What is the middle number?

(A) 25

(B) 16 years

(C) 27

(D) 28 years

**Explanation:**

Let the numbers be  $x, x + 1$  and  $x + 2$ .

Then,  $x^2 + (x + 1)^2 + (x + 2)^2 = 2030$

$$\Leftrightarrow 3x^2 + 6x - 2025 = 0$$

$$\Leftrightarrow x^2 + 2x - 675 = 0$$

$$\Leftrightarrow (x + 27)(x - 25) = 0$$

$$\Leftrightarrow x = 25.$$

$\therefore$  Middle number =  $(x + 1) = 26$ .

19. The sum of the first 99 terms of the series

$$\frac{3}{4} + \frac{5}{36} + \frac{7}{144} + \frac{9}{400} + \dots$$

(A)  $\frac{99}{100}$

(B)  $\frac{999}{1000}$

(C)  $\frac{9999}{10000}$

(D) 1

$$\frac{3}{4} + \frac{5}{36} + \frac{7}{144} + \frac{9}{400} + \dots + \text{upto 99 terms}$$

$$\left(\frac{1}{1^2} - \frac{1}{2^2}\right) + \left(\frac{1}{2^2} - \frac{1}{3^2}\right) + \left(\frac{1}{3^2} - \frac{1}{4^2}\right) + \left(\frac{1}{4^2} - \frac{1}{5^2}\right) + \dots + \left(\frac{1}{99^2} - \frac{1}{100^2}\right) \Rightarrow \left(\frac{1}{1^2} - \frac{1}{100^2}\right) = \frac{9999}{10000}$$

20. If  $x : y = 2 : 1$  then  $(x^2 - y^2) : (x^2 + y^2)$  is

(A) 3:5 (B) 1:3

(C) 5:3 (D) 3:1

Explanation:  $x=2, y=1$

$$\frac{2^2 - 1^2}{2^2 + 1^2} = \frac{3}{5}$$

21. Area of circle is equal to the area of a rectangle having perimeter of 50 cm and the length is more than its breadth by 3 cm. What is the diameter of the circle?

(B) 21cm (A) 7 cm

(C) 14 cm (D) 28 cm

Explanation:

$$\text{Perimeter } 2(l+b) = 50 \Rightarrow l+b = 25 \text{ ----(1)}$$

$$l-b = 3 \text{ ----(2)}$$

Solve, we get length = 14 cm & breadth = 11 cm

Area of the circle = Area of the rectangle

$$\Rightarrow \pi r^2 = 14 \times 11$$

$$\Rightarrow r^2 = \frac{14 \times 11 \times 7}{22} = 49$$

$$r = \sqrt{49} = 7 \text{ cm.}$$

$$\text{Diameter} = 2r = 2 \times 7 = 14 \text{ cm.}$$

22. A man invested  $\frac{1}{3}$  of his capital at 7%,  $\frac{1}{4}$  at 8% and the remainder at 10%. If his monthly income is Rs. 561, the capital is

- (A) 6600 (B) 79200  
(C) 13200 (D) 6732

**Explanation:** S.I = 561, N=1 Month =  $\frac{1}{12}$  year, R=10% p.a

$$561 = \frac{P}{100} \times \frac{1}{12} \left( \frac{1}{3} \times 7 + \frac{1}{4} \times 8 + \frac{5}{12} \times 10 \right) \Rightarrow P = 6600 \times 12 = 79200$$

23. The LCM of  $\frac{2}{3}, \frac{3}{5}, \frac{4}{7}, \frac{9}{13}$

- A. 36 B.  $1/36$  C.  $1/1365$  D.  $12/455$

**Explanation:**

$$\text{LCM of fractions} = \frac{\text{LCM of numerators}}{\text{HCF of denominators}} = \frac{\text{LCM of } 2, 3, 4, 9}{\text{HCF of } 3, 5, 7, 13} = \frac{36}{1} = 36$$

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