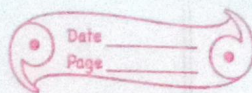


H.W  
14/10/21

## HOLIDAY HOMEWORK



1) Reciprocal of Zero is ~~1/0~~

a) 0

b) 1

c) -1

d) None of the above ✓

2) The multiplicative inverse of  $10^{-100}$  is

a)  $10^{100}$  ✓

b)  $10^{-100}$

c) 10

d) 100

3) Zero (0) is the identity for addition of rational numbers.

4) One (1) is the identity for multiplication of rational numbers.

5) Find the least number by which ~~1323~~ 1323 must be multiplied so that the product is a perfect cube.

a) 5   b) 6   c) 7 ✓   d) 8

b) 2.7 is what percent of 18?

a) 10%. b) 15%. ✓ c) 1.5%. d) 20%.

7) If A and B are two sets such that  $n(A) = 15$ ,  $n(B) = 21$  and  $n(A \cup B) = 36$  then  $n(A \cap B)$  equal to

a) 2 b) 0 ✓ c) -4. d) 15

8) If  $5A \times A = 399$ , then the value of A is

a) 3 b) 7 ✓ c) 6 d) 9

9) If 30 men can do a work in 24 days. How many men will do the same work in 12 days?

Ans → ~~30~~ 60 men

10)  $a + b = b + a$

Ans → Commutative law of addition.

11) ~~Find~~ Insert three rational numbers between  $\frac{2}{3}$  and  $\frac{3}{4}$ .

Ans let the three rational numbers be  $x_1$ ,  $x_2$  and  $x_3$ .

$$x_1 = \frac{1}{2} \left( \frac{2}{3} + \frac{3}{4} \right)$$

$$= \frac{1}{2} \times \frac{17}{12} = \frac{17}{24}$$

$$n_2 = \frac{1}{2} \left( \frac{17}{24} + \frac{2}{3} \right)$$

$$= \frac{1}{2} \times \frac{33}{24}$$

$$= \frac{33}{48}$$

$$n_3 = \frac{1}{2} \left( \frac{33}{48} + \frac{3}{4} \right)$$

$$= \frac{1}{2} \times \frac{105}{48}$$

$$= \frac{105}{96}$$

$\therefore$  The three rational numbers between  $\frac{2}{3}$  and  $\frac{3}{4}$  are :-  
 $\frac{17}{24}$ ,  $\frac{33}{48}$  and  $\frac{105}{96}$ .

$$12) \text{ Simplify: } (12)^{-2} \times 43$$

$$= (12)^{-2} \times 43$$

$$= \frac{1}{12^2} \times 43$$

$$= \frac{1}{144} \times 43$$

$$\frac{43}{144}$$

$$= \frac{43}{144}$$

14) Sol:-  $\frac{8}{7}, \frac{2}{5}, 0, -\frac{9}{8}, -\frac{3}{2}$

15) Find the sum of additive inverse and multiplicative inverse of 7.

Sol:- Additive inverse of 7 = -7

Multiplicative inverse of 7 =  $\frac{1}{7}$

Sum of additive inverse and multiplicative inverse

$$= -7 + \frac{1}{7} = \frac{-49 + 1}{7} = \frac{-48}{7}$$

16) The perimeter of a triangle is  $8y^2 - 9y + 4$  and its two sides are  $3y^2 - 5y$  and  $4y^2 + 12$ . Find the third side.

Sol:- First side =  $3y^2 - 5y$

Second side =  $4y^2 + 12$

Perimeter =  $8y^2 - 9y + 4$

$$\begin{aligned} \text{Sum of first side and second side} &= 3y^2 - 5y + 4y^2 + 12 \\ &= 3y^2 + 4y^2 - 5y + 12 \\ &= 7y^2 - 5y + 12 \end{aligned}$$

$$\begin{aligned} \text{Third side} &= 8y^2 - 9y + 4 - 7y^2 + 5y - 12 \\ &= 8y^2 - 7y^2 - 9y + 5y + 4 - 12 \\ &= y^2 - 4y - 8 \end{aligned}$$

17) A can do a piece of work in 20 days and B in 15 days. They worked together on it for 6 days and then A left. How long will B take to finish the remaining work.

Sol: - A's 1 day work =  $\frac{1}{20}$

B's 1 day work =  $\frac{1}{15}$

(A+B)'s 1 day work =  $\frac{1}{20} + \frac{1}{15} = \frac{7}{60}$

(A+B)'s 6 days work =  $\frac{7}{60} \times 6 = \frac{7}{10}$

Work left =  $1 - \frac{7}{10} = \frac{3}{10}$

B can do  $\frac{3}{10}$  work =  $\frac{3}{10} \times \frac{15}{1} = \frac{9}{2} = 4\frac{1}{2}$  days.

18) i) Sol: - P = ₹ 630

T = 4 years

I = ₹ 126

$$R = \frac{I \times 100}{P \times T} = \frac{126 \times 100}{630 \times 4} = 5\%$$

18) Sol:- let ~~Principal~~ the principal be ₹ 100.   
 $A = 2 \times ₹ 100 = ₹ 200$

$$I = A - P$$

$$= ₹ 200 - ₹ 100 = ₹ 100$$

$$T = 6 \text{ years}$$

$$R = \frac{I \times 100}{P \times T} = \frac{100 \times 100}{100 \times 6} = \frac{50}{3} \%$$

19) Sol:-  $P = ₹ 7,500$   
 $T = 2 \text{ years}$   
 $R = \text{8\% p.a.}$

$$S.I. = \frac{P \times T \times R}{100} = \frac{7500 \times 2 \times 8}{100} = ₹ 1200$$

$$A = P \left(1 + \frac{R}{100}\right)^n$$

$$= 7500 \left(1 + \frac{8}{100}\right)^2$$

$$= 7500 \left(\frac{27}{25}\right)^2$$

$$= 7500 \times \frac{27}{25} \times \frac{27}{25} = ₹ 8,748$$

$$C.I. = A - P$$

$$= ₹ 8,748 - ₹ 7,500 = ₹ 1,248$$

$$C.I. - S.I. = ₹ 1,248 - ₹ 1,200$$

$$= ₹ 48$$

20) Sol:- let the original price of uniform be ₹100.

$$\text{Today's price} = ₹100 + ₹25 = ₹125$$

$$₹125 - ₹100 = ₹25 \text{ on } ₹125$$

On ₹125, the price should be decreased by ₹20

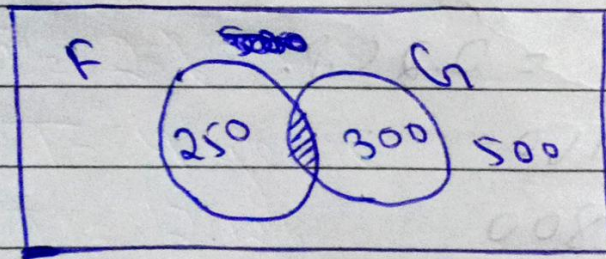
On ₹1, the price should be decreased by =  $\frac{₹20}{125}$

On ₹100, the price should be decreased by =  $\frac{20}{125} \times 100$

$$\frac{20}{125} \times 100$$

$$= 16\%.$$

21) Sol:-



$$n(F) = 250, n(G) = 300 \text{ and } n(F \cup G) = 500$$

$$n(F \cup G) = n(F) + \cancel{n(G)} - n(F \cap G)$$

$$\Rightarrow n(F \cap G) = n(F) + n(G) - n(F \cup G)$$

$$\Rightarrow n(F \cap G) = 250 + 300 - 500 = 50$$

→ 50 men can speak both French and German.



22) Sol :- S.P. = ₹ 912  
Loss = 5%

$$\text{Loss \%} = \frac{\text{C.P.} - \text{S.P.}}{\text{C.P.}} \times 100 = 5\%$$

$$\Rightarrow \frac{\text{C.P.} - 912}{\text{C.P.}} \times 100 = 5$$

$$\Rightarrow \text{C.P.} - 912 = 0.05 \text{ C.P.}$$

$$\Rightarrow 0.95 \text{ C.P.} = 912$$

$$\Rightarrow \text{C.P.} = ₹ 960$$

$$\text{Profit \%} = \frac{\text{S.P.} - \text{C.P.}}{\text{C.P.}} \times 100 = 20\%$$

$$\Rightarrow \frac{960 - \text{C.P.}}{\text{C.P.}} \times 100 = 20$$

$$\Rightarrow 960 - \text{C.P.} = 0.2 \text{ C.P.}$$

$$\Rightarrow 1.2 \text{ C.P.} = 960$$

$$\Rightarrow \text{C.P.} = ₹ 800$$

~~John brought the article for ₹ 800.~~

→ Hence, John brought the article for ₹ 800.

23) Sol:- Let the C.P. of the stock for Rajesh be ₹100n.

$$\text{S.P. for Rajesh} = \frac{100n \times 92}{100} = 92n$$

$$\text{C.P. for Rahim} = 92n, \text{ Gain} = 5\%$$

$$\text{S.P.} = \frac{92n \times 105}{100} = \frac{92n \times 21}{20} = \frac{46n \times 21}{20} = \frac{966n}{20}$$

$$\text{C.P.} = ₹14,490$$

$$\frac{966n}{10} = 14,490$$

$$\Rightarrow n = \frac{14490 \times 10}{966} = \frac{14490}{96.6} \times 10 = 30 \times 10 = 150$$

i) C.P. = 92n = 92 × 150  
= ₹13,800

$$\text{S.P.} = \frac{966n}{10} = \frac{966}{10} \times 150$$
$$= ₹14,490$$

ii) C.P. = 100n = 100 × 150 = ₹15,000

$$\text{S.P.} = 92n = 92 \times 150 = ₹13,800$$

24) Sol:- LCM of 6 and 9 is 18.

$$\frac{5}{6} = \frac{5 \times 3}{6 \times 3} = \frac{15}{18}$$

$$\frac{8}{9} = \frac{8 \times 2}{9 \times 2} = \frac{16}{18}$$

$$6 + 1 = 7$$

$$\frac{15}{18} = \frac{15 \times 7}{18 \times 7} = \frac{105}{126}$$

$$\frac{16}{18} = \frac{16 \times 7}{18 \times 7} = \frac{112}{126}$$

$\therefore$  The six rational numbers between  $\frac{5}{6}$  and  $\frac{8}{9}$  are:-

$$\frac{106}{126}, \frac{107}{126}, \frac{108}{126}, \frac{109}{126}, \frac{110}{126},$$

$$\frac{111}{126}$$

25) i) Sol:-  $\sqrt{7.84} + \sqrt{78400}$

$$= 2.8 + 280$$

$$= \cancel{282.8} 282.8$$

ii) Sol:-  $\sqrt{0.0784} + \sqrt{0.000784}$

$$= 0.28 + 0.028$$

$$= 0.308$$

26) Sol:-) The ~~set~~ set of points of intersection of ~~straight~~ straight lines in the same line.

27) Sol:- S.P. = ₹ 637  
disc. % = 9 %

$$C.P. = \frac{100}{100 - 2\%} \times S.P.$$

$$\Rightarrow C.P. = \frac{100}{100 - 9} \times 637$$

$$\Rightarrow C.P. = \frac{100}{91} \times 637 = ₹ 700$$

$$C.P. = ₹ 700$$

$$\text{Profit \%} = 5\%$$

$$S.P. = \frac{100 + P.\%}{100} \times C.P.$$

$$= \frac{100 + 5}{100} \times 700$$

$$= \frac{105}{100} \times 700$$

$$= \del{735} ₹ 735$$

28) Sol:- 3 men = 6 boys or 1 man = 2 boys

4 men and 12 boys =  $2(4+12)$  or 20 boys

If 6 boys can do the work in 20 days.

20 boys can do the ~~work~~ work =  $\frac{6 \times 20}{20}$   
= 6 days

~~28)~~

29) Sol:- 5 persons, maintained for 20 days, with = ₹2,480

1 person, maintained at  $\frac{2480}{20 \times 5} = \frac{2480}{100} = ₹24.80$

So, the maintenance of 8 persons =  $24.80 \times 8$   
= ₹198.40

For ₹6944, 8 persons =  $\frac{6944}{198.40} = 35$  days

30) Sol:- ~~A =~~  $A = \{x: x^2 - 9x - 10 = 0\}$

$$x^2 - 9x - 10 = 0$$

$$\Rightarrow x^2 - 10x + x - 10 = 0$$

$$\Rightarrow x(x-10) + (x-10) = 0$$

$$\Rightarrow (x-10)(x+1) = 0$$

$$\Rightarrow x = 10, -1$$

$$A = \{10, -1\}$$

$\therefore$  The proper subsets of the given sets are  $\Phi, \{10\}, \{-1\}$ .