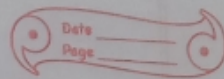


Maths Holiday Homework



1) 0

2) 10^{100}

3) the identity for addition of rational numbers.

4) the identity for multiplication of rational numbers.

5) 7

6) 15%

7) 0

8) 7

9) 60

10) commutative law of addition

11) Three rational numbers between $\frac{2}{3}$ and $\frac{3}{4}$

$$= \frac{2}{3}, \frac{3}{4}$$

$$= \frac{2}{3}, \frac{2+3}{3+4}, \frac{3}{4}$$

$$= \frac{2}{3}, \frac{5}{7}, \frac{3}{4}$$

$$= \frac{2}{3}, \frac{2+5}{3+7}, \frac{5}{7}, \frac{5+3}{7+4}, \frac{3}{4}$$

$$= \frac{2}{3}, \frac{7}{10}, \frac{5}{7}, \frac{8}{11}, \frac{3}{4}$$

\therefore Therefore, the inserted numbers are $\frac{7}{10}, \frac{5}{7}, \frac{8}{11}$.

$$12) (12)^{-2} \times 4^3$$

$$= \left(\frac{1}{12}\right)^2 \times 4^3$$

$$= \frac{1}{144} \times 64$$

$$= \frac{1}{9} \times 4 = \frac{4}{9}$$

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

LCM of 7, 8, 2 and 5 is 280

$$\Rightarrow \frac{8}{7} = \frac{8 \times 40}{7 \times 40} = \frac{320}{280}, \quad \frac{-9}{8} = \frac{-9 \times 35}{8 \times 35} = \frac{-315}{280}$$

$$\frac{-3}{2} = \frac{-3 \times 140}{2 \times 140} = \frac{-420}{280}, \quad \frac{3}{5} = \frac{3 \times 56}{5 \times 56} = \frac{168}{280}$$

$$\Rightarrow \frac{320}{280} > \frac{168}{280} > 0 > \frac{-315}{280} > \frac{-420}{280}$$

$$\Rightarrow \frac{8}{7} > \frac{3}{5} > 0 > \frac{-9}{8} > \frac{-3}{2}$$

15) The additive inverse of 7 is -7.

The multiplicative inverse of 7 is $\frac{1}{7}$

$$-7 + \frac{1}{7}$$

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

$$= \text{LCM of } 1 \text{ \& } 7 \text{ is } 7$$

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

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

$$= \frac{-48}{7}$$

Date _____
Page _____

$$\begin{aligned}
 16) & 8y^2 - 9y + 4 - (3y^2 - 5y + 4y^2 + 12) \\
 &= 8y^2 - 9y + 4 - (3y^2 + 4y^2 + 12 - 5y) \\
 &= 8y^2 - 9y + 4 - (7y^2 + 12 - 5y) \\
 &= 8y^2 - 9y + 4 - 7y^2 - 12 + 5y \\
 &= 8y^2 - 7y^2 - 9y + 5y + 4 - 12 \\
 &= y^2 - 4y - 8
 \end{aligned}$$

17) A can complete work in = 30 days
B can complete work in = 15 days

$$A's \text{ 1 day work} = \frac{1}{30}$$

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

$$\text{These both's 1 day work} = \frac{1}{30} + \frac{1}{15}$$

$$= \frac{2}{60} + \frac{4}{60}$$

$$= \frac{2+4}{60}$$

$$= \frac{6}{60}$$

$$\text{They worked for 6 days} = \frac{6}{60} \times 6$$

$$= \frac{6}{10}$$

$$\therefore \text{Work done} = 1 - \frac{6}{10} = \frac{4}{10}$$

$$B \text{ is now alone} = 1 \times 15$$

$$= \frac{4}{10} \times 15$$

$$= \frac{4}{10} \times 15 = \frac{6}{2} \text{ to finish the remaining}$$

$$18) i) \frac{P \times T \times R}{100} = \text{simple interest}$$

$$\Rightarrow \frac{126 \times 4 \times R}{100} = 630$$

$$\Rightarrow 126 \times 4 \times R = 630 \times 100$$

$$\Rightarrow 504 \times R = 63000$$

$$\Rightarrow R = \frac{63000}{504}$$

$$\Rightarrow R = 125\%$$

ii) Let $P = ₹100$

Amount = $3 \times 100 = ₹300$

India = Amount - Principal
 $= ₹300 - ₹100$
 $= ₹200$

Time = 6 years

Rate = $\frac{100 \times 100}{100}$

$$ii) A = I + P$$

For, $A = 3P, I = P$

$$\Rightarrow \frac{PNR}{100} = P$$

$$\Rightarrow \frac{6R}{100} = 1$$

$$\Rightarrow R = 16.67\%$$

19) Principal = ₹ 7500

Rate = 8%

Time = 2 years

$$\begin{aligned}\text{Compound interest} &= P(1+R)^{nt} - P \\ &= P[(1+R)^t - 1] \\ &= 7500(1.08^2 - 1) \\ &= ₹ 1248\end{aligned}$$

$$\begin{aligned}\text{Simple interest} &= \frac{PTR}{100} \\ &= \frac{7500 \times 8 \times 2}{100} \\ &= ₹ 1200\end{aligned}$$

$$\text{Difference} = 1248 - 1200 = ₹ 48$$

20) Let the previous price of sugar be ₹ 100
then today's price = 125% of 100
$$= \frac{125}{100} \times 100$$
$$= ₹ 125$$

To bring back the today's price = $125 - 100 = 25$

$$\frac{25}{125} \times 100$$

$$= \frac{1}{5} \times 100$$

$$= 20\%$$

23) For Peter S.P = ₹912
Loss = 5%

~~Now, with this S.P and for Loss % = $\frac{C.P. - S.P}{C.P.} \times 100 = 5\%$~~

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

$$= \frac{100}{(100 - 5)} \times 912$$

$$= \frac{100 \times 912}{95}$$

$$= 90 \times 48$$

$$= ₹960$$

∴ So, John sold the same article to Peter.

For John S.P = ₹960

Profit = 20%

$$C.P = \frac{100}{(100 + \text{Profit}\%)} \times S.P$$

$$= \frac{100}{(100 + 20)} \times 960$$

$$= \frac{100}{120} \times 960$$

$$= 100 \times 8$$

$$= 800$$

∴ Hence, John paid for article = ₹800.

Q3) C.P of Paem will be S.P of Rahim that is ₹14,490.
So, C.P of Rahim = $\frac{100}{(100 + \text{gain}\%)} \times \text{S.P}$

$$= \frac{100}{(100+5)} \times 14490$$

$$= \frac{100}{105} \times 14490$$

$$= ₹13800$$

The C.P of Rahim will be S.P of Rajesh that is ₹13800.

$$\text{C.P of Rajesh} = \frac{100}{(100 - 8)} \times 13800$$

$$= \frac{100}{92} \times 13800$$

$$= ₹15,000$$

i) The S.P and the C.P of the scooter for Rahim is :-

$$\text{S.P of Rahim} = ₹14,490$$

$$\text{C.P of Rahim} = ₹13,800$$

ii) The S.P and the C.P of the scooter for Rajesh is :-

$$\text{S.P of Rajesh} = ₹13,800$$

$$\text{C.P of Rajesh} = ₹15,000$$

Q4) Six rational numbers between $\frac{5}{6}$ and $\frac{8}{9}$

\Rightarrow L.C.M of 6 & 9 is 18

$$\Rightarrow \frac{5}{6} = \frac{5 \times 3}{6 \times 3} = \frac{15}{18}, \quad \frac{8}{9} = \frac{8 \times 2}{9 \times 2} = \frac{16}{18}$$

$$\Rightarrow \frac{15}{18} = \frac{15 \times 7}{18 \times 7} = \frac{105}{126}, \quad \frac{16}{18} = \frac{16 \times 7}{18 \times 7} = \frac{112}{126}$$

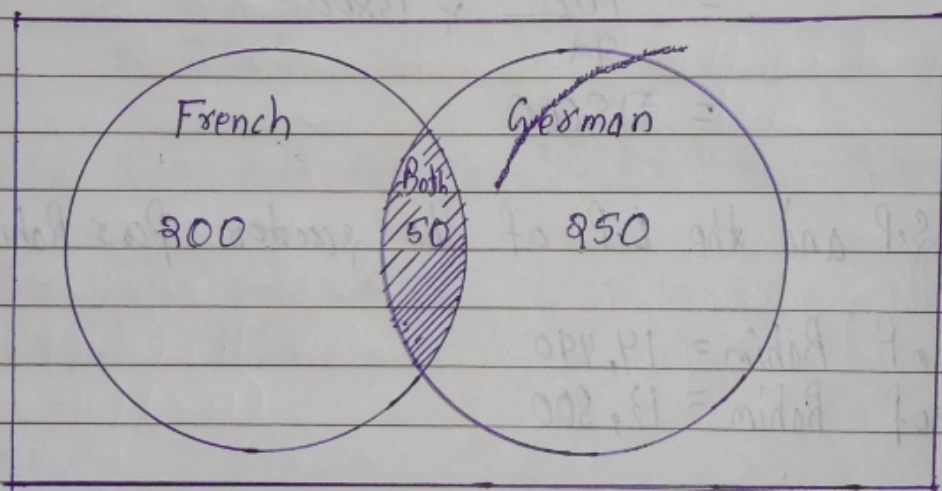
The numbers between $\frac{105}{126}$ and $\frac{112}{126}$ = the numbers between

$$\frac{5}{6} \text{ and } \frac{8}{9}$$

$$\frac{1046}{126}, \frac{107}{126}, \frac{108}{126}, \frac{109}{126}, \frac{110}{126}, \frac{111}{126}$$

=

31)



$$\begin{aligned} 25) i) & \sqrt{7.84} + \sqrt{78400} \\ &= 2.8 + 280 \\ &= 282.8 \end{aligned}$$

$$\begin{aligned} ii) & \sqrt{0.0784} + \sqrt{0.000784} \\ &= 0.28 + 0.028 \\ &= 0.308 \end{aligned}$$

26) i) ~~Yes~~ ~~Yes~~ ~~Yes~~ Yes, because two lines can have only one dimⁿ interaction.

~~ii) No~~ ~~No~~ ~~No~~ No

ii) $\{x: 7x - 3 = 11\}$ Yes, it is.

$$\Rightarrow 7x = 11 + 3$$

$$\Rightarrow 7x = 14$$

$$\Rightarrow x = \frac{14}{7}$$

$$\Rightarrow x = 2$$

iii) $\{y: 2y+1 \in \mathbb{Z} \text{ and } y \in \mathbb{W}\}$

$$\Rightarrow 2y+1 = 0$$

$$\Rightarrow 2y = 0 - 1$$

$$\Rightarrow 2y = -1$$

$$\Rightarrow y = \frac{-1}{2}$$

$$\Rightarrow 2y+1 = 1$$

$$\Rightarrow 2y = 1 - 1$$

$$\Rightarrow 2y = 0$$

$$\Rightarrow y = \frac{0}{2}$$

$$\Rightarrow 2y+1 = 2$$

$$\Rightarrow 2y = 2 - 1$$

$$\Rightarrow 2y = 1$$

$$\Rightarrow y = \frac{1}{2}$$

$$\therefore \left\{ \frac{-1}{2}, \frac{0}{2}, \frac{1}{2} \right\}$$

There contains three elements therefore, it can not be a singleton or unit set.

27) S.P of the bicycle = ₹ 637

Loss % = 9%

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

$$= \frac{100}{100 - 9} \times 637$$

$$= \frac{100}{91} \times 637$$

$$= ₹ 700$$

C.P. is ₹ 700 and profit is 5%.

$$S.P. = \frac{100 + \text{Gain \%}}{100} \times C.P. = \frac{100 + 5}{100} \times 700 = 105 \times 7 = ₹ 735$$

28) 3 men = 6 boys
 So, 1 man = 2 boys
 3 men or 6 boys can finish the work in = 30 days

4 men and 12 boys = 4+6 men = 10 men
 3 men can finish the work in 30 days
 \therefore So, 10 men can finish the work in = $\frac{30 \times 3}{10} = 6$ days

29) 5 persons can be maintained for 20 days with = ₹ 2480.
 Then 1 person maintained at = $\frac{2480}{20 \times 5} = \frac{2480}{100} = ₹ 24.80$ person/day

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

~~So, the number of days~~
 So, the number of days ₹ 6944 can be maintained 8 person will be = $\frac{6944}{198.40} = 35$ days

30) $\{x: x^2 - 9x - 10 = 0\}$
 $\Rightarrow x^2 - 10x + x - 10 = 0$
 $\Rightarrow x(x-10) + 1(x-10) = 0$
 $\Rightarrow (x-10)(x+1)$
 $\Rightarrow 10, -1$

\therefore Therefore, the proper subset of $\{x: x^2 - 9x - 10 = 0\}$ is $\{10, -1\}$.