C.W
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Holiday Homework

1) Reciprocal of Zero is:
d. None of the above

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

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

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

5) Find the least number by which 1323 must be multiplied so that the product is a perfect cube.
c. 7

6) 2.7 is what percent of 18?
b. 15%.

7) If A & B are two sets such that $n(A)=15$, $n(B)=21$ & $n(A \cup B)=36$ then $n(A \cap B)$ equal to
b. 0

8) If $5A \times A = 399$, then the value of A is
b. 7

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

b. 60 men

10) $a+b=b+a$ is called
a. Commutative law of addition

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

$\frac{2}{3}$ and $\frac{3}{4}$

L.C.M of denominators = 12

$\frac{2\times4}{3\times4} = \frac{8}{12}$ $\quad$ $\frac{3\times3}{4\times3} = \frac{9}{12}$

We need 3 rational numbers between them. Then multiply it with = 3+1=4

$\frac{8\times4}{12\times4} = \frac{32}{48}$ $\quad$ $\frac{33}{48}, \frac{34}{48}, \frac{35}{48}$

$\frac{9\times4}{12\times4} = \frac{36}{48}$

Rational numbers between $\frac{2}{3}$ and $\frac{3}{4}$ are:

$\frac{33}{48}, \frac{34}{48}, \frac{35}{48} = \frac{11}{16}, \frac{17}{24}, \frac{35}{48}$

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

$= \frac{1}{(12)^2} \times 64$

$= \frac{1}{144} \times \frac{64}{9}$

$= \frac{4}{9}$

13) Let the length of long rope be x.
It is cutted into 12 equal pieces.
Length of each piece $= \frac{x}{12}$

$\therefore$ Each piece $= \frac{x}{12}$ units

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

LCM of denominators $= 280$

$\frac{8 \times 40}{7 \times 40} = \frac{320}{280}$

$\frac{-9 \times 35}{8 \times 35} = \frac{-315}{280}$

$\frac{-3 \times 140}{2 \times 140} = \frac{-420}{280}$

$\frac{2 \times 56}{5 \times 56} = \frac{112}{280}$

Descending order $= \frac{-420}{280}, \frac{-315}{280}, 0, \frac{112}{280}, \frac{320}{280}$

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

15) Additive inverse of $7 = -7$
Multiplicative inverse of $7 = \frac{1}{7}$

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

16) Two sides of triangle $= 3y^2 - 5y$ and $4y^2 + 12$

Sum $= 3y^2 - 5y + (4y^2 + 12)$

$= 3y^2 + 4y^2 - 5y + 12$

$= 7y^2 - 5y + 12$

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

Third side = Perimeter − (First side + Second side)

$= 8y^2 - 9y + 4 - (7y^2 - 5y + 12)$

$= 8y^2 - 9y + 4 - 7y^2 + 5y - 12$

$= 8y^2 - 7y^2 - 9y + 5y + 4 - 12$

$= y^2 - 4y - 8$

17) Given A can do the work in 20 days and B can do it in 15 days.

Then work done by A in one day $= \frac{1}{20}$

Work done by B in one day $= \frac{1}{15}$

Then, the work done by A & B in one day

$= \frac{1}{20} + \frac{1}{15} = \frac{7}{60}$

A and B done 6 days together then work done in A & B in 6 days

$= \frac{7}{\cancel{60}_{10}} \times \cancel{6}^{1} = \frac{7}{10}$

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

B can do $\frac{3}{10}$ work $= \frac{3}{\cancel{10}_{2}} \times \frac{\cancel{15}^{3}}{1} = \frac{9}{2} = 4\frac{1}{2}$

∴ B will take $4\frac{1}{2}$ days.

18) i) $S.I = \frac{PRT}{100}$

Given, $P = ₹630$, $T = 4$ years and $S.I = ₹126$

$S.I = \frac{630 \times 4 \times R}{100}$

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

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

$\Rightarrow R = 5\%$

∴ Rate is 5% per annum

ii) Let $P = ₹100$

Amount $= 2 \times 100 = ₹200$

Interest $= A - P$

$= 200 - 100 = ₹100$

Time $= 6$ years

Rate per annum $= \frac{100 \times I}{P \times T} = \frac{100 \times 100}{100 \times 6}$

$= \frac{50}{3}\% = 16.67\%$

19) Principal $= ₹7500$

Rate $= 8\%$ p.a

Time $= 2$ years

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

Interest for the first year $= \frac{7500 \times 8 \times 1}{100}$

$= ₹600$

Amount at the end of first year
= P + S.I
= ₹7500 + ₹600
= ₹8100
Principal for the second year = ₹8100
Interest for the second year = $\frac{8100 \times 8 \times 1}{100}$
= ₹648
Total C.I for 2 years = ₹600 + ₹648
= ₹1248
Difference between C.I and S.I
= 1248 - 1200
= ₹48

20) Let the price of sugar = ₹100
25% of 100 = ₹25
Increased price = 100 + 25 = ₹125
To brought it back to the original, we need to substitute 25 from it.
25 is what percent of 125 = $\frac{25}{125} \times 100$
= 20%
∴ 20% should be decreased to bring it back to the original.

21) Group of people = 500 people
French = 250 people
German = 300 people
F is the set of people who speak French.
G is the set of people who speak German.
n(F ∪ G) = 500
n(F) = 250

$n(F \cap G) = ?$

A/Q,

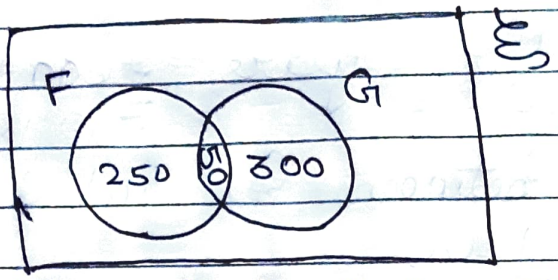
$n(F \cup G) = n(F) + n(G) - n(F \cap G)$

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

$\Rightarrow 500 = 550 - n(F \cap G)$

$\Rightarrow n(F \cap G) = 550 - 500$

$\Rightarrow n(F \cap G) = 50$



∴ 50 people speak both French and German.

22) Peter sold the article to Mohan for ₹912.

S.P for Peter = ₹912

Loss = 5%.

C.P for Peter $= \frac{100 \times S.P}{100 - l\%.} = \frac{100 \times 912}{100 - 5} = \frac{91200}{95}$

$= ₹960$

John sold the article for ₹960 to Peter.

S.P for John = ₹960

Profit = 20%.

C.P $= \frac{100 \times S.P}{(100 + P\%.)} = \frac{100 \times 960}{(100 + 20)} = \frac{9600}{120} = ₹800$

∴ John paid ₹800 for the article.

23) i) Rahim sold the scooter to Prem.

Prem paid = ₹14,490

S.P for Rahim = ₹14,490

Profit = 5%

C.P for Rahim = $\frac{100 \times S.P}{(100 + P\%)} = \frac{100 \times 14490}{105}$

$= \frac{1449000}{105} = ₹13800$

∴ S.P for Rahim is ₹14,490 and C.P for Rahim is ₹13,800.

ii) Rahim paid ₹13,800 to Rajesh for the scooter.

S.P for Rajesh = ₹13,800

Loss = 8%.

C.P = $\frac{100 \times SP}{100 - l\%} = \frac{100 \times 13800}{100 - 8} = \frac{1380000}{92}$

$= ₹15,000$

∴ S.P for Rajesh is ₹13,800 and C.P for Rajesh is ₹15,000.

24) $\frac{5}{6}, \frac{8}{9}$

L.C.M of denominators = 18

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

We need six rational number between them.

We will Multiply 6+1=7

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

Required rational numbers between $\frac{5}{6}$ and $\frac{8}{9}$

$= \frac{106}{126}, \frac{107}{126}, \frac{108}{126}, \frac{109}{126}, \frac{110}{126}, \frac{111}{126}$

$= \frac{53}{63}, \frac{107}{126}, \frac{6}{7}, \frac{109}{126}, \frac{55}{63}, \frac{37}{42}$

25) $\sqrt{784} = 28$

i) $\sqrt{7.84} + \sqrt{78400}$

$= \sqrt{\frac{784}{100}} + 280$

$= \sqrt{\frac{28}{10}} + 280$

$= 2.8 + 280$

$= 282.8$

ii) $\sqrt{0.0784} + \sqrt{0.000784}$

$= \sqrt{\frac{784}{10000}} + \sqrt{\frac{784}{1000000}}$

$= \sqrt{\frac{28}{100}} + \sqrt{\frac{28}{1000}}$

$= 0.28 + 0.028$

$= 0.308$

26) i) It is a singleton set because there is only one point of intersection.

ii) $A = \{x : 7x - 3 = 11\}$

$7x - 3 = 11$

$\Rightarrow 7x = 14$

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

$\Rightarrow x = 2$

$A = \{2\}$

$\therefore$ It is a singleton set.

iii) $B = \{y : 2y + 1 < 3 \text{ and } y \in W\}$

$2y + 1 < 3$

$\Rightarrow 2y + 1 - 1 < 3 - 1$

$\Rightarrow 2y < 2$

$\Rightarrow \frac{2y}{2} < \frac{2}{2}$

$\Rightarrow y < 1$

$\therefore B = \{0\}$

$\therefore$ It is a singleton set.

27) S.P = ₹637

Loss = 9%.

$C.P = \frac{100 \times S.P}{(100 - l\%)} = \frac{100 \times 637}{100 - 9} = \frac{63700}{91} = ₹700$

C.P = ₹700

Profit = 5%.

$S.P = \frac{(100 + P\%)}{100} \times C.P = \frac{(100+5)}{100} \times 700$

$= \frac{105}{100} \times 700 = ₹735$

∴ Jak should sell the bicycle for ₹735 to gain 5% profit.

28) 3 men are equivalent to 6 boys.

3 men = 6 boys

1 men = $\frac{6}{3}$ boys = 2 boys

4 men = 4 × 2 = 8 boys

8 + 12 = 20 boys

6 boys can do a work = 20 days

1 boy can do work = 20 × 6 = 120 days

20 boys can do work = $\frac{120}{20}$ = 6 days

∴ 4 men and 12 boys will take 6 days to complete the work.

29) 5 person maintained for 20 days with ₹2480.

1 person maintenance $= \frac{2480}{20 \times 5} = \frac{2480}{100}$

$= ₹24.80$

Maintenance of 8 persons $= 24.80 \times 8$

$= ₹198.40$

Number of days ₹6944 can be maintained 8 person $= \frac{6944}{198.40} = 35$ days

∴ 8 persons can be maintained for 35 days.

30) Subsets of $\{x : x^2 - 9x - 10 = 0\}$

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

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

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

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

$\Rightarrow x = 10, -1$

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

∴ Proper subsets of the given set are $\{\phi\}, \{10\}, \{-1\}$.

X