Friday
17/10/20

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 is (a) identity for addition of rational numbers

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

5) Find the least number by which 1323 must be multiplied so that the product is a perfect cube
(a) 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 ~~a~~ b) 0

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

9) If 30 men can do a work in 24 days. How many men will do the same work in 12 days?
(c) 15

10) $a+b = b+a$ is called
(a) commutative law of addition

11) Insert three rational number between 2/3 and 3/4

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

$= \frac{2}{6}, \frac{2+3}{3+4}, \frac{3}{4}$

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

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

$= \frac{2}{3}\left(\frac{7}{10}, \frac{5}{7}, \frac{8}{11}\right)\frac{3}{4}$

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

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

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

13) Question is wrong.

14) Write the following rational number in descending order: 2/1, -9/8, -3/2, 0, 2/5

$\frac{2}{1}, \frac{-9}{8}, \frac{-3}{2}, 0, \frac{2}{5}$

LCM of 1, 8, 2, 5 = 280

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$\frac{8}{7} = \frac{8\times40}{7\times40} = \frac{320}{280}$

$\frac{-9}{8} = \frac{-9\times35}{8\times35} = \frac{-315}{280}$

$\frac{-3}{2} = \frac{-3\times140}{2\times140} = \frac{-420}{280}$

0

$\frac{2}{5} = \frac{2\times56}{5\times56} = \frac{112}{280}$

~~$0, \frac{112}{28}$~~ $\frac{320}{280}, \frac{112}{280}, 0, \frac{-315}{280}, \frac{-420}{280}$

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

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

additive inverse $= -7$

multiplicative inverse $= \frac{1}{7}$

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

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

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

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.

Sum of two sides $= 3y^2 - 5y + 4y^2 + 12$
$= 3y^2 + 4y^2 - 5y + 12$
$= 7y^2 - 5y + 12$

The perimeter of triangle $= 8y^2 - 9y + 4$
Third 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) Then work done by A in one day $= \frac{1}{20}$
Work done by B in one day $= \frac{1}{15}$

Then work done by A & B in one day

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

A & B done in 6 days $= \frac{7}{60} \times 6 = \frac{7}{10}$

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

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

18) At what rate per cent annum will ₹630 produce an interest of ₹126 in 4 years.

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

$$R = \frac{100 \times S.I}{P \times T}$$

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

$$= 5\%$$

ii) Let $P = ₹100$
Amount $= 2 \times 100 = ₹200$
Interest $= A - P$
$= 200 - 100 = 100$

$T = 6\frac{1}{4}$ years $= \frac{25}{4}$ yrs

$$R = \frac{100 \times I}{P \times T} = \frac{100 \times 10}{100 \times \frac{25}{10}} = \frac{100 \times 100}{100} \times \frac{4}{25} = 16\%$$

19) Calculate the difference between the compound interest and the simple interest on ₹7500 in two years and at 8% per annum.

Principal = ₹ 7500
R = 8%
T = 2 yrs

Simple Interest = $\frac{P \times R \times T}{100}$ = $\frac{7500 \times 8 \times 2}{100}$

= ₹ 1200

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

= ₹ 600

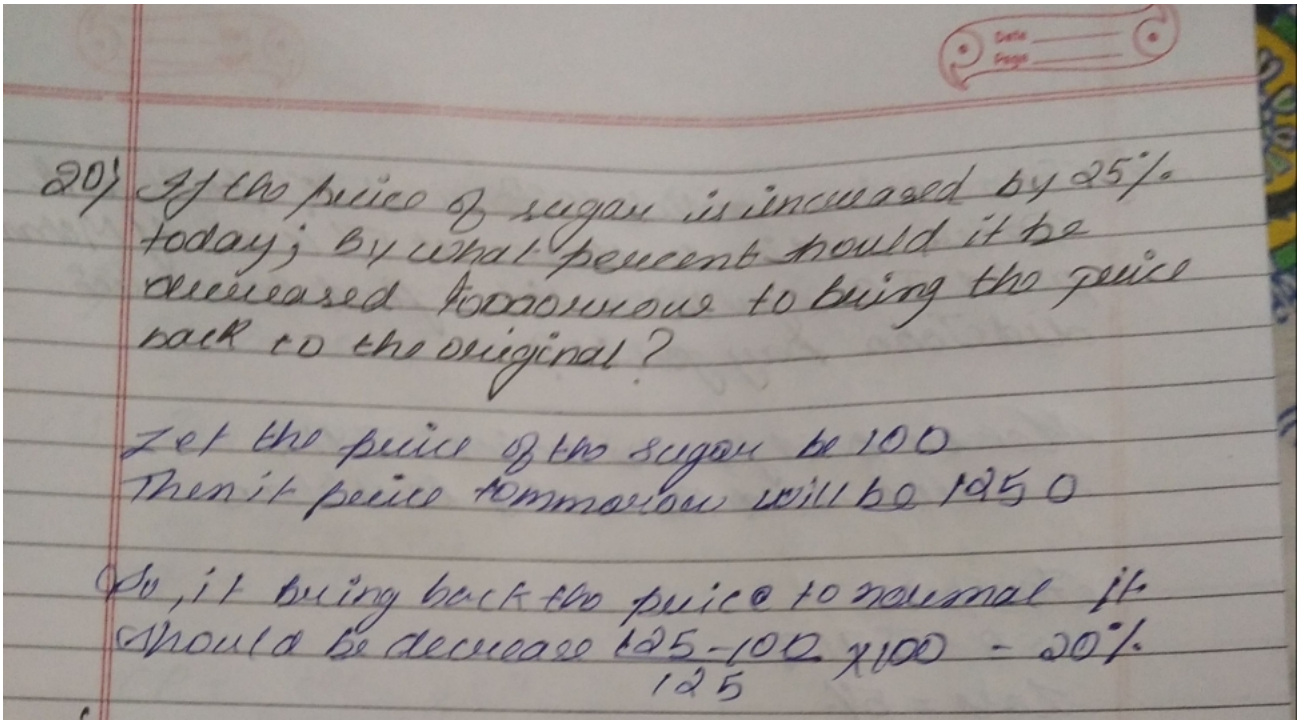
Amount = P + S.I
= 7500 + 600
= 8100

P of second year = ₹ 8100

Interest of the second year
= $\frac{8100 \times 8 \times 1}{100}$
= ₹ 648

Total C.I = 600 + 648
= ₹ 1248

Difference between C.I and S.I
= 1248 - 1200
= ₹ 48



20) If the price of sugar is increased by 25% today; by what percent should it be decreased tomorrow to bring the price back to the original?

Let the price of the sugar be 100
Then it price tommarow will be 1250

So, it bring back the price to normal it should be decrease $\frac{125-100}{125} \times 100 = 20\%$

22) John sold an article to Peter at 20% profit and Peter sold it to Mohan at 5% loss. If Mohan paid ₹ 912 for the article. Find how much did John pay for it?

Mohan paid for the article = ₹ 912
∴ Peter sold the article to Mohan

For peter :-
SP = ₹ 912
Loss = 5%

$$CP = \frac{100}{(100-L\%)} \times S.P$$

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

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

$$= 20 \times 48$$

$$= 960$$

John sold the same article to Peter

For John :-

SP = 960
Profit = 20%

$$CP = \frac{100}{(100+P)} \times S.P$$

$$= \frac{100}{(100+20)} \times 960 = \frac{100}{120} \times 960$$

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Hence John paid for this article is ₹800

22) Ram paid for the scooter = ₹14,490
Rahim sold the ~~and~~ scooter to Ram

(i) For Rahim :-

SP = ₹14,490
P = 5%

$$CP = \frac{100}{(100+P\%)} \times S.P$$

$$= \frac{100}{(100+5\%)} \times 14,490$$

$$= \frac{100 \times 14,490}{105}$$

$$= 13800$$

Rajest sold the same groocer to Rahim

For Rajesh :-

SP = 13,800
L = 8%

$$CP = \frac{100}{(100-L\%)} \times SP$$

$$= \frac{100}{(100-8\%)} \times 13,800$$

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

$$= 150$$

Hence Rajesh paid for the scooter is ₹150

26)

24) Insert six rational number between 5/6 and 8/9

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

$= \frac{5}{6}, \frac{5+8}{6+9}, \frac{8}{9}$

$= \frac{5}{6}, \frac{13}{15}, \frac{8}{9}$

$= \frac{5}{6}, \frac{5+13}{6+15}, \frac{13}{15}, \frac{13+8}{15+9}, \frac{8}{9}$

$\frac{5}{6}, \frac{18}{21}, \frac{13}{15}, \frac{21}{24}, \frac{8}{9}$

$\frac{5}{6}, \frac{5+18}{6+21}, \frac{18}{21}, \frac{18+13}{21+15}, \frac{13}{15}, \frac{13+21}{15+24}, \frac{21}{24}, \frac{21+8}{24+9}, \frac{8}{9}$

$= \frac{5}{6}, \left(\frac{23}{27}, \frac{18}{21}, \frac{31}{36}, \frac{13}{15}, \frac{34}{39}, \frac{21}{24}, \frac{29}{33}\right), \frac{8}{9}$

25) If $\sqrt{784} = 28$ find the value of :-

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

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

ans) i) $28 + 280$

$= 282.8$

ii) $0.28 + 0.028$

$= 0.308$

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

$= 2y+1 = 3$
$= 2y = 3-1$
$= 2y = 2$
$= y = \frac{2}{2}$,
$= y = \{1\}$

Yes, this set is called the singuton set.

27) a) John sells his bicycle for ₹637, he will suffer a loss of 9%. For how much should it be sold, if he desires a profit of 5%?

SP of the bicycle = ₹637
Loss = 9%
$CP = \frac{100}{(100-L\%)} \times SP$
$= \frac{100}{100-9} \times 637$
$= \frac{100 \times 637}{91}$
$= 700$

Desires a profit of 5%
CP = 700

$SP = \frac{100}{(100+P\%)} \times CP$ =

$\frac{100}{100-5\%} \times 700$

$= \frac{100}{95} \times 700$

$= \frac{100 \times 700}{95}$

$= 735$

28) 3 men 6 boys

1 man = 2 boys

3 men or 6 boy can finish a work in 20 days

4 men and 12 boys = 4 + 6 men = 10 men

3 men can finish a work in 20 days

10 men can finish the work in $\frac{20 \times 3}{10}$

$= 6$ days.

29) 5 person maintained for 20 days with ₹ 2480

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

So the maintainance of 8 persons = 24.80 $\times$ 8 = 198.40 day.

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So the number of days ₹ 6944 can be maintained 8 persons will be

$\frac{6944}{198.40} = 35$ days.

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

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

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

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

$x - 10 = 0$ or $x + 1 = 0$

$x = 10$ $x = -1$