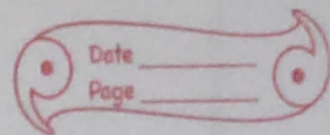


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1. If two rational numbers are added together, the result is always a Rational number.

2. The smallest number by which 980 be multiplied to make so that the product is a perfect square is 5.

3. If ab is a two digit number then $ab + ba$ is divided by 11, the quotient is \underline{ab} .

4. The sum of two rational numbers is $-\frac{5}{12}$ if one of these numbers is $-\frac{7}{8}$ find the other number.

Sol: ~~$\frac{-7}{8}$~~ $\frac{-7}{12} = \frac{-7 \times 2}{12 \times 2} = \frac{-14}{24}$

$$\frac{-5}{8} = \frac{-5 \times 3}{8 \times 3} = \frac{-15}{24}$$

$$\frac{-15}{24} - \left(\frac{-14}{24} \right) = \frac{-15}{24} + \frac{14}{24} = \frac{-15+14}{24} = -\frac{1}{24}$$

5. What is the least number by which 6750 may be divided so that the quotient is a perfect cube.

$$\begin{array}{r|l}
 \text{sol: } 2 & 6750 \\
 \hline
 3 & 3375 \\
 \hline
 3 & 1125 \\
 \hline
 3 & 375 \\
 \hline
 5 & 125 \\
 \hline
 5 & 25 \\
 \hline
 5 & 5 \\
 \hline
 & 1
 \end{array}$$

$\therefore 2$ must be divided so that the quotient must be a perfect cube.

6. 21y8 is a multiple of 6, find the value of digit y.

sol: \star 21y8 needs to be even.
 \star 21y8 needs to be a multiple of ~~3~~ 3.

21y8 is even.

y can be 1.

7. Evaluate :

$$(i) \left[\frac{2 \times 5}{-3 \quad 4} \right] + \left[\frac{5 \times 3}{9 \quad -10} \right]$$

$$\text{Sol: } \frac{2}{-3} = \frac{(2 \times -1)}{(-3 \times -1)} = \frac{-2}{3} = \frac{-2 \times 8}{3 \times 8} = \frac{-16}{24}$$

$$\frac{5}{4} = \frac{5 \times 6}{4 \times 6} = \frac{30}{24}$$

$$\frac{-16}{24} \times \frac{30}{24} = \frac{-16 \times 30}{24} = \frac{480}{24}$$

$$(ii) \left[2 \times \frac{1}{4} \right] - \left[\frac{-18}{7} \times \frac{-7}{15} \right]$$

$$\text{sol: } \left[\frac{2 \times 1}{4} \right] - \left[\frac{-18 \times -7}{7 \times 15} \right]$$

$$= \frac{1}{2} - \left(\frac{-18 \times -1}{15} \right)$$

$$= \frac{1}{2} - \left(\frac{18}{15} \right)$$

$$= \frac{1}{2} - \frac{18}{15} = \frac{15 - 36}{30} = \frac{-21}{30}$$

8. Simplify

$$(i) ((x)^{a+b})^{a-b} * (x^{b-c})^{b+c} * (x^{c-a})^{c+a}$$

$$\text{sol: } x^{(a+b)(a-b)} * x^{(b-c)(b+c)} * x^{(c-a)(c+a)}$$

$$= x^{a^2-b^2} * x^{b^2-c^2} * x^{c^2-a^2}$$

$$= x^0$$

$$= 1$$

$$(ii) (xy)^{l-m} (xy)^{m-n} (xy)^{n-l}$$

$$\text{sol: } (xy)^{l-m} (xy)^{m-n} (xy)^{n-l}$$

$$= (xy)^{l-m+m-n+n-l}$$

$$= (xy)^0$$

$$= 1$$

9. Find the least number which must be added to 18,265 to obtain a perfect square.

Sol: ~~5~~ 18,265

Square root of
18265 \approx 135.14

$$\text{Square of } 136 \times 2 \\ = 136 \times 136 = 18496$$

$$18496 - 18265 = 231$$

\therefore 231 must be added to make it a perfect square.