CREST Olympiads

#CRESTInnovator

CREST Mathematics Olympiad (CMO)

Worksheet *for*

Class 8

Topic

Rational Numbers

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Worksheet on Rational Numbers

1. **Simplify the expression p − (q − r) using the values p = 5/11, q = 3/7 and r = − 7/11.**

   a. −(37/77)
   b. −(47/77)
   c. −(57/77)
   d. −(67/77)

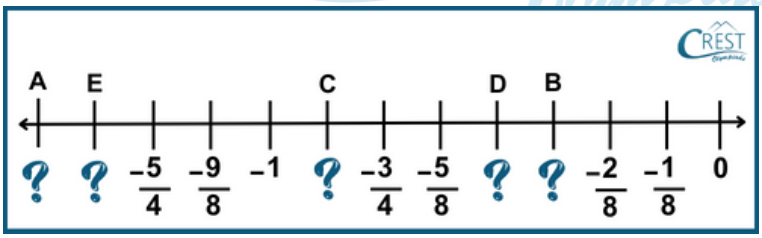
2. **The product of the two numbers is − 27/23. If one of the numbers is $2\frac{35}{23}$, what is the other number?**

   a. −(1/3)
   b. −(2/3)
   c. 1/3
   d. 2/3

3. **What will be the result when the difference of $-1\frac{3}{5}$ and 7/13 divides the sum of 11/13 and −3/5?**

   a. $-7\frac{11}{16}$
   b. $7\frac{11}{16}$
   c. $-8\frac{11}{16}$
   d. $8\frac{11}{16}$

4. **Which of the following rational numbers is the result of adding the sum of the rational numbers represented by letters B, D, and E to the difference between the rational numbers represented by letters A and C?**



   a. $-1\frac{5}{8}$
   b. $-1\frac{7}{8}$
   c. $-2\frac{5}{8}$
   d. $-2\frac{7}{8}$

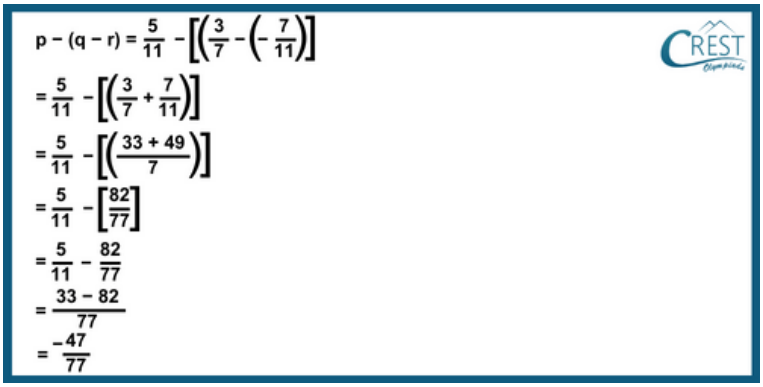
5. **Which of the following is five rational numbers between 2 and 3?**

   a. $\frac{1}{5}, \frac{23}{10}, \frac{3}{2}, \frac{13}{5}, \frac{29}{10}$
   b. $\frac{1}{5}, \frac{23}{10}, \frac{5}{2}, \frac{13}{5}, \frac{29}{10}$
   c. $\frac{11}{5}, \frac{23}{10}, \frac{3}{2}, \frac{13}{5}, \frac{29}{10}$
   d. $\frac{11}{5}, \frac{23}{10}, \frac{5}{2}, \frac{13}{5}, \frac{29}{10}$

Answer Key

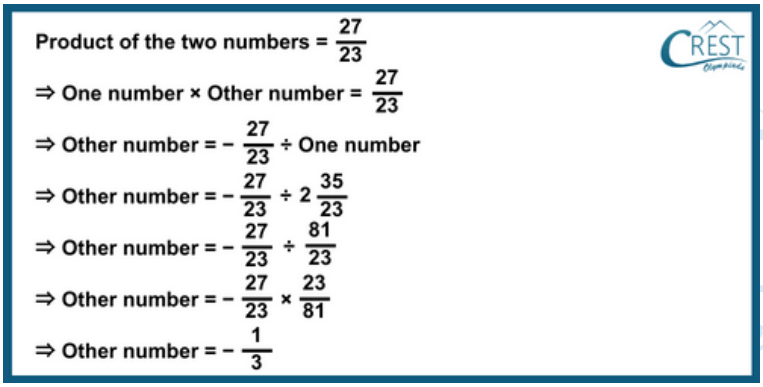
1. b - −(47/77)

Explanation:



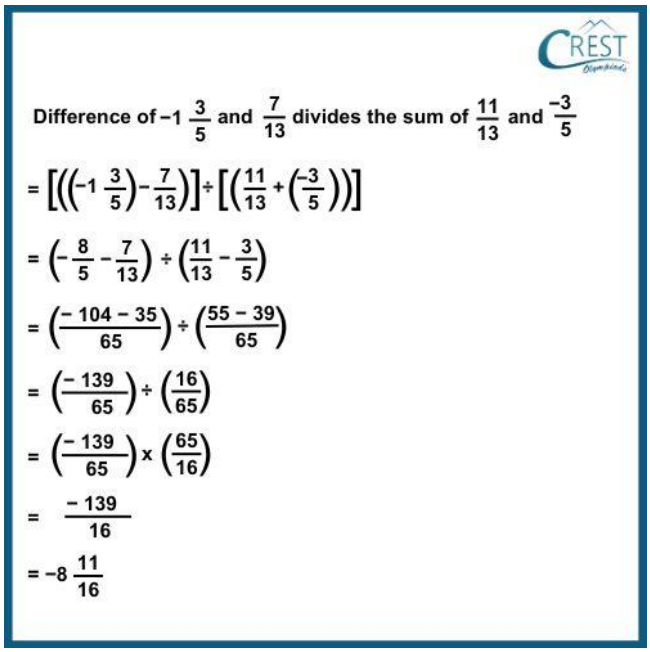
2. a - −(1/3)

Explanation:



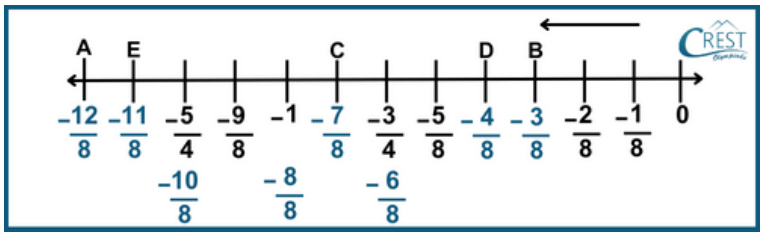
3. c - ($-8\frac{11}{16}$)

Explanation:

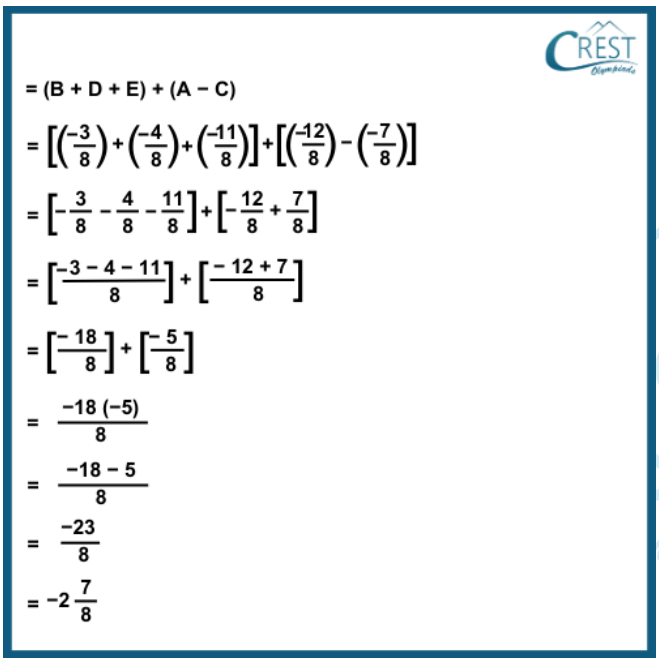


4. d - $(-2\frac{7}{8})$

Explanation: The rational numbers for each point labelled with a letter are as follows:

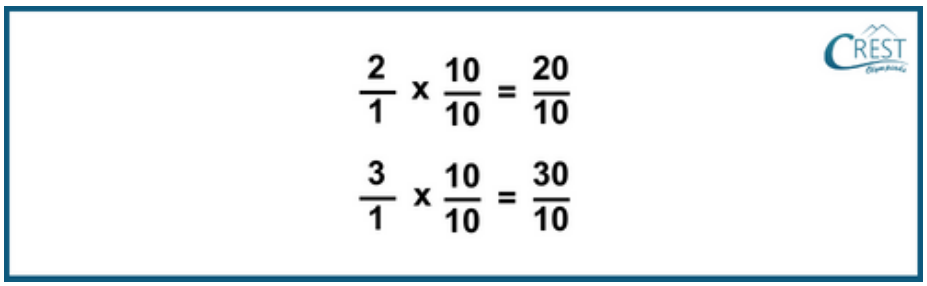


Sum of the rational numbers represented by letters B, D and E = B + D + E
Difference between the rational numbers represented by letters A and C = A − C
Sum of the rational numbers represented by letters B, D and E and the difference between the rational numbers represented by letters A and C



5. d - $\frac{11}{5}, \frac{23}{10}, \frac{5}{2}, \frac{13}{5}, \frac{29}{10}$

Explanation: 2/1 and 3/1 are two rational numbers with the same denominator 7.
Follow these steps:
Step 1: First compare the numerators.
2 < 3 (2 is less than 3)
Step 2: Since there is no difference between the numerators 2 and 3.
Step 3: If you need more numbers in between, you can multiply both the original rational numbers by 10.



Step 4: Now there is a very large difference between the numerators 20 and 30. There are 10 numbers between the numerators 20 and 30. So, you can pick any 5 rational numbers in between.

Rational numbers between

$$\frac{20}{10} \text{ and } \frac{30}{10}: \frac{21}{10}, \frac{22}{10}, \frac{23}{10}, \frac{24}{10}, \frac{25}{10}, \frac{26}{10}, \frac{27}{10}, \frac{28}{10}, \frac{29}{10}$$

In the simplest form:

$$\frac{21}{10}, \frac{11}{5}, \frac{23}{10}, \frac{12}{5}, \frac{5}{2}, \frac{13}{5}, \frac{27}{10}, \frac{14}{5}, \frac{29}{10}$$

Any five rational numbers lying between 2 and 3:

$$\frac{11}{5}, \frac{23}{10}, \frac{5}{2}, \frac{13}{5}, \frac{29}{10}$$

Note: There are 10 numbers between the numerators 20 and 30. So, you may also choose the other 5 rational numbers in between.

More Questions Coming Soon – Keep Learning!

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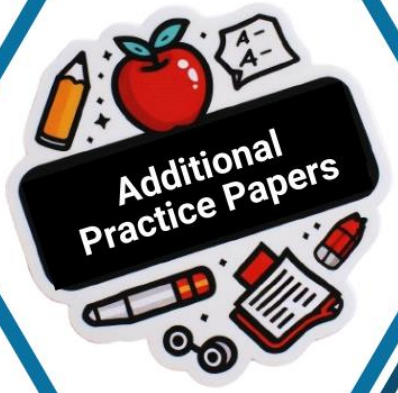

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