CREST Olympiads

#CRESTInnovator

CREST Mathematics Olympiad (CMO)

Worksheet for

Class 7

Topic

Rational Number

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Worksheet on Rational Number

1. **What is the difference between the additive inverse and multiplicative inverse of 5/7?**

   a. 72/35
   b. 74/35
   c. −72/35
   d. −74/35

2. **Which of the following is a rational number?**

   a. $7 - \sqrt{2}$
   b. $7 - \sqrt{3}$
   c. $7 - \sqrt{4}$
   d. $7 - \sqrt{5}$

3. **What is the result obtained when the additive inverse of 23/11 is multiplied by the multiplicative inverse of the sum of 2/5 and 8/3?**

   a. $-\frac{15}{11}$
   b. $-\frac{15}{22}$
   c. $\frac{15}{11}$
   d. $\frac{15}{22}$

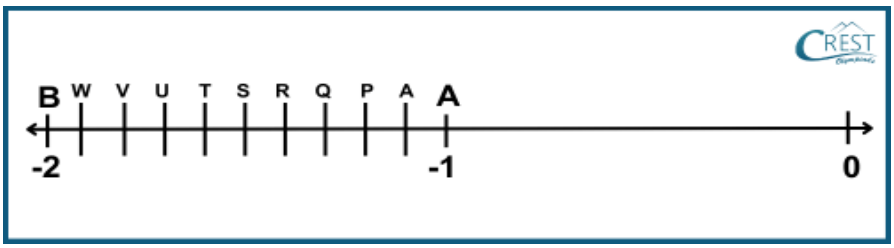
4. **What are the next three rational numbers in the following pattern?**

$$\frac{-8}{14}, \frac{-16}{28}, \frac{32}{-56}, \frac{64}{-112}, \ldots\ldots, \ldots\ldots, \ldots\ldots$$

   a. $\frac{-128}{224}, \frac{-256}{448}, \frac{-512}{896}$
   b. $\frac{-128}{224}, \frac{-254}{448}, \frac{512}{-896}$
   c. $\frac{-128}{224}, \frac{-253}{448}, \frac{-512}{896}$

d. $\frac{-128}{224}, \frac{-252}{448}, \frac{512}{-896}$

5. The points A, P, Q, R, S, T, U, V, W and B on the number line. If AP = PQ = QR = RS = ST = TU = UV = VW = WB. which rational number is represented by U?



a. $^{-1}/_{3}$
b. $^{-5}/_{3}$
c. $^{-1}/_{9}$
d. $^{-5}/_{9}$

Answer Key

1. d – (−74/35)

Explanation: Additive inverse of 5/7 = − 5/7
Multiplicative inverse of 5/7 = 7/5
Difference between the additive inverse and multiplicative inverse of 5/7
= −5/7 − 7/5
= (−25 −49)/35 [LCM of 7 and 5]
= −74/35

2. c - 7 − √4

Explanation: The root of the numbers like √2, √3 and √5 are irrational numbers.
The difference between a rational number and an irrational number is an irrational number.
Hence, 7 − √2, 7 − √3 and 7 − √5 are irrational numbers.

The difference between two rational numbers is a rational number.
Number: 7 − √4 = 7 − √(2 × 2) = 7 − 2 = 5 = $^{5}/_{1}$
7 − √4 is a rational number which is in the form $^{5}/_{1}$ where both '5' and '1' are integers and '1' is not equal to zero.

3. b - $\left(-\frac{15}{22}\right)$

Explanation: Additive inverse of 23/11 = − 23/11
Sum of 2/5 and 8/3 = 2/5 + 8/3
= (6 + 40)/15
= 46/15
Multiplicative inverse of the sum of 2/5 and 8/3 = 15/46

Result obtained when the additive inverse of − 23/11 is multiplied by the multiplicative inverse of the sum of 2/5 and 8/3 = $-\frac{23}{11} \times \frac{15}{46}$

$= -\frac{15}{22}$

4. a - $\frac{-128}{224}, \frac{-256}{448}, \frac{-512}{896}$

Explanation: Multiply the rational number by 2 and divide by 2 to get the next term.

$\frac{-8}{14} \times \frac{2}{2} = \frac{-16}{28}$

$\frac{-16}{28} \times \frac{2}{2} = \frac{-32}{56} = \frac{32}{-56}$

$\frac{32}{-56} \times \frac{2}{2} = \frac{64}{-112}$

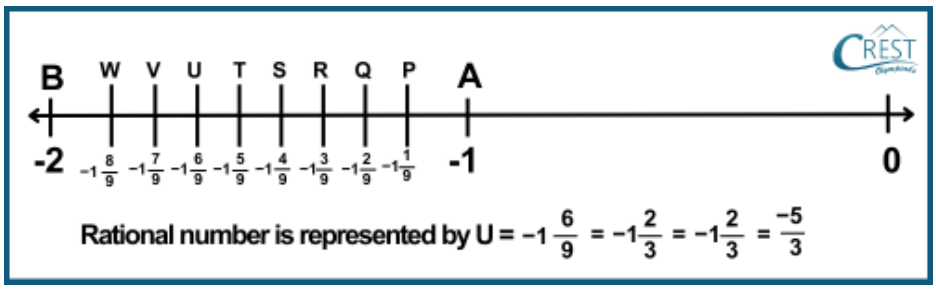
$\frac{64}{-112} \times \frac{2}{2} = \frac{128}{-224} = \frac{-128}{224}$

$\frac{-128}{224} \times \frac{2}{2} = \frac{-256}{448}$

$\frac{-256}{448} \times \frac{2}{2} = \frac{-512}{896}$

5. b - -5⁄3

Explanation:



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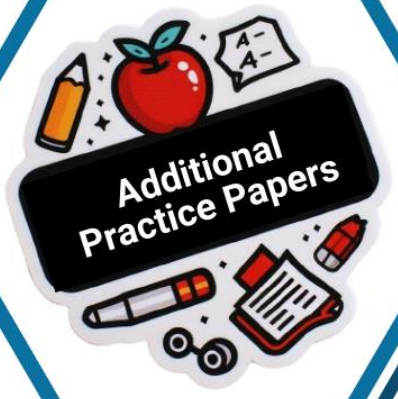

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