

Order of Operations with Rational Numbers Part 2

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Mathematics 9 Rational Numbers Order of Operations with Rational Numbers Part 2

A. Order of Operations with Rational Numbers

Remember to follow BEDMAS rules when solving order of operations with rational numbers. It is generally easiest if you change the Mixed Numbers into Improper Fractions before beginning your calculations. Your final answer may still need to be reduced to lowest terms.

$$\frac{1}{2} \times \left(2\frac{1}{3} + \frac{1}{2} \right)$$

Handwritten work: An orange arrow points down from the expression. To the right, the mixed number $2\frac{1}{3}$ is converted to the improper fraction $\frac{7}{3}$ with 7×2 and 1×3 written above. The two fractions $\frac{7}{3} + \frac{1}{2}$ are converted to a common denominator of 6, resulting in $\frac{14}{6} + \frac{3}{6}$, which is circled in green.

$$\frac{1}{2} \times \frac{17}{6}$$

Handwritten work: Red arrows point from the 1 and 17 in the numerator to the 2 and 6 in the denominator, indicating cross-multiplication.

$$= \frac{17}{12} \approx 1\frac{5}{12}$$

$$\left(1\frac{1}{2} \times \frac{2}{5} \right) + \left(-1\frac{1}{4} \div \frac{1}{2} \right)$$

Handwritten work: The first term $1\frac{1}{2} \times \frac{2}{5}$ is converted to $\frac{3}{2} \times \frac{2}{5}$ with red arrows showing the 2s canceling. The second term $-1\frac{1}{4} \div \frac{1}{2}$ is converted to $-\frac{5}{4} \div \frac{1}{2}$ with red arrows showing the 1 and 2 canceling, and then $-\frac{5}{4} \times \frac{2}{1}$ with red arrows showing the 2 and 4 canceling.

$$\frac{3}{5} + -\frac{5}{2}$$

Handwritten work: The fractions are converted to a common denominator of 10, resulting in $\frac{6}{10} + -\frac{25}{10}$, which is circled in green.

$$= -\frac{19}{10} \approx -1\frac{9}{10}$$

$$1\frac{2}{3} - \left(-\frac{15}{16} \times -\frac{4}{5} \right) \div 2\frac{1}{2}$$

$$\frac{5}{3} - \frac{3}{4} \div \frac{5}{2}$$

$$\frac{5^{10}}{3^{10}} - \frac{3^{10}}{10^{10}}$$

$$\frac{50}{30} - \frac{9}{30}$$

$$\frac{50 + -9}{30}$$

$$\frac{41}{30} \text{ or } 1\frac{11}{30}$$

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

$$\left(-\frac{3}{4} + -\frac{3}{2} \right) \times \left(\frac{7}{4} + -\frac{5}{2} \right)$$

$$\frac{-3 + -6}{4} \quad \frac{7 + -10}{4}$$

$$\frac{-9}{4} \times \frac{-3}{4}$$

$$= \frac{27}{16} \text{ or } 1\frac{11}{16}$$

Assignment : Order of Operations with Rational Numbers Assignment

Name: _____

Order of Operations with Rational Numbers Part 2

1. $\frac{1}{8} + \left(\frac{1}{2} \times \frac{1}{4}\right)$

2. $\frac{1}{3} - \frac{1}{2} \times \frac{1}{4}$

3. $1\frac{1}{4} \div \left(-\frac{1}{2}\right) + \frac{3}{4}$

4. $\frac{1}{2} \div \left(1\frac{1}{3} + 1\frac{1}{6}\right)$

5. $\left(1\frac{2}{3} + 2\frac{2}{3}\right) \div \frac{1}{6}$

6. $\left(-1\frac{1}{4} + \frac{1}{2}\right) - \left(\frac{1}{4} \times 1\frac{1}{3}\right)$

$$7. \left(1\frac{1}{4} + \frac{-1}{2}\right) \times \left(1\frac{1}{3} - \frac{3}{4}\right)$$

$$8. \left(1\frac{3}{5} \div 1\frac{1}{5}\right) \times \left(1\frac{1}{2} \div \frac{1}{3}\right)$$

$$9. \left(\frac{-5}{6} + 1\frac{1}{2}\right) \div \left(-1\frac{3}{4} - \frac{-1}{2}\right)$$

$$10. 2\frac{1}{8} - \left(1\frac{1}{2} - 2\frac{1}{4}\right) \times \frac{1}{2}$$

Answers

1) $\frac{1}{4}$

2) $\frac{5}{24}$

3) $-\frac{7}{4}$

4) $\frac{1}{5}$

5) 26

6) $-\frac{13}{12}$

7) $\frac{7}{16}$

8) 6

9) $-\frac{8}{15}$

10) $\frac{5}{2}$