Adding Integers

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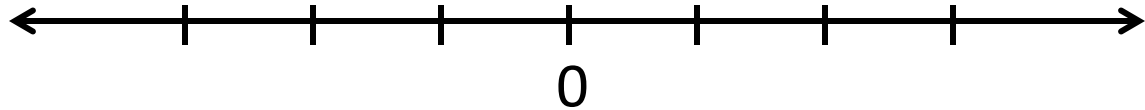
Example 1 Evaluate.

−6 + (−14) =

Adding Integers

Example 2 Evaluate.

−5 + 12 =

Adding Integers

Example 3 Evaluate.

   8 + (−20) =

Subtracting Integers

Subtracting Integers

Subtracting Integers

Change the subtraction symbol to addition, and change the sign of the number being subtracted.

Example 1 Evaluate.

23 − (−14) =

Subtracting Integers

Example 2 Evaluate.

   17 − 26 =

Multiplying and Dividing Integers

Multiplying and Dividing Integers

- The product of two numbers having the *same sign* is *positive*.
- The product of two numbers having *different signs* is *negative*.

Example 1 Evaluate.

(a) −8(7) =

(b) −3(−9) =

Multiplying and Dividing Integers

- The quotient of two numbers having the *same sign* is *positive*.
- The quotient of two numbers having *different signs* is *negative*.

Example 2 Evaluate.

(a) $\dfrac{-24}{-6} =$

(b) $\dfrac{50}{-25} =$

Order of Operations with Integers

Order of Operations with Integers

Parentheses

Exponents

Multiplication

Division

In order of appearance, from left to right

Addition

Subtraction

In order of appearance, from left to right

Example 1 Evaluate.

$$-3 - 2(5 - 10) + (-15) =$$

Order of Operations with Integers

Example 2 Evaluate.

$$\frac{(-3)^2 - 15}{6 + (-4)} =$$

Order of Operations with Integers

Order of Operations with Integers

Parentheses

Exponents

Multiplication

Division ⎤ In order of appearance, from left to right

Addition

Subtraction ⎤ In order of appearance, from left to right

Example 1 Evaluate.

−3 − 2(5 − 10) + (−15) =

Order of Operations with Integers

Example 2 Evaluate.

$$\frac{(-3)^2 - 15}{6 + (-4)} =$$

Simplifying Fractions

Simplifying Fractions

Divide the numerator and denominator by their greatest common factor to obtain an equivalent fraction in lowest terms.

Example Simplify.

(a) $\dfrac{28}{40}$

(b) $\dfrac{54}{9}$

Adding and Subtracting Fractions

Adding and Subtracting Fractions

1. Rewrite the fractions, as needed, so that they have a common denominator (i.e., a number that is divisible by all denominators).
2. Add or subtract numerators; keep the denominator the same.

Example 1 Perform the indicated operations, expressing final answer as a simplified fraction.

$$\frac{4}{5} - \frac{1}{3} =$$

Adding and Subtracting Fractions

Example 2 Perform the indicated operations, expressing final answer as a simplified fraction.

$$\frac{1}{6} + \frac{1}{12} =$$

Adding and Subtracting Fractions

Example 3 Perform the indicated operations, expressing final answer as a simplified fraction.

$$\frac{1}{20} + \frac{1}{12} =$$

Multiplying Fractions

Multiplying Fractions

Multiply numerators; multiply denominators.

Example 1 Perform the indicated operations, expressing final answer as a simplified fraction.

$$\frac{1}{4} \cdot \frac{1}{3} =$$

Multiplying Fractions

Example 2 Perform the indicated operations, expressing final answer as a simplified fraction.

$$\frac{2}{7} \cdot \frac{5}{6} =$$

Dividing Fractions

Dividing Fractions

Rewrite the division symbol as multiplication, and rewrite the divisor as its reciprocal.

Example 1 Perform the indicated operations, expressing final answer as a simplified fraction.

$$\frac{4}{3} \div \frac{3}{2} =$$

Dividing Fractions

Example 2 Perform the indicated operations, expressing final answer as a simplified fraction.

$$\frac{3}{7} \div \frac{2}{7} =$$

Dividing Fractions

Example 3 Perform the indicated operations, expressing final answer as a simplified fraction.

$$\frac{\dfrac{6}{2}}{\dfrac{3}{12}} =$$

Dividing Fractions

Example 4 Perform the indicated operations, expressing final answer as a simplified fraction.

$$\frac{\frac{7}{4}}{15} =$$

Order of Operations with Fractions

Order of Operations with Fractions

Parentheses (i.e., numerators and denominators separately)

Exponents

Multiplication

Division

In order of appearance, from left to right

Addition

Subtraction

In order of appearance, from left to right

Example 1 Perform the indicated operations, expressing final answer as a simplified fraction.

$$\frac{4 - 10}{4 \cdot 10} =$$

Order of Operations with Fractions

Example 2 Perform the indicated operations, expressing final answer as a simplified fraction.

$$\frac{1}{3-5} + \frac{1}{3+5} =$$

Order of Operations with Fractions

Example 3 Perform the indicated operations, expressing final answer as a simplified fraction.

$$\left(\frac{2}{5} - \frac{9}{10}\right) \div 3 =$$

Order of Operations with Fractions

Example 4 Perform the indicated operations, expressing final answer as a simplified fraction.

$$\frac{\dfrac{3}{4} - \dfrac{3}{14}}{3} =$$

Evaluating Expressions at Specified Values

Evaluating Expressions at Specified Values

Example 1 Let a = 7, b = −4, and c = 2. Evaluate the expression below, expressing final answer as a simplified integer.

$$b^2 - 4ac =$$

Evaluating Expressions at Specified Values

Example 2 Let p = −2, r = −5, and t = 2. Evaluate the expression below, expressing final answer as a simplified fraction.

$$\frac{p^2 - 2t}{r + t} =$$