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Multiplying and Dividing Integers

Unit 1 Lesson 11

Multiplying and Dividing Integers

Students will be able to:

Multiply and divide integers using rules

Key Vocabulary:

An integer

Negative number

Positive number

Rules for Multiplying Integers

Rule 1:

If the integers have the same signs then the product will be positive.

$$(+)* (+) = (+)$$

$$(-)* (-) = (+)$$

Rules for Multiplying Integers

Rule 2:

If the integers have different signs then the product will be negative.

$$(-) * (+) = (-)$$

$$(+)* (-) = (-)$$

Multiplying and Dividing Integers

Sample Problem 1: Find the product of each expression below using the rules for multiplying integers.

a. $14 * 2 =$

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Sample Problem 1: Find the product of each expression below using the rules for multiplying integers.

a. $14 * 2 = 28$

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Sample Problem 1: Find the product of each expression below using the rules for multiplying integers.

b. $(-10) * (-4) =$

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Sample Problem 1: Find the product of each expression below using the rules for multiplying integers.

b. $(-10) * (-4) = 40$

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Sample Problem 1: Find the product of each expression below using the rules for multiplying integers.

c. $(-13) * (-13) =$

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Sample Problem 1: Find the product of each expression below using the rules for multiplying integers.

c. $(-13) * (-13) = 169$

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Sample Problem 1: Find the product of each expression below using the rules for multiplying integers.

d. $12 * 21 =$

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Sample Problem 1: Find the product of each expression below using the rules for multiplying integers.

d. $12 * 21 = 252$

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Sample Problem 2: Find the product of each expression below using the rules for multiplying integers.

a. $(-13) * 14 =$

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Sample Problem 2: Find the product of each expression below using the rules for multiplying integers.

a. $(-13) * 14 = -182$

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Sample Problem 2: Find the product of each expression below using the rules for multiplying integers.

b. $18 * (-10) =$

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Sample Problem 2: Find the product of each expression below using the rules for multiplying integers.

b. $18 * (-10) = -180$

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Sample Problem 2: Find the product of each expression below using the rules for multiplying integers.

c. $(-7) * 22 =$

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Sample Problem 2: Find the product of each expression below using the rules for multiplying integers.

c. $(-7) * 22 = -154$

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Sample Problem 2: Find the product of each expression below using the rules for multiplying integers.

d. $100 * (-10) =$

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Sample Problem 2: Find the product of each expression below using the rules for multiplying integers.

d. $100 * (-10) = -1,000$

Rules for Dividing Integers

Rule 1:

If the integers have the same signs then the quotient will be **positive**.

$$(+)\div(+)=(+)\quad \text{or}\quad \frac{(+)}{(+)}=(+)$$

$$(-)\div(-)=(+)\quad \text{or}\quad \frac{(-)}{(-)}=(+)$$

Rules for Dividing Integers

Rule 2:

If the integers have different signs then the quotient will be negative.

$$(-) \div (+) = (-) \quad \text{or} \quad \frac{(-)}{(+)} = (-)$$

$$(+)\div(-)=(-) \quad \text{or} \quad \frac{(+)}{(-)} = (-)$$



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Sample Problem 3: Find the quotient of each expression below using the rules for dividing integers.

a. $234 \div 2 =$

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Sample Problem 3: Find the quotient of each expression below using the rules for dividing integers.

a. $234 \div 2 = 117$

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Sample Problem 3: Find the quotient of each expression below using the rules for dividing integers.

b. $(-1,000) \div (-4) =$

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Sample Problem 3: Find the quotient of each expression below using the rules for dividing integers.

b. $(-1,000) \div (-4) = 250$

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Sample Problem 3: Find the quotient of each expression below using the rules for dividing integers.

c. $(-196) \div (-14) =$

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Sample Problem 3: Find the quotient of each expression below using the rules for dividing integers.

c. $(-196) \div (-14) = 14$

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Sample Problem 3: Find the quotient of each expression below using the rules for dividing integers.

d.
$$\frac{-225}{-5} =$$

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Sample Problem 3: Find the quotient of each expression below using the rules for dividing integers.

d.
$$\frac{-225}{-5} = 45$$

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Sample Problem 4: Find the quotient of each expression below using the rules for dividing integers.

a. $(-432) \div 9 =$

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Sample Problem 4: Find the quotient of each expression below using the rules for dividing integers.

a. $(-432) \div 9 = -48$

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Sample Problem 4: Find the quotient of each expression below using the rules for dividing integers.

b. $2,025 \div (-45) =$

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Sample Problem 4: Find the quotient of each expression below using the rules for dividing integers.

b. $2,025 \div (-45) = -45$

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Sample Problem 4: Find the quotient of each expression below using the rules for dividing integers.

c.
$$\frac{-216}{36} =$$

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Sample Problem 4: Find the quotient of each expression below using the rules for dividing integers.

c.
$$\frac{-216}{36} = -6$$

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Sample Problem 4: Find the quotient of each expression below using the rules for dividing integers.

d. $1,024 \div (-16) =$

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Sample Problem 4: Find the quotient of each expression below using the rules for dividing integers.

d. $1,024 \div (-16) = -64$

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Sample Problem 5: Solve each expression below.

a. $(-12) * (-140) \div 8 =$

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Sample Problem 5: Solve each expression below.

a. $(-12) * (-140) \div 8 =$

$$= 1,680 \div 8 =$$

$$= 210$$

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Sample Problem 5: Solve each expression below.

b. $128 \div 4 * (-14) =$

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Sample Problem 5: Solve each expression below.

b. $128 \div 4 * (-14) =$

$$= 32 * (-14) =$$

$$= -448$$

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Sample Problem 5: Solve each expression below.

c. $(-100) \div [20 \div (-10)]^2 =$

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Sample Problem 5: Solve each expression below.

$$\begin{aligned}\text{c. } & (-100) \div [20 \div (-10)]^2 = \\ & = (-100) \div [-2]^2 = \\ & = (-100) \div 4 = \\ & = -25\end{aligned}$$

Multiplying and Dividing Integers

Combined operations on integers

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Sample Problem 6: Solve each expression below using order of operations.

a. $(-23) + [45 + (-15)] * (-14) - 8 =$

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Sample Problem 6: Solve each expression below using order of operations.

$$\begin{aligned} \text{a. } & (-23) + [45 + (-15)] * (-14) - 8 = \\ & = (-23) + [30] * (-14) - 8 = \\ & = (-23) + (-420) - 8 = \\ & = (-443) - 8 = \\ & = (-443) + (-8) = \\ & = -451 \end{aligned}$$

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Sample Problem 6: Solve each expression below using order of operations.

b. $28 \div 4 + [225 \div (-5)] - (-24) =$

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Sample Problem 6: Solve each expression below using order of operations.

$$\begin{aligned} \text{b. } & 28 \div 4 + [225 \div (-5)] - (-24) = \\ & = 28 \div 4 + [-45] - (-24) = \\ & = 7 + [-45] - (-24) = \\ & = -38 - (-24) = \\ & = -38 + 24 = \\ & = -14 \end{aligned}$$

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Sample Problem 6: Solve each expression below using order of operations.

c. $(-10) * [1,200 \div (-100)]^2 - [15 \div (-3)] =$

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Sample Problem 6: Solve each expression below using order of operations.

$$\begin{aligned} \text{c. } & (-10) * [1,200 \div (-100)]^2 - [15 \div (-3)] = \\ & = (-10) * [-12]^2 - [15 \div (-3)] = \\ & = (-10) * 144 - [-5] = \\ & = -1,440 - [-5] = \\ & = -1,440 + 5 \\ & = -1,435 \end{aligned}$$