Multiply!

Let's get more practice multiplying signed numbers.

10.1 Which Three Go Together: Expressions

Which three go together? Why do they go together?

A

$7.9x$

B

$7.9 + x$

C

$7.9 \cdot (-10)$

D

-79

10.2 Info Gap: Temperature and Art Funds

Your teacher will give you either a problem card or a data card. Do not show or read your card to your partner.

If your teacher gives you the problem card:

1. Silently read your card and think about what information you need to answer the question.
2. Ask your partner for the specific information that you need. "Can you tell me _____?"
3. Explain to your partner how you are using the information to solve the problem. "I need to know _____ because . . . ."

   Continue to ask questions until you have enough information to solve the problem.
4. Once you have enough information, share the problem card with your partner, and solve the problem independently.
5. Read the data card, and discuss your reasoning.

If your teacher gives you the data card:

1. Silently read your card. Wait for your partner to ask for information.
2. Before telling your partner any information, ask, "Why do you need to know _____?"
3. Listen to your partner's reasoning, and ask clarifying questions. Only give information that is on your card. Do not figure out anything for your partner!

   These steps may be repeated.
4. Once your partner says they have enough information to solve the problem, read the problem card, and solve the problem independently.
5. Share the data card, and discuss your reasoning.

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Are you ready for more?

1. Find the value of the expression without a calculator.

$$(2)(-30) + (-3)(-20) + (-6)(-10) - (2)(3)(10)$$

2. Write an expression that uses addition, subtraction, and multiplication, only uses negative numbers, and has the same value as the previous expression.

10.3 Card Sort: Matching Expressions

Your teacher will give you a set of cards. Each card contains an expression.

Sort the expressions into groups based on their values. There will be 3 cards in each group. Be prepared to explain how you know where each expression belongs.

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10.4 Row Game: Multiplying Rational Numbers

Evaluate the expressions in one of the columns. Your partner will work on the other column.

Discuss your thinking with your partner after you finish each row. Your answers in each row should be the same. If you disagree, work to reach an agreement.

column A	column B
$790 \div 10$	$(7.9) \cdot 10$
$-\frac{6}{7} \cdot 7$	$(0.1) \cdot -60$
$(2.1) \cdot -2$	$(-8.4) \cdot \frac{1}{2}$
$-\frac{4}{3} \cdot \left(-\frac{6}{5}\right)$	$-5 \cdot (-0.32)$
$(2.5) \cdot (-3.25)$	$-\frac{5}{2} \cdot \frac{13}{4}$
$-10 \cdot (3.2) \cdot (-7.3)$	$5 \cdot (-1.6) \cdot (-29.2)$

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Are you ready for more?

A sequence of rational numbers is made by starting with 1, and from then on, each term is one more than the reciprocal of the previous term. Evaluate the first few expressions in the sequence. Can you find any patterns? Find the 10th term in this sequence.

$$1 \qquad 1+\frac{1}{1} \qquad 1+\frac{1}{1+1} \qquad 1+\frac{1}{1+\frac{1}{1+1}} \qquad 1+\frac{1}{1+\frac{1}{1+\frac{1}{1+1}}} \qquad \ldots$$

Lesson 10 Summary

- A positive number times a positive number always results in a positive number.

  For example, $\frac{3}{5} \cdot \frac{7}{8} = \frac{21}{40}$.

- A negative number times a negative number also always results in a positive number.

  For example, $-\frac{3}{5} \cdot -\frac{7}{8} = \frac{21}{40}$.

- A negative times a positive number or a positive number times a negative number always results in a negative number.

  For example, $\frac{3}{5} \cdot -\frac{7}{8} = -\frac{3}{5} \cdot \frac{7}{8} = -\frac{21}{40}$.

- A negative number times a negative number times a negative number also always results in a negative number.

  For example, $-3 \cdot -4 \cdot -5 = -60$.