

LESSON 13: Multiply Integers

Warm-Up

Directions: Find each product.

1. $8 \cdot 7 =$ _____.

2. $3 \cdot 7 =$ _____.

3. $4 \cdot 8 =$ _____.

4. $4 \cdot 6 =$ _____.

5. $9 \cdot 6 =$ _____.

6. $5 \cdot 6 =$ _____.

7. $5 \cdot 3 =$ _____.

8. $2 \cdot 8 =$ _____.

LESSON 13: Multiply Integers

Directions: Complete the following SOLVE problem with your teacher. You will only complete the S step.

The membership at the local fitness club has decreased an average of 16 people each month for the last 6 months. If this pattern continues for the next 6 months, what integer could be used to represent the loss of members over the next 6 - month period?

S Underline the question.
 This problem is asking me to find _____
 _____.

Directions: Complete this page with your teacher and partner.



Wording for multiplication of integers:

Gain/Lose _____ groups of positive/negative _____ items

1. $2 \cdot 2 = \underline{\quad}$

2. $2 \cdot ^{-}2 = \underline{\quad}$

_____ two groups of _____ two items. _____ two groups of _____ two items.

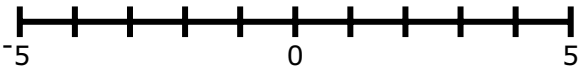
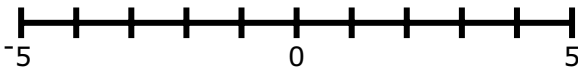
3. $^{-}2 \cdot 2 = \underline{\quad}$

4. $^{-}2 \cdot ^{-}2 = \underline{\quad}$

_____ two groups of _____ two items. _____ two groups of _____ two items.

LESSON 13: Multiply Integers

Directions: Complete this page with your teacher and partner.

1. $2 \cdot 2 =$	2. $2 \cdot -2 =$
	
Describe the process in Problem 1.	Describe the process in Problem 2.
In Problem 1 when you multiplied the two positive factors, what was the product?	In Problem 2 when you multiplied a positive factor and a negative factor, what was the product?
What conclusion can you draw about multiplying two positive integers?	What conclusion can you draw about multiplying one positive integer and one negative integer?
3. $-2 \cdot 2 =$	4. $-2 \cdot -2 =$
What did we have to do to “lose” groups of items?	What did we have to do to “lose” groups of items?
In Problem 3 when you multiplied a positive factor and a negative factor, what was the product?	In Problem 4 when you multiplied the two negative factors, what was the product?
What conclusion can you draw about multiplying one negative integer and one positive integer?	What conclusion can you draw about multiplying two negative integers?

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Directions: Complete this page with your teacher and partner.

Property Application with Multiplication of Integers		
Original Multiplication Problem	Switch the order of the factors.	Does the product change? Explain your answer.
1. $4 \cdot 3 =$		
2. $4 \cdot -3 =$		
3. $-4 \cdot 3 =$		
4. $-4 \cdot -3 =$		
<p>Conclusion: The order of the factors will not change the product in an integer multiplication problem. This property is known as the _____.</p>		

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Directions: Complete this page with your teacher and partner.

	What do you notice about the signs of the factors?	What is the sign of the product?
Problem 1 $2 \cdot 2 =$		
Problem 2 $2 \cdot ^{-}2 =$		
Problem 3 $^{-}2 \cdot 2 =$		
Problem 4 $^{-}2 \cdot ^{-}2 =$		

Conclusions:

When you multiply two integers that have like signs, the answer is _____.

When you multiply two integers that have different signs, the answer is _____.

For Problems 1 – 4, solve the following integer problems and create a context for the problems. For Problems 5 – 8 write the integer problems to match the context and find the solutions.

Equation	Context
1. $6 \cdot 20 =$	
2. $11 \cdot ^{-}5 =$	
3. $^{-}10 \cdot 9 =$	
4. $^{-}12 \cdot ^{-}12 =$	
5.	The art club sold 12 cases of oranges and made a profit of \$20 per case. What is the total profit?
6.	Justin owes \$5.00 to each of his four sisters. What is his financial standing?
7.	Mr. Johnson spent \$3.00 each on 12 packs of pencils. What is his financial standing?
8.	During the integer math game, Tanya draws a red 7 and a red 8. She has to multiply the two negative numbers. What is the product?

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Directions: Complete this page with your teacher and partner.

RULES FOR OPERATIONS WITH INTEGERS

ADDITION:

Two integers with same signs: **Add them together and keep the sign.**

Two integers with different signs: **Subtract the two values and take the sign of the larger absolute value.**

SUBTRACTION:

Subtraction is the same as: **adding the opposite**

Make two changes to the problem:

1. **Change subtraction sign to an addition sign.**
2. **Change the sign of the second number to its opposite.**

After these two steps: **Follow the rules for addition of integers.**

MULTIPLICATION:

Two integers with same signs:

Two integers with different signs:

DIVISION:

Two integers with same signs:

Two integers with different signs:

LESSON 13: Multiply Integers

Directions: Complete the following SOLVE problem with your partner.

The membership at the local fitness club has decreased an average of 16 people each month for the last 6 months. If this pattern continues for the next 6 months, what integer could be used to represent the loss of members over the next 6 month period?

S Underline the question.

This problem is asking me to find _____.

O Identify the facts.

Eliminate the unnecessary facts.

List the necessary facts.

Stop!

- What are we trying to find?
- What does this mean?

Discuss:

- What integer can we use to represent the decrease in members per month?
- What integer can we use to represent the number of months?
- What does this mean?
- How do we multiply integers? Explain your thinking.

L Write in words what your plan of action will be.

Choose an operation or operations.

V Estimate your answer.

Carry out your plan.

E Does your answer make sense? (Compare your answer to the question.)

Is your answer reasonable? (Compare your answer to the estimate.)

Is your answer accurate? (Check your work.)

Write your answer in a complete sentence.

LESSON 13: Multiply Integers

Directions: Complete the following SOLVE problem with your partner.

The football team at the high school has had a great season this year. Scott scored an average of 9 points per game for the 12 game season. What was the total number of points Scott scored for the season?

S Underline the question.

This problem is asking me to find _____.

O Identify the facts.

Eliminate the unnecessary facts.

List the necessary facts.

Stop!

- What are we trying to find?
- What does this mean?

Discuss:

- What integer can we use to represent the average points per game?
- What integer can we use to represent the number of games?
- What does this mean?
- How do we multiply integers? Explain your thinking.

L Write in words what your plan of action will be.

Choose an operation or operations.

V Estimate your answer.

Carry out your plan.

E Does your answer make sense? (Compare your answer to the question.)

Is your answer reasonable? (Compare your answer to the estimate.)

Is your answer accurate? (Check your work.)

Write your answer in a complete sentence.

LESSON 13: Multiply Integers

Directions: Complete the following SOLVE problem with your partner.

The math class is playing an integer card game. Each student must draw two cards every round. The student then has to multiply the two values on the cards and record the answer on a score sheet. The black cards represent positive integer and the red cards represent negative integers. Callie draws a red 8 and a red 9 on her turn. What is the integer that she will record on her score card for that turn?

S Underline the question.

This problem is asking me to find _____.

O Identify the facts.

Eliminate the unnecessary facts.

List the necessary facts.

Stop!

- What are we trying to find?
- What does this mean?

Discuss:

- What integer can we use to represent the first card?
- What integer can we use to represent the second card?
- What does this mean?
- How do we multiply integers? Explain your thinking.

L Write in words what your plan of action will be.

Choose an operation or operations.

V Estimate your answer.

Carry out your plan.

E Does your answer make sense? (Compare your answer to the question.)

Is your answer reasonable? (Compare your answer to the estimate.)

Is your answer accurate? (Check your work.)

Write your answer in a complete sentence.

LESSON 13: Multiply Integers

Directions: Complete the following SOLVE problem with your partner.

The student council at Collins Middle School has a school supply store in the front office. In the mornings they sell pencils, pens, eraser and other school supplies. At the end of the year, the money is used to purchase something that will benefit all of the students. On last month's order the store purchased 24 boxes of pencils for \$3.50 per box. What integer will be used to represent the amount of money that the student council owes for the pencils?

S Underline the question.

This problem is asking me to find _____
_____.

O Identify the facts.

Eliminate the unnecessary facts.

List the necessary facts.

Stop!

- What are we trying to find?
- What does this mean?

Discuss:

- What integer can we use to represent the boxes of pencils?
- What value can we use to represent the cost per box?
- What does this mean?
- How do we multiply integers? Explain your thinking.

L Write in words what your plan of action will be.

Choose an operation or operations.

V Estimate your answer.

Carry out your plan.

E Does your answer make sense? (Compare your answer to the question.)

Is your answer reasonable? (Compare your answer to the estimate.)

Is your answer accurate? (Check your work.)

Write your answer in a complete sentence.

LESSON 13: Multiply Integers

Directions: Complete the following SOLVE problem with your partner.

Alicia joined an online movie club where the monthly fee was \$6.99. The first month was free and after that, the movie club charged her credit card every month. Alicia cancelled her membership before the end of the first month, but the movie club continued to charge her card for 4 months until she noticed the error. What value can be used to represent the amount that was charged to her card for the 4 months?

S Underline the question.

This problem is asking me to find _____.

O Identify the facts.

Eliminate the unnecessary facts.

List the necessary facts:

Stop!

- What are we trying to find?
- What does this mean?

Discuss:

- What value can we use to represent the cost per month?
- What integer can we use to represent the number of months?
- What does this mean?
- How do we multiply integers? Explain your thinking.

L Write in words what your plan of action will be.

Choose an operation or operations.

V Estimate your answer.

Carry out your plan.

E Does your answer make sense? (Compare your answer to the question.)

Is your answer reasonable? (Compare your answer to the estimate.)

Is your answer accurate? (Check your work.)

Write your answer in a complete sentence.

LESSON 13: Multiply Integers

Directions: Complete the following problems. Draw pictures if needed. Use your rules you created.

1. $3 \cdot 7 =$

2. $5 \cdot -3 =$

3. $-9 \cdot -7 =$

4. Terence owes \$5.00 to his mother and his father. Write the integer problem and determine the total amount he owes his parents.

5. $-8 \cdot 6 =$

6. $9 \cdot -3 =$

7. $2 \cdot 5 =$

8. The school band had a fundraiser and sold 140 cases of popcorn. They made a profit of \$25 for each case. Write an integer multiplication problem and solve it to determine their total profit.

9. $-5 \cdot 8 =$

10. $-5 \cdot 4 =$

LESSON 13: Multiply Integers

Homework

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Name _____ Date _____**Directions:** Find each product.

1. $2 \cdot 7 =$

2. $18 \cdot -3 =$

3. Derrick bought 9 DVDs at the neighbor's yard sale for \$5.00 each. Write an equation to represent the situation and the integer that will represent how much he spent on the DVDs.

4. $-30 \cdot -12 =$

5. The Ocean Exploration Institute has a submarine that is used to study patterns of fish movement. The submarine started at the surface of the water and collected data at three different depths. Each time the submarine dove 40 feet down. Write an integer equation to model the situation and determine the lowest depth of the submarine.

6. $15 \cdot -2 =$

7. $-5 \cdot 2 =$

8. In Mr. Steven's 5th period class, there are eight groups of 4 students. Write an integer equation and determine the total number of students in the class.

9. $5 \cdot 7 =$

10. $-6 \cdot (-4) =$