Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**CFS for top quality work**

* + Expressions are rewritten using the **multiplicative property of -1** and the **associative property**
  + Number line is **drawn and labeled** to show the product using known rules
  + The **final answer is clearly labeled**, especially if applying the multiplicative property of -1

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

UNIT 2 LESSON 2

**AIM**: SWBAT evaluate and model the product of two negative numbers

**THINK ABOUT IT!**

Solve the expressions using your knowledge of multiplying and opposites

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Left** | | **Middle** | | **Right** | |
| ***Expression*** | ***Product*** | ***Expression*** | ***Product*** | ***Expression*** | ***Product*** |
| (1)(-4) |  | -(-4) |  | (-1)(-4) |  |
| (1) (-8) |  | -(-8) |  | (-1)(-8) |  |

Based on the work you did above, what do you think the product of -7 x -3 is?

Explain your reasoning?

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Test the Conjecture #1) Evaluate the expression -8 x (-11)

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Test the Conjecture #2) Evaluate the expression -23 x (-14)

**CFS for top quality work**

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Conjecture

|  |
| --- |
| The product of two negative numbers is \_\_\_\_\_\_\_\_\_\_\_\_ |

**PARTNER PRACTICE**

**CFS for top quality work**

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  + The **final answer is clearly labeled**, especially if applying the multiplicative property of -1

|  |
| --- |
| *Bachelor Level* |

1. Find the products for each expression by rewriting the expression using the multiplicative property of -1 and the associative property
   1. -12 · -15
   2. (-4)(-9)
   3. -3(-12)
2. Explain how you would simplify the expression: (-13)(-5)

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| *Master Level* |

1. Determine the product of -32 and -21 by writing a new expression.
2. Which expressions have a product of 40?
3. -5 x -8
4. 10 x -4
5. (-1)(20)(2)
6. (-1)(1)(-40)
7. (-1)(-8)(5)

**INDEPENDENT PRACTICE**

**CFS for top quality work**

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  + The **final answer is clearly labeled**, especially if applying the multiplicative property of -1

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| *Bachelor Level* |

1. Find the products for each expression by rewriting the expression using the multiplicative property of -1 and the associative property
   1. -5 x (-6)
   2. -7(-4)
   3. -9 x (-12)
2. Arnold is teaching his little sister how to multiply negative numbers. What should Arnold say to explain how to multiply two negative numbers?

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1. Which expressions are equivalent to the product of -6 and -9?
2. -54
3. (-1)(54)
4. (-1)(-54)
5. 54
6. (-6)(9)
7. (6)(9)

|  |
| --- |
| *Master Level* |

1. Juan multiplied -2 and -5 and got -10. He said that when you multiply two negatives, your product has to be negative because 2 x 5 = 10 and you have a negative sign left. Is his logic correct? Why or why not?

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1. Which expressions could be used to find the product 96?
2. (-12)(8)
3. (-24)(-4)
4. (-1)(2)(48)
5. (-1)(6)(-16)
6. (-1)(-1)(96)
7. Explain one of the expressions you picked above to explain how it shows a product of 96.

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1. Which expressions have the same product as (-p)(-q) when p and q are positive integers?
   1. pq
   2. –pq
   3. (-p)(q)
   4. (-1)(-p)(q)
   5. (-1)(pq)
   6. (-1)(-pq)

|  |
| --- |
| *PhD Level* |

1. What is the product of -45 and -943
2. a and b are both positive integers, therefore –a and -b are negative integers. Using this, simplify the expression (-a)(-b) and explain.

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1. Jose is thinking of two numbers that have a product of 240. One of the numbers is negative and has a value that is less than -20. What is true about the other number? What could the two factors be? Explain.

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**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**EXIT TICKET**

|  |  |  |  |
| --- | --- | --- | --- |
| Self-assessment | I mastered the learning objective today. | I am almost there. | Need more practice and feedback. |
| Teacher feedback | You mastered the learning objective today. | You are almost there. | You need more practice and feedback. |

* + 1. What is the product of -4 and -9? Show your work using numerical properties and explain in the lines given.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* + 1. Which expressions are equivalent to the product of -a and –b, where a and b are positive integers?
       - 1. a – b
         2. a – (-b)
         3. (1)(ab)
         4. -(ab)
         5. ab
         6. –(-a)(b)