

Math 3

1-6a The Commutativity of Multiplication

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| **Name:** |  | **Date:** |  |

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| **Common Core Standards** | [CCSS.MATH.CONTENT.3.OA.A.1](http://www.corestandards.org/Math/Content/3/OA/A/1/)  Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5 × 7.*  [CCSS.MATH.CONTENT.3.OA.A.3](http://www.corestandards.org/Math/Content/3/OA/A/3/)  Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.  [CCSS.MATH.CONTENT.3.OA.A.4](http://www.corestandards.org/Math/Content/3/OA/A/4/)  Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = \_ ÷ 3, 6 × 6 = ?.*  [CCSS.MATH.CONTENT.3.OA.B.5](http://www.corestandards.org/Math/Content/3/OA/B/5/)  Apply properties of operations as strategies to multiply and divide. *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)* |

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**Commutative Property**



*Mona Lisa by Leonardo da Vinci*

Is it the same image?

Answer: Yes

Why is it the same image?

Answer: The first image is just a reverse of the second.

**Commutative Property**

Situation:

Lisa has 3 necklaces with 9 beads each.

Write the possible expressions of the array above:

**\_ x \_ = \_ x \_**

How many beads are there?

Part A: Write the two possible expressions for the following array models.

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|  |  |  |  |  |  |

x

x

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |

x

x

|  |  |
| --- | --- |
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|  |  |
|  |  |
|  |  |

x

x

Part B: Write a check if the expression is the same as the array model. Otherwise, write the commutative form of the expression.

\_\_\_\_\_\_\_\_ 1. 5 x 2

\_\_\_\_\_\_\_\_ 2. 3 x 4

\_\_\_\_\_\_\_\_ 3. 6 x 3

Part C: Odd Man Out

Cross out the item that does not show the commutativity of multiplication.

1.

**8 x 3**

**3 x 8**

**2 x 3**

2.

**7 x 3**

**3 x 6**

**3 x 7**

3.

**2 x 9**

**2 x 2**

**9 x 2**

4.

**3 x 4**

**4 x 3**

**4 x 4**

5.

**6 x 2**

**5 x 2**

**2 x 5**

6.

**5 x 3**

**3 x 4**

**3 x 5**

7.

**9 x 3**

**2 x 9**

**3 x 9**

**2 x 4**

**8 x 4**

**4 x 2**

8.

**4 x 5**

**5 x 3**

**3 x 5**

9.

**3 x 6**

**6 x 2**

**6 x 3**

10.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **ANSWER KEY** | | |
|  | **Situation 1** | **3 x 9 = 9 x 3**  **27 beads** | |
|  | **Part A:** | **1.**  **3 x 6**  **6 x 3**  **2.**  **2 x 4**  **4 x 2**  **3.**  **2 x 9**  **9 x 2** | |
|  | **Part B:** |  | |
|  |  | **1. ✓** | |
|  |  | **2. 4 x 3** | |
|  |  | **3. ✓** | |
|  | **Part C:** | |  | |
|  | **1.** | | **2 x 3** | |
|  | **2.** | | **3 x 6** | |
|  | **3.** | | **2 x 2** | |
|  | **4.** | | **4 x 4** | |
|  | **5.** | | **6 x 2** | |
|  | **6.** | | **3 x 4** | |
|  | **7.** | | **2 x 9** | |
|  | **8.** | | **8 x 4** | |
|  | **9.** | | **4 x 5** | |
|  | **10.** | | **6 x 2** | |