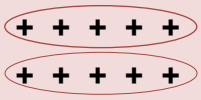
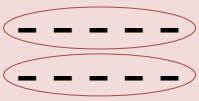
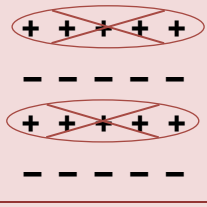
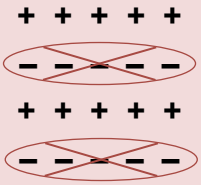
Packet 3: Integer Multiplication and Division

Dear Parents/Guardians,

In Integers: Packet 3, lesson 1, students use counter and temperature change models to develop the rules for multiplying integers. In lesson 2, students use patterns and the inverse relationship between multiplication and division to develop rules for dividing integers. In lesson 3, students review the conventions for order of operations and simplify expressions involving integers (see video link).

Multiplying Integers

Students continue use the counter model (CM) and temperature change model (TC) for multiplying integers to develop rules.

(2) • (5) = 10	(2) • (-5) = -10
	
CM: Place two groups of 5 on the workspace. TC: Put two groups of 5 hot cubes in the liquid.	CM: Place two groups of (-5) on the workspace. TC: Put two groups of 5 cold cubes in the liquid.
(-2) • (5) = -10	(-2) • (-5) = 10
	
Start with two rows of 5 zero pairs (to keep the value 0). CM: Remove two groups of 5 from the workspace. TC: Remove two groups of 5 hot cubes from the liquid.	Start with two rows of 5 zero pairs (to keep the value 0). CM: Remove two groups of (-5) from the workspace. TC: Remove two groups of 5 cold cubes from the liquid.

Relating Multiplication and Division

Students use the relationship between multiplication and division to develop rules for signed division.

	Multiplication Fact	Corresponding Division Facts
a.	(5) • (4) = 20	20 ÷ 4 = 5 20 ÷ 5 = 4
b.	(5) • (-4) = -20	-20 ÷ (-4) = 5 -20 ÷ 5 = -4
c.	(-5) • (4) = -20	-20 ÷ 4 = -5 -20 ÷ (-5) = 4
d.	(-5) • (-4) = 20	20 ÷ (-4) = -5 20 ÷ (-5) = -4

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INTEGERS PACKET 3

By the end of the packet, your student should know…

- How to represent integer multiplication using the counter and temperature change models Lesson 3.1
- How to use the inverse relationship between multiplication and division to establish rules for dividing integers Lesson 3.2
- How to solve problems involving multiplication and division Lessons 3.1and 3.2
- How to use the order of operations conventions to simplify integer expressions Lesson 3.3

Additional Resources

- For definitions and additional notes please refer to section 3.5.
- For videos on using order of operations:
  http://www.mathtv.com/#
  1) Click on Basic Math; Whole Numbers; Exponents and Order of Operations
  2) Click on Algebra; Simplifying Expressions; with numbers only
- Multiplying Integers with counters:
  http://youtu.be/4yTtkRVLUwo