

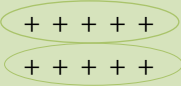
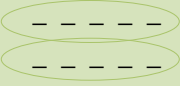
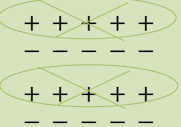
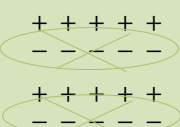
Packet 5: Rational Numbers: Multiplication and Division Part 1

Dear Parents/Guardians,

Packet 5 continues with the counter and temperature change models to develop the rules for integer multiplication rules, and then extends these rules to all rational numbers using number lines. Students use patterns and the inverse relationship between multiplication and division to develop rules for dividing rational numbers.

Multiplication Models

Students will continue exploring the counter model (CM) and temperature change model (TC) for multiplication of integers to develop rules for multiplying signed numbers.

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



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

How to represent integer multiplication using the counter and temperature change models Lesson 5.1

How to use the inverse relationship between multiplication and division to establish rules for dividing integers Lesson 5.2

How to solve problems involving multiplication and division Lessons 5.1, 5.2, and 5.3

Additional Resources

Resource Guide, Part 1, Pages 31-32, 38-40

<https://youtu.be/MuZ3Y3PYv2U>

<https://youtu.be/Yhoz1g35alw>

Relating Multiplication and Division

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

Multiplication Fact		Corresponding Division Facts
a. $(5) \cdot (4) = 20$	↗ ↘	$(20) \div (4) = 5$ $(20) \div (5) = 4$
b. $(4) \cdot (-3) = -12$	↗ ↘	$(-12) \div (4) = \underline{-3}$ $(-12) \div (-3) = 4$
c. $(-4) \cdot (2) = -8$	↗ ↘	$(-8) \div (2) = \underline{-4}$ $(-8) \div (-4) = 2$
d. $(-3) \cdot (-2) = 6$	↗ ↘	$(6) \div (-3) = \underline{-2}$ $(6) \div (-2) = -3$