Mini Lesson #4 - Multiplying and Dividing Integers

- How can you model $3 \cdot 4$? $= 12$ $3+3+3+3$
- How can you model $-3 \cdot 4$? $= -12$ $-3+-3+-3+-3 = -12$
- Is 4×-3 the same as $-3 \cdot 4$? Why?

$4 \cdot -3 = -3 \cdot 4$

$-12 = -12$

Complete the charts. Look for PATTERNS!

CHART 1	
4 • 5	20
4 • 4	16
4 • 3	12
4 • 2	8
4 • 1	4
4 • 0	0
4 • -1	-4
4 • -2	-8
4 • -3	-12
4 • -4	-16

$4 \cdot -9 = -36$

CHART 2	
-4 • 5	-20
-4 • 4	-16
-4 • 3	-12
-4 • 2	-8
-4 • 1	-4
-4 • 0	0
-4 • -1	4
-4 • -2	8
-4 • -3	12
-4 • -4	16

$-7 \cdot -6 = 42$

CHART 3	
20 ÷ 4	5
16 ÷ 4	4
12 ÷ 4	3
8 ÷ 4	2
4 ÷ 4	1
0 ÷ 4	0
-4 ÷ 4	-1
-8 ÷ 4	-2
-12 ÷ 4	-3
-16 ÷ 4	-4

$5 \cdot -7 = -35$ $-8 \cdot 3 = -24$

- Can you write the multiplication problems below as two different division problems?

$4 \cdot -2 = -8$

$-8 \div -2 = 4$ OR $-8 \div 4 = -2$

$4 \cdot -3 = -12$

$-12 \div 4 = -3$ OR $-12 \div -3 = 4$

- So based on what you did above fill in the problems below

$-20 \div 4 = -5$ $-20 \div -5 = 4$

$-15 \div 3 = -5$ $-15 \div -3 = 5$

- Based on patterns and observations you made in the previous work in Mini Lesson #4 try to formulate rules/statements for multiplying and dividing integers. Make sure you address all possible situations.

Rules for Multiplying Integers	Rules for Dividing Integers
Like signs $(\frac{+}{-}\ \frac{+}{-})$ • mult • positive answer Unlike sign $(\frac{+}{-}\ \frac{-}{+})$ • mult • neg. answer	Same as mult. just ÷ numbers

- Use your rules to simplify the following problems.

1) $5 \bullet -7 = -35$

2) $-4 \bullet -9 = 36$

3) $-63 \div -7 = 9$

4) $-50 \div 10 = -5$

5) $-4 \bullet -5 \bullet -6$
$20 \cdot -6 = -120$

6) $-100 \div -10 = 10$

7) $-8 \bullet 4 \bullet -2$
$-32 \cdot -2 = 64$

8) If a drill could dig into the ground and go down 5 feet every minute, how far down could you drill in 10 minutes? What integer could represent the depth after the 10 minutes? $-5 \cdot 10 = -50$