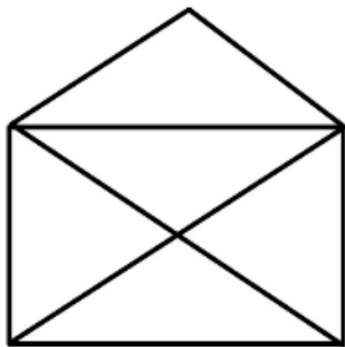


# SEPTEMBER 16, 2014 <sup>5<sup>TH</sup></sup> <sub>6<sup>TH</sup></sub>

STARTER

How many different ways can you trace the image below with one continuous line that doesn't retrace any lines?



At least  
10 ways  
to get a ②

## 9/16 - Multiplying Integers

*"Multiplication is repeated addition."*

Discuss with your partner why it is true and be ready to share.

$4 \times 6$  means four 6's added up

Numerical example:

$$\begin{aligned} 3 \times 2 &= 3 + 3 \\ &= 2 + 2 + 2 \end{aligned}$$

## Integer counters



$$3 \times 2 = \begin{array}{ccccccc} \text{+} & \text{+} & + & \text{+} & \text{+} & + & \text{+} & \text{+} \\ = 6 & = & \text{+} & \text{+} & \text{+} & + & \text{+} & \text{+} & \text{+} \end{array}$$

$$\begin{array}{l} 3 \times (-2) \\ \text{sets} \end{array} = \begin{array}{ccccccc} \text{-} & \text{-} & + & \text{-} & \text{-} & + & \text{-} & \text{-} \\ = -6 \end{array}$$

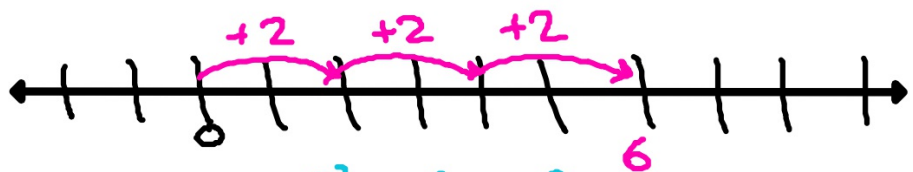
$$2 \times (-3) = \begin{array}{ccccccc} \text{-} & \text{-} & \text{-} & + & \text{-} & \text{-} & \text{-} \end{array}$$

$$4 \times (-3) = -12$$

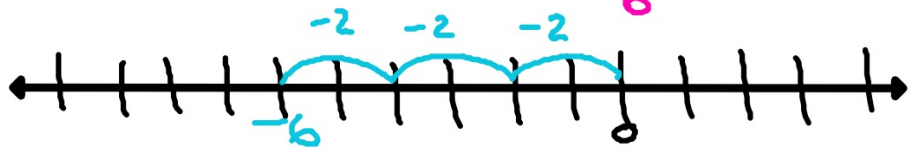
$$\begin{array}{ccccccc} \text{-} & \text{-} & \text{-} & + & \text{-} & \text{-} & \text{-} & + & \text{-} & \text{-} & \text{-} & + & \text{-} & \text{-} & \text{-} \end{array}$$

## Numberlines

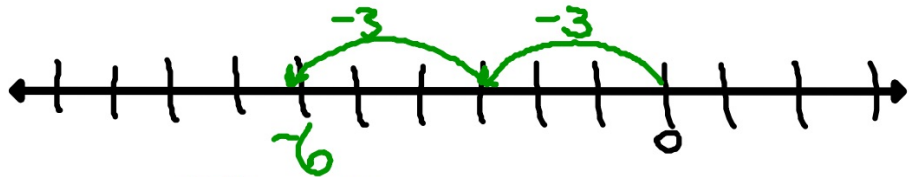
$3 \times 2$   
3 hops 2 spaces



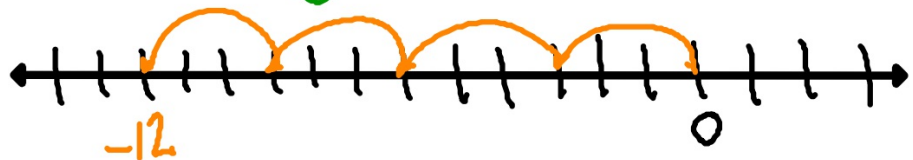
$3 \times (-2)$   
3 hops 2 left



$2 \times (-3)$   
2 hops 3 left



$4 \times (-3)$



## Patterns

Work with a partner. Use a table to find  $-3 \bullet 2$ .

Describe the pattern of the products in the table. Then complete the table.

2	•	2	=	4
1	•	2	=	2
0	•	2	=	0
-1	•	2	=	-2
-2	•	2	=	-4
-3	•	2	=	-6

*Counting down by 1's* (written vertically on the left side of the table)

*Count down by 2's* (written vertically on the right side of the table)

$$-3 \bullet 2 = \underline{\hspace{2cm}}$$

Work with a partner. Use a table to find  $-3 \cdot (-2)$ .

Describe the pattern of the products in the table. Then complete the table.

-3	3	= -9
-3	2	= -6
-3	1	= -3
-3	0	= 0
-3	-1	= 3
-3	-2	= 6

negative  $\times$  negative  
= positive

$$-3 \cdot (-2) = \underline{6}$$



+ -



### RULES

Person	Act	Result
+	×	+
Batman	\$	Good
+	×	-
Batman	Hit by a truck	Bad
-	×	-
Joker	\$	Bad
-	×	+
Joker	Hit by a truck	Good!

$$-3 \cdot 4 = -12$$

$$-2 \cdot -5 = 10$$

**HOMEWORK**  
Yellow WS5

**DUE** Today?