Names (pair) _____ Date _____

Multiplying Two Negative Numbers

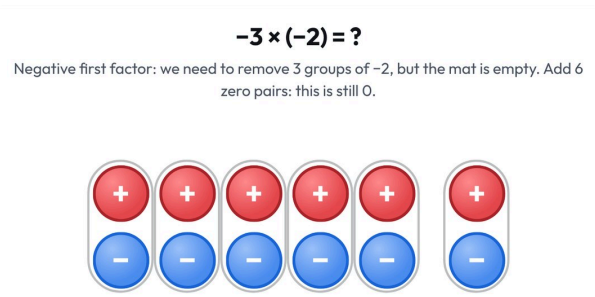
1 IN PAIRS **A pattern.** Complete the tables. How does the product change when the first factor goes down by 1? Continue the same pattern below zero.

$3 \times (-2)$	-6
$2 \times (-2)$	-4
$1 \times (-2)$	
$0 \times (-2)$	
$(-1) \times (-2)$	
$(-2) \times (-2)$	
$(-3) \times (-2)$	

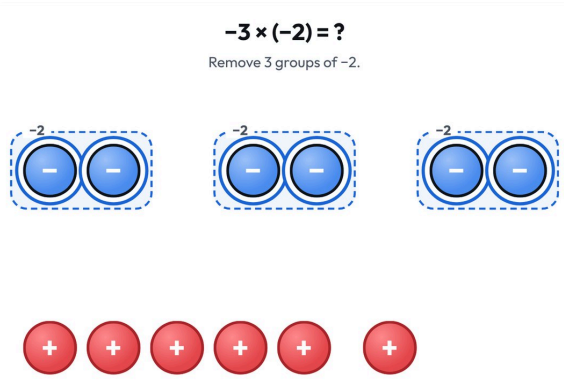
$3 \times (-5)$	-15
$2 \times (-5)$	-10
$1 \times (-5)$	
$0 \times (-5)$	
$(-1) \times (-5)$	
$(-2) \times (-5)$	
$(-3) \times (-5)$	

What do you notice? What is the product of two negative numbers like?

2 IN PAIRS **With counters.** $(-3) \times (-2)$ means: **remove** 3 groups of (-2). The mat is empty, so first we add zero pairs.



1. add 6 zero pairs (the value is still 0)



2. remove 3 groups of (-2)

Which counters are left on the mat? _____ $(-3) \times (-2) =$ ____

Why did we need zero pairs?

Names (pair) _____ Date _____

Remember

The product of two negative numbers is **positive**: $(-3) \times (-2) = 6$. Signs of a product: $(+) \times (+) = +$, $(+) \times (-) = -$, $(-) \times (+) = -$, $(-) \times (-) = +$. With an even number of negative factors the product is positive; with an odd number, negative.

3 ON YOUR OWN Work out.

$(-4) \times (-5) =$ ☐ $(-7) \times (-1) =$ ☐

$(-3) \times (-3) =$ ☐ $(-10) \times (-6) =$ ☐

$(-2) \times (-2) \times (-2) =$ ☐ $(-1) \times (-1) \times (-1) \times (-1) =$ ☐

4 ON YOUR OWN **Without calculating**, decide the sign of the product. How many negative factors are there?

$(-3) \times 4 \times (-2) \times (-1)$	negative: ☐	sign: ☐
$(-5) \times (-5) \times 7$	negative: ☐	sign: ☐
$2 \times (-1) \times 3 \times (-4) \times (-6) \times (-8)$	negative: ☐	sign: ☐

5 IN A GROUP CHALLENGE **A proof.** Complete the calculation. We use only the distributive law and the fact that a product with zero is 0.

$$0 = (-1) \times 0 = (-1) \times (1 + (-1)) = (-1) \times 1 + (-1) \times (-1) = -1 + (-1) \times (-1)$$

Which number added to -1 gives 0? So $(-1) \times (-1) =$ ☐

The Counters app · otooly.com/counters

Operations mode: enter -3, choose $\times$ and enter -2. Step through. Try $(-3) \times 2$ too.

★ ON YOUR OWN **Exit card.** $(-6) \times (-7) =$ ☐ $(-2) \times 5 \times (-3) =$ ☐