Aim: How can we review multiplying & dividing integers?

DO NOW:

Evaluate each of the following expressions.

a.) -5 + 10
5

b.) -12 + 15
3

c.) -15 - 3
$-15 + -3 = -18$

d.) 9 - (-2)
$9 + 2 = 11$

e.) -13 - (-4)
$-13 + 4 = -9$

f.) $-4(3) = -12$

Multiplying Integers

Rule: When multiplying 2 integers with different signs, the product will be negative

Ex 1) -15×3
-45

2) $5 \times (-6)$
-30

3) $18 \times (-2)$
-36

Rule: When multiplying 2 integers with same signs, the product will be positive

Ex: 1) $-9 \times (-3)$
27

2) -14×-5
70

3) $-4 \times (-24)$
96

Dividing Integers

Rule: When Multiplying 2 integers will different signs, the answer will be negative. Rule: When multiplying 2 integers with the same signs, the answer will be positive.

Ex: 1) $-9 \div (-3)$
3

2) $-14 \div 7$
-2

3) $-81 \div 9$
-9

Tic Tac Toe

+	−	−
−	+	−
−	−	+

Find the product or quotient.

a) 25(-5)

-125

b) -9(-4)

36

c) -24 ÷ 3

-8

d) -120 ÷ -8

15

e) -240 ÷ 20 ÷ (-4)

-12 ÷ -4

3

Critical Thinking

a) Analyze the table below. What can you say about the sign of the product of more than two integers?

Expression	Number of integers	Product	Sign of product
−1(−2)	2 ?	? 2	? +
−1(−2)(−3)	3 ?	? 6	? −
−1(−2)(−3)(−4)	4 ?	? 24	? +
−1(−2)(−3)(−4)(−5)	5 ?	? 120	? −

Conclusion: The product of an even amount of integers will be positive and an odd amount of integers will be negative.

For each question below, answer positive, negative, or zero.

b) The product of two negative integers is positive.

c) The absolute value of zero is zero.

d) The sum of two integers that are opposites is zero.

e) The sum of two negative integers is negative.

f) The quotient of a positive integer and a negative integer is negative.

Connections / Challenge

1) **Error analysis.** Describe and correct the error in multiplying -5 and -12, then dividing by -4.

$-5(-12)$ should be a positive 60. Then $60 \div -4 = \boxed{-15}$

2) What is the value of x^2 if $x = -2$?

$(-2)^2 = (-2)\cdot(-2) = 4$ ✓ $\frac{-5(-12)}{-4} = \frac{-60}{-4} = 15$ ✗

3) What about $-x^2$?

$-(-2)^2 = -(4) = \boxed{-4}$

The TAKE AWAY

When multiplying or dividing integers, we must remember:

- **SAME SIGNS:** positive product/quotient
- **DIFFERENT SIGNS:** negative product/quotient