

Warm Up Grade 8

Sept. 8, 2017

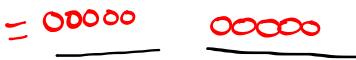


copy off the board

Use tiles to show the following products:

a)  $(+2) \times (-5)$

put down 2 groups of -5



$-10$

b)  $(-6) \times (-3)$

remove 6 groups of zero pairs



model answer



$= +18$

Page 68-69 #5, #6, #7, #8, #9(a,b,c,d), #10(a,b,c,d), #11(a,c,e), #12, #13, #14, #17(a,b), #20(a)

# Textbook

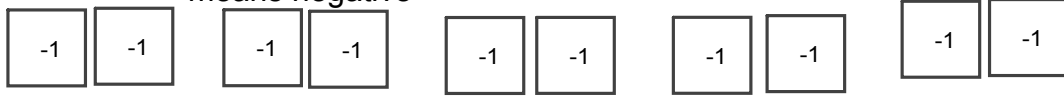
deposit, Yellow, Shaded = +  
Withdraw, Red, UNShaded = -



9a) 5 sets of 2 red tiles  $(+5) \times (-2)$



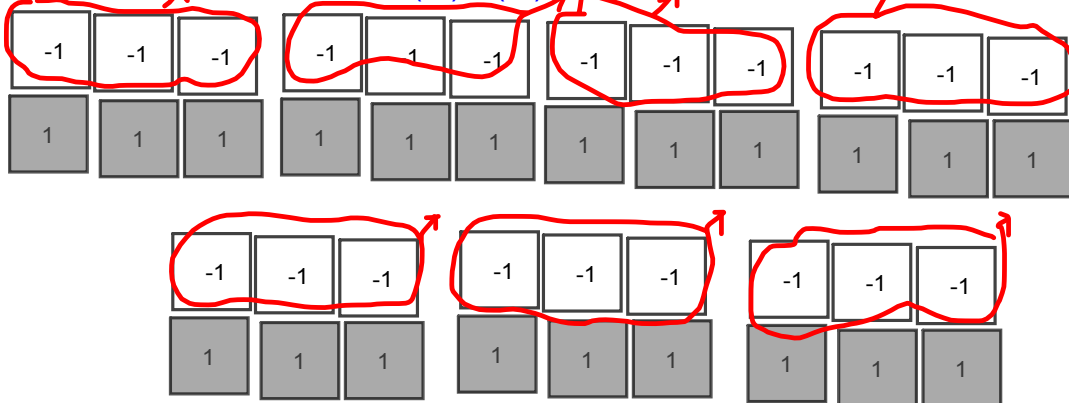
means negative



9b) Deposits 5 sets of 2 yellow tiles  $(+5) \times (+2)$

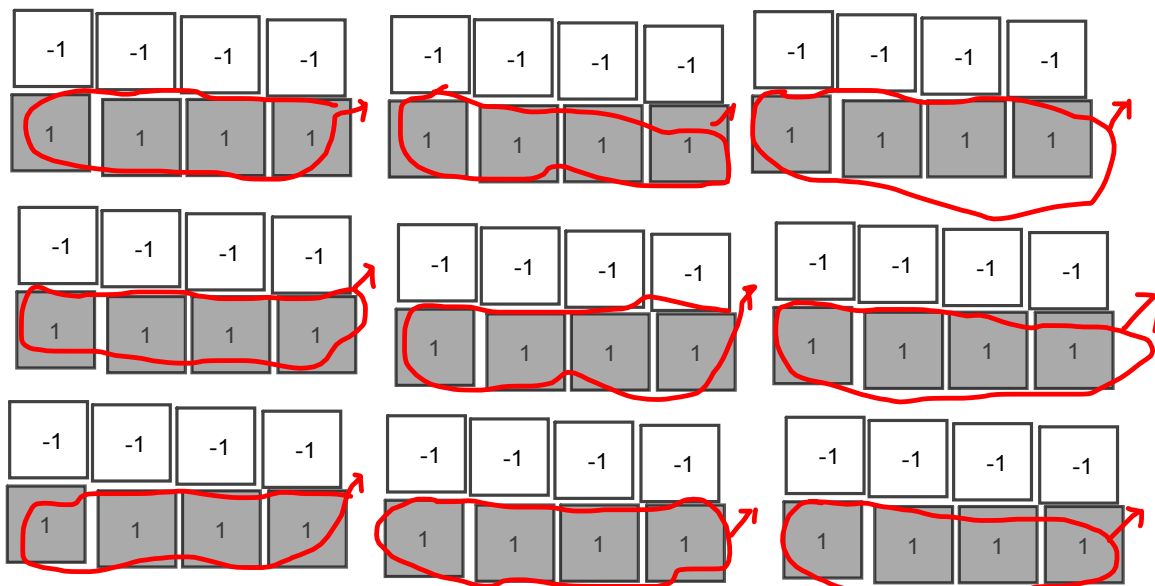


9c) Withdraw 7 sets of 3 red tiles  $(-7) \times (-3)$




9d) Withdraw 9 sets of 4 yellow tiles

$$(-9) \times (+4)$$

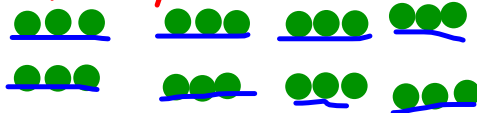


Page 68-69 #5, #6, #7, #8, #9(a,b,c,d), #10(a,b,c,d), #11(a,c,e), #12, #13, #14, #17(a,b), #20(a)

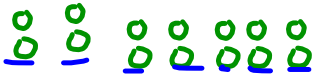
😊 a)  $(+1) \times (+5) = +5$



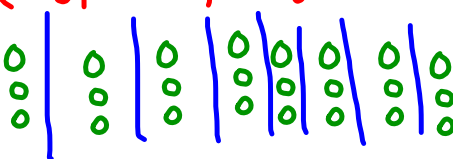
b)  $(+8) \times (+3) = +24$



😊 c)  $(+1) \times (-2) = -14$

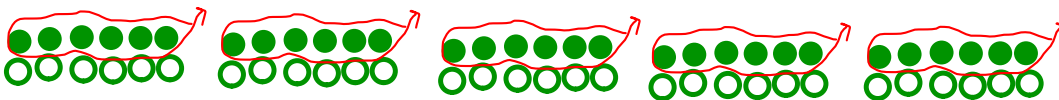


d)  $(+8) \times (-3) = -24$



● ○

e)  $(-5) \times (+6) = -30$



f)  $(-4) \times (-8) = +32$

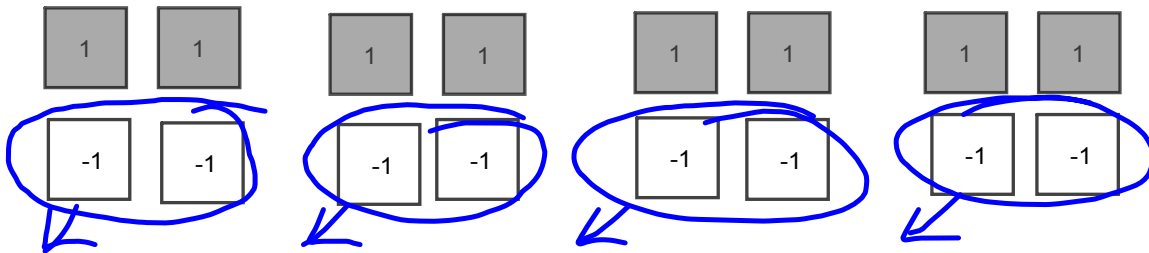


pg. 68 # 11-20

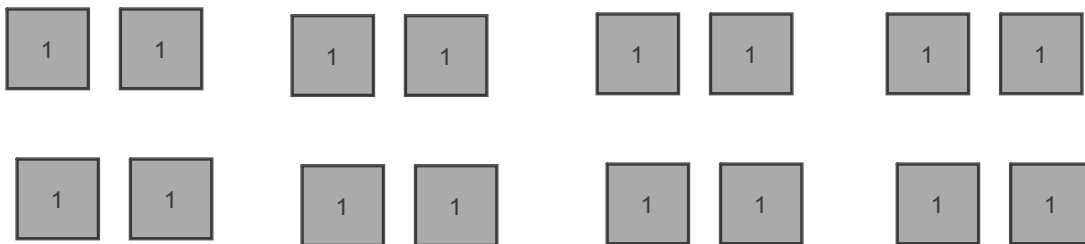
$(+4) \times (+2) = +8$



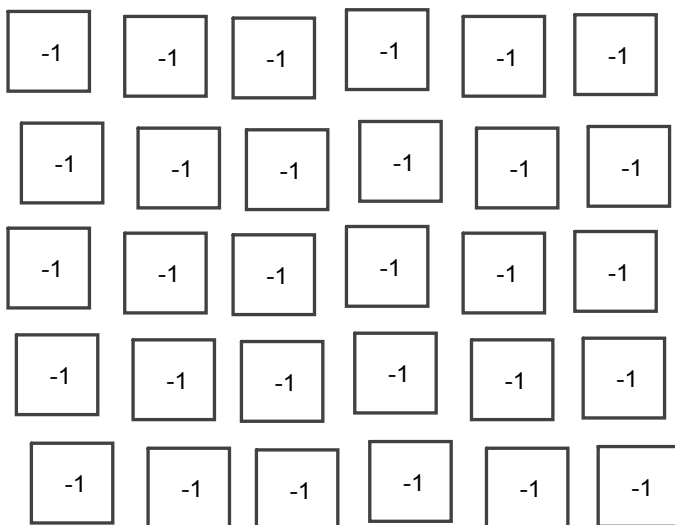
b)  $(-4) \times (-2) = +8$



c)  $(+2) \times (+8) = +16$



d)  $(+5) \times (-6)$



$= -30$

e)  $(-4) \times (+6)$

=

- 24

= -24

-1

f)  $(-7) \times (-3)$

= +21

Page 68-69 #5, #6, #7, #8, #9(a,b,c,d), #10(a,b,c,d), #11(a,c,e), #12, #13, #14a, #17(a,b), #20(a)

😊 12)  $(+2) \times (+9) = (+18)$  It rose a total of  $18^\circ$

😊 13)  $(-3) \times (+11) = (-33)$  It drained 33 cm in 11 hours

✖ 14) Ted spend \$6 a day for 8 days. How much did he spend?

$(+8) \times (-6) = (-48)$

😊 17a)  $(-5) \times (+8) = (-40)$  He will have \$40 less

$(-5) \times (-2) = +10$

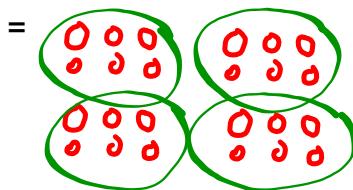
😊 17b)  $(+5) \times (+2) = (+10)$  He had \$10 more

*didn't spend (+5)*

😊 20a)  $(+3) \times (-2) \times (+4)$

$= \begin{array}{|c|c|c|} \hline \circ & \circ & \circ \\ \hline \circ & \circ & \circ \\ \hline \end{array} \times (+4)$

$(+3) \times (-2) \times (+4)$   
 $(-6) \times (+4)$

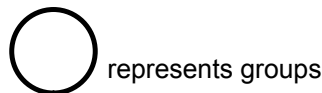


$-24$

$= (-24)$



Multiplying Integers



- Positive x Positive → Positive
- Positive x Negative → Negative
- Negative x Positive → Negative
- Negative x Negative → Positive

$(+)(+) \Rightarrow +$   
 $(-)(-) \Rightarrow +$   
 Sign same

*Sign different*  
 $(+)(-) = -$   
 $(-)(+) = -$

As a result, the properties that we have for multiplying whole numbers also apply to integers.

Multiplying by 0 (Zero Property)

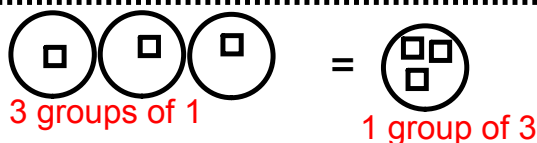
$3 \times 0 = 0$  and  $0 \times 3 = 0$   
 so  $-3 \times 0 = 0$  and  $0 \times -3 = 0$



That is that anything multiplied by 0 will give the answer 0.

Multiplying by 1 (Multiplicative Identity)

$3 \times 1 = 3$  and  $1 \times 3 = 3$   
 so  $-3 \times 1 = -3$  and  $1 \times -3 = -3$

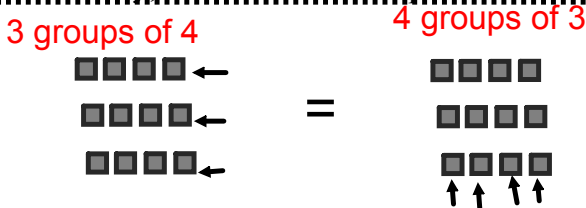


That is that anything that is multiplied by 1 results in the number itself.

Since multiplying by 1 does not change the identity, we call 1 the multiplicative identity.

Commutative Property

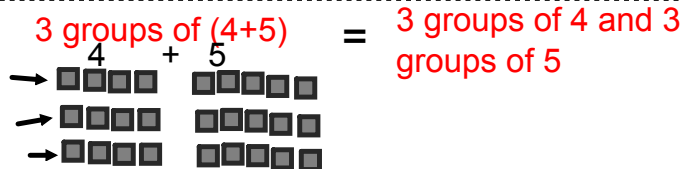
$3 \times 4 = 12$  and  $4 \times 3 = 12$   
 so  $-3 \times 4 = -12$  and  $4 \times (-3) = -12$



That is you can multiply in any order.

Distributive Property

$3 \times (4 + 5) = 3 \times 4 + 3 \times 5$   
 so  $3 \times (-4 + -5) = 3 \times (-4) + 3 \times (-5)$



That is everything inside the bracket must be multiplied by the number outside the bracket.

Example)

Use the rules just discussed to find the PRODUCT of each:

a)  $(-6) \times (+5)$

$$= -30$$

b)  $(-10) \times (-7)$

*same*

$$= +70$$

c)  $(+3) \cdot (+6)$

*same*

$$= +18$$

*dot or nothing  
it means  
"times"*



## Box Method

Example) Use the expanded form of the distributive property to find:

a)  $(+30) \times (-56)$

$$\begin{aligned} &= 30 \overbrace{(-50 + -6)} \\ &= 30(-50) + (30)(-6) \\ &= (-1500) + (-180) \\ &= -1680 \end{aligned}$$

b)  $(+20) \times (+15)$

$$\begin{aligned} &20 \overbrace{(10 + 5)} \\ &(20)(10) + (20)(5) \\ &200 + 100 \\ &+ 300 \end{aligned}$$

Example) Find the product of  $(-25) \times (-48)$

↑ ↑  
same answer ⊕

Multiply as if they were positive (worry about sign last)

$$(25) \times (48) = (20 \times 40) + (5 \times 40) + (20 \times 8) + (5 \times 8)$$

$$\overset{(20+5)}{\underbrace{\quad}} \overset{(40+8)}{\underbrace{\quad}} = 800 + 200 + 160$$

$$= 1200$$

without calculators

Use the rectangle box to help

	20	5	
40	20 x 40 = 800	5 x 40 = 200	800 200 160 + 40 ----- 1200
8	8 x 20 160	8 x 5 40	

Integers have the \_\_\_\_\_ so the answer is \_\_\_\_\_

$$(-25) \times (-48) = +1200$$

# Class/Homework

Page 73

~~#3 (a,b,c,d)~~

#4 (a,b,c,d,e,f,g,h,i,j)

#6 (a,c,d) USE distributive Property

#7 (b,f) Use The Distributive Property

#8 (a,b,g,h)

} show work  
*Box Method  
No  
Calculator*

1/24

Quiz Tuesday, so study rules and properties

30 x 15

