

### Warm Up Grade 8

Sept. 13, 2016



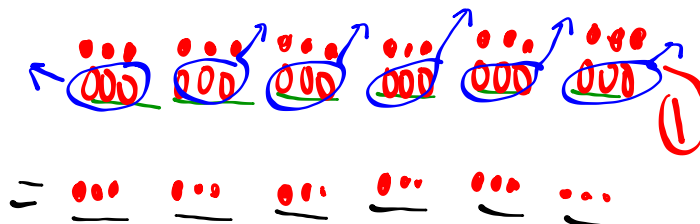
4

Use tiles to show the following products:

a)  $(+2) \times (-5) = \boxed{-10}$  (1)



b)  $(-6) \times (-3) = \boxed{+18}$  (1)



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)

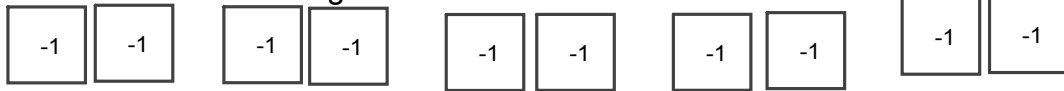
# Textbook

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



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

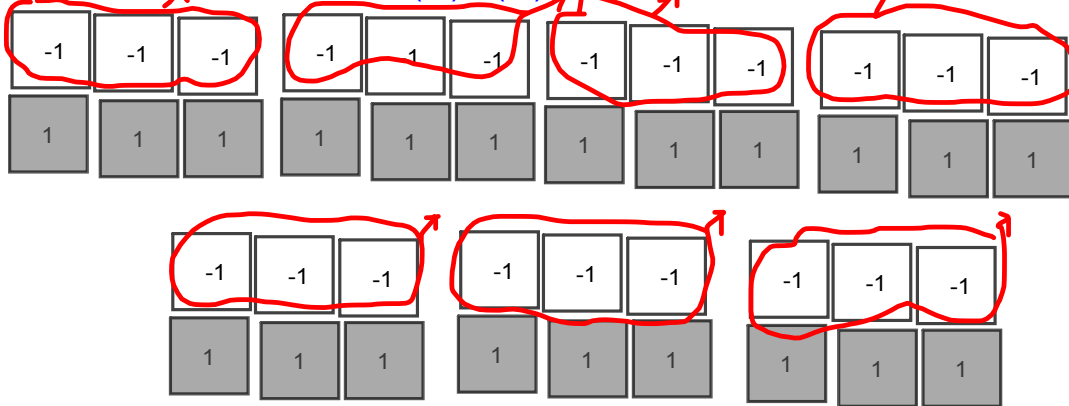
means negative



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

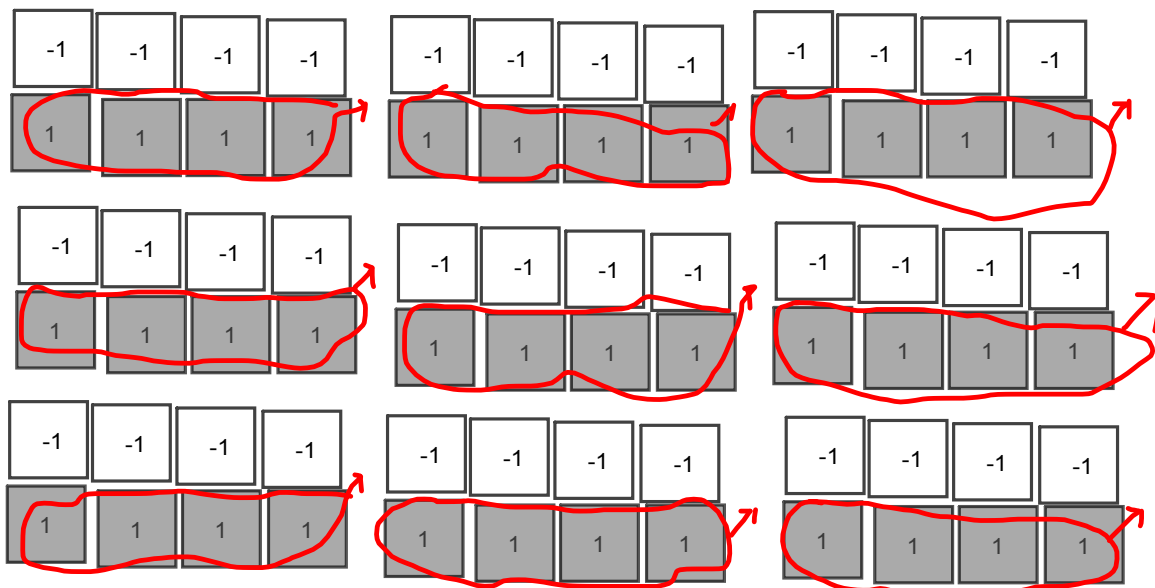


9c) Withdraw 7 sets of 3 red tiles  $(-7) \times (-3)$



9d) Withdraw 9 sets of 4 yellow tiles

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

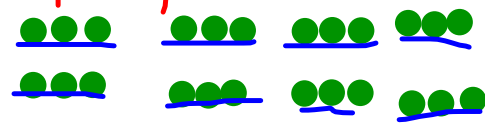


Page 68-69 #5, #6, #7, #8, #9(a,b,c,d), #10(a,b,c,d), #11(a,c,e), #12, #13, #14, #17(a,b), #20(a)

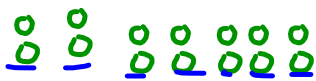
10 a)  $(+1) \times (+5) = +5$



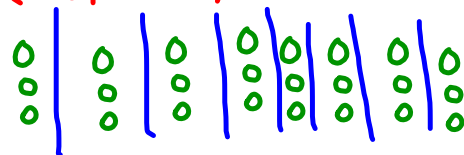
b)  $(+8) \times (+3) = +24$



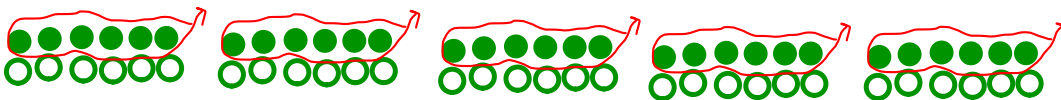
c)  $(+1) \times (-2) = -14$



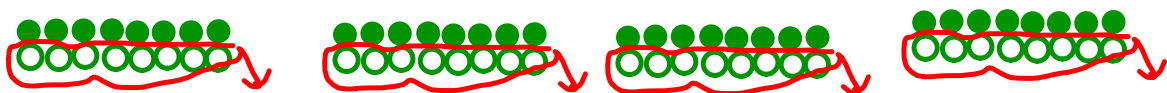
d)  $(+8) \times (-3) = -24$



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



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

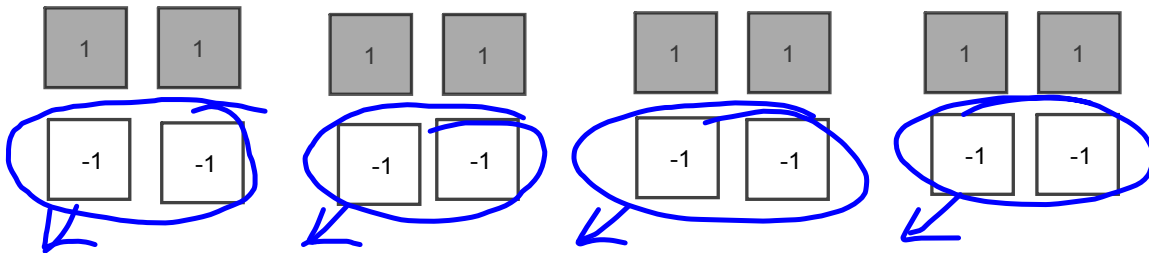


pg. 68 # 11-20

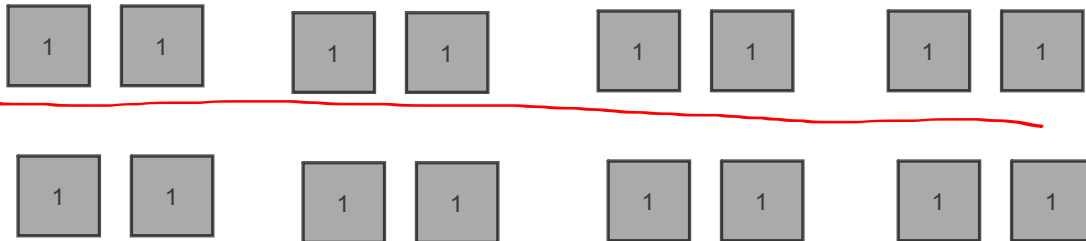
\* 11a)  $(+4) \times (+2) = +8$



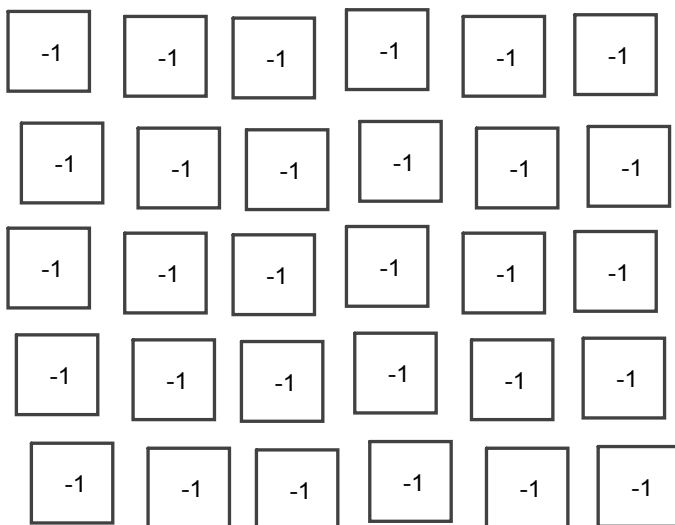
b)  $(-4) \times (-2) = +8$



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

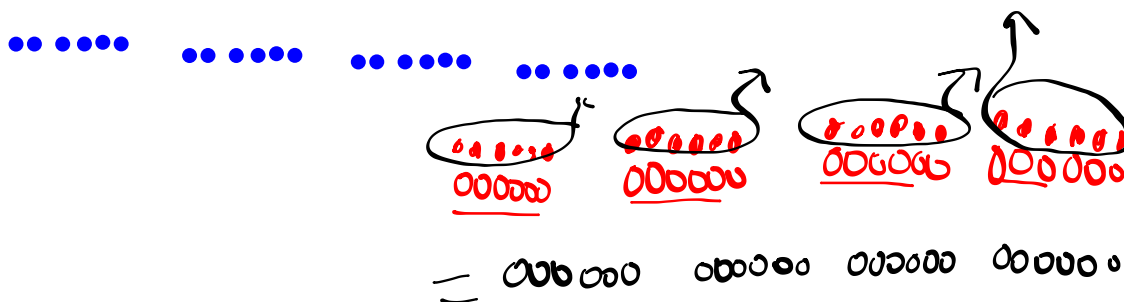


d)  $(+5) \times (-6)$



$= -30$

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



= -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)

x 12)  $(+2) \times (+9) = (+18)$  It rose a total of 18°

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

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



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

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

x 17b)  $(+5) \times (+2) = (+10)$  He had \$10 more didn't spend (+5)

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

=  $\underbrace{(+3) \times (-2)}_{(-6)} \times (+4)$

=   


= (-24)

Key is to do one operation at a time

$(+3) \times (-2) \times (+4)$   
 $(-6) \times (+4)$   
 $-24$

$$12. (+9) \times (+2) = +18$$

The temp. rose  $18^{\circ}$

$$13. (-3) \times (+11) = -33$$

The water dropped 33cm

$$14. (+8) \times (-6)$$

8 people each took 6 candy from of dish. What was the total change of candy from the dish.

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

15. Model  $(-7) \times (-8)$

→ use tile. Put down 7 sets of 8 zeroes (a positive and a negative), then take away 7 sets of 8 negative.

16.  $(+4) \times (-4) = -16$

she went back 16 spaces

17.  $(+8) \times (-5) = -40$

He will have 40 less dollars.

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

2 weeks ago he had \$10 more.



$$18. \text{ a) } -4 \times (+10) = -40$$

$$\text{ b) } (-3) \times (-4) = +12$$

c) You can find the answer by multiplying.

19. I owe \$7 to each of 6 friends  
How much money do I owe?

$$20 \text{ a) } (+3) \times (-2) \times (+4) \\ -6 \times (+4) \\ -24$$

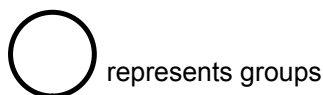
$$\text{ b) } (-5) \times (-1) \times (+3) \\ +5 \times (+3) \\ +15$$

$$\text{ c) } (-5) \times (-2) \times (-3) \\ +10 \times (-3) \\ -30$$

$$\text{ d) } (+2) \times (-3) \times (-6) \\ -6 \times (-6) \\ +36$$



Multiplying Integers



We have seen that multiplying integers is very similar to multiplying whole numbers, you just have to be careful with the signs:

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

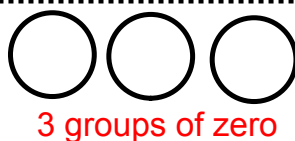
$(+)(+) = (+)$   
 $(-)(-) = (+)$   
 Signs are the same the (+)

$(+)(-) = (-)$   
 $(-)(+) = (-)$   
 different signs

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

Multiplying by 0 (Zero Property)

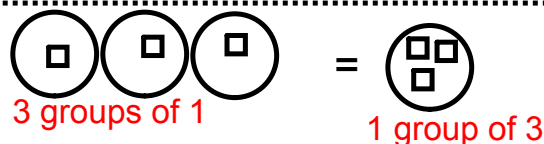
$3 \times 0 = 0$  and  $0 \times 3 = 0$   
 so  $-3 \times 0 = 0$  and  $0 \times -3 = 0$



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

Multiplying by 1 (Multiplicative Identity)

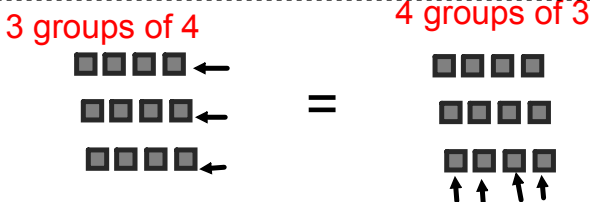
$3 \times 1 = 3$  and  $1 \times 3 = 3$   
 so  $-3 \times 1 = -3$  and  $1 \times -3 = -3$



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

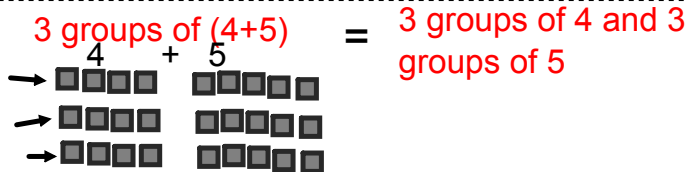
$3 \times 4 = 12$  and  $4 \times 3 = 12$   
 so  $-3 \times 4 = -12$  and  $4 \times (-3) = -12$



That is you can multiply in any order.

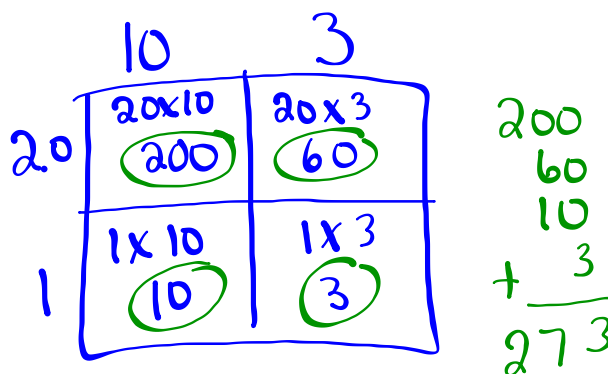
Distributive Property

$3 \times (4 + 5) = (3 \times 4) + (3 \times 5)$   
 $3 \times 9 = 12 + 15$   
 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.

$(10+3) \times (20+1)$   
 $13 \times 21$   
 $= 273$



Example)

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

$$\text{a) } (-6) \times (+5) \\ = \boxed{-30}$$

$$\text{b) } (-10) \times (-7) \\ = \boxed{+70}$$

$$\text{c) } (+3) \times (+6) \\ = \boxed{+18}$$

## Box Method

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

Must Show

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

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

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

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

10	20
	10 x 20 = 200
5	5 x 20 = 100

Total  
200  
+100

$$(+20) \times (+15) = 300$$

	(-50)	(-6)
(+30)	(+30) x (-50) -1500	(-6) x (+30) -180

$$\begin{aligned} & -1500 \\ & + -180 \\ & \hline & -1680 \end{aligned}$$

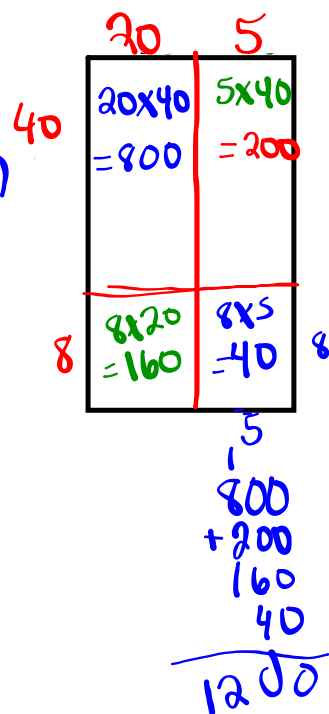
Example) Find the product of  $(-25) \times (-48) = +$

without calculators

Use the rectangle box to help

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

$$\begin{aligned} (25) \times (48) &= (20+5) \times (40+8) \\ &= (20 \times 40) + (5 \times 40) + (8 \times 20) + (8 \times 5) \\ &= 800 + (200) + 160 + (40) \\ &= 1200 \end{aligned}$$



Integers have the same sign so the answer is +

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

# Class/Homework

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#3 (a,b,c,d) *1min*

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

*X* #6 (a,c,~~b~~,~~d~~) USE distributive Property } show work  
 #7 (b,~~c~~,~~d~~) Use The Distributive Property }

#8 (a,b,g,h) *1min*

*/22*

Quiz \_\_\_\_\_, so study rules and properties

3a)  $(-b) \times (+2) = -12$   
 b)

4a)  $(+8)(-3) = -24$   
 b)