

Warm Up Grade 8

Shaded  $\Rightarrow (+)$   
 unshaded  $\Rightarrow (-)$



Use tiles to show the following products:

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

Put  
down



b)  $(-6) \times (-3) = (+18)$

take  
away



Redraw answer



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 = -



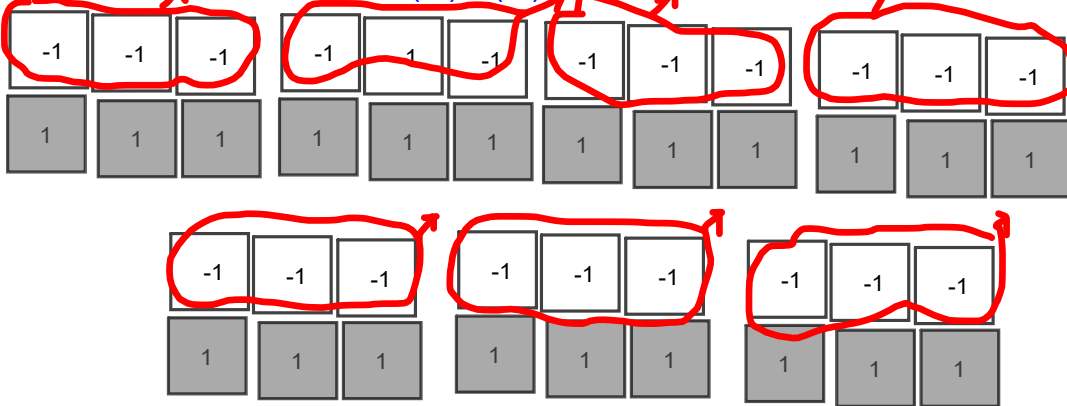
9a) 5 sets of 2 red tiles  $(+5) \times (-2)$



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

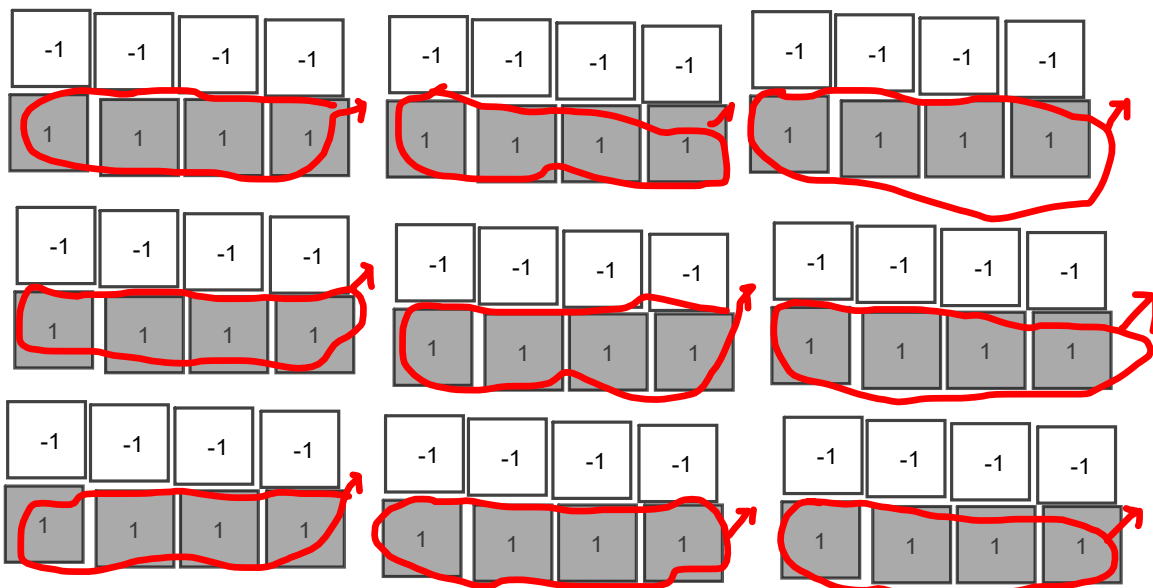


9c) Withdraw 7 sets of 3 red tiles  $(-7) \times (-3)$



9d) Withdraw 9 sets of 4 yellow tiles

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

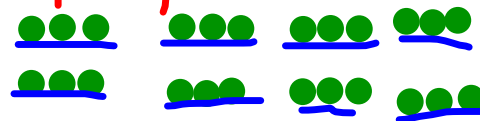


Page 68-69 #5, #6, #7, #8, #9(a,b,c,d), #10(a,b,c,d), #11(a,c,e), #12, #13, #14, #17(a,b), #20(a)

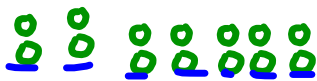
10 a)  $(+1) \times (+5) = +5$



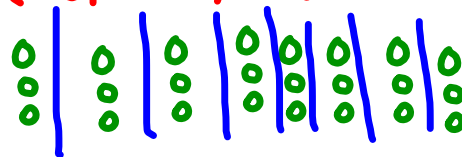
b)  $(+8) \times (+3) = +24$



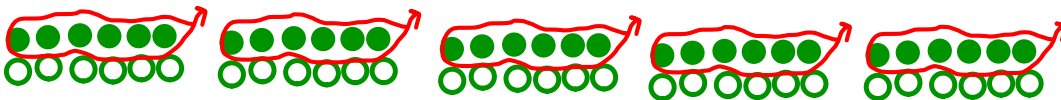
c)  $(+1) \times (-2) = -14$



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



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



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

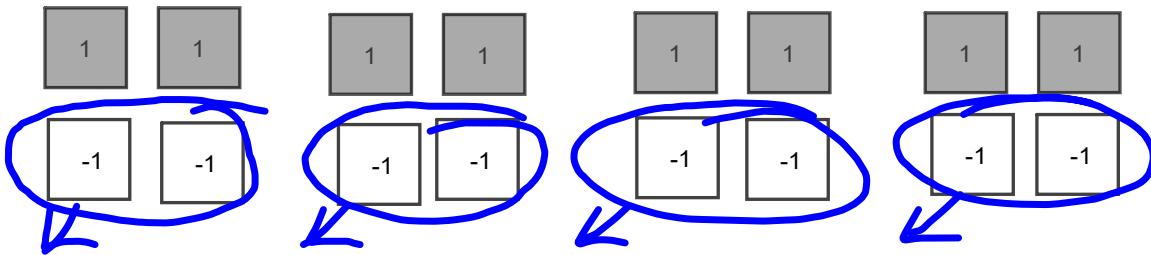


pg. 68 # 11-20

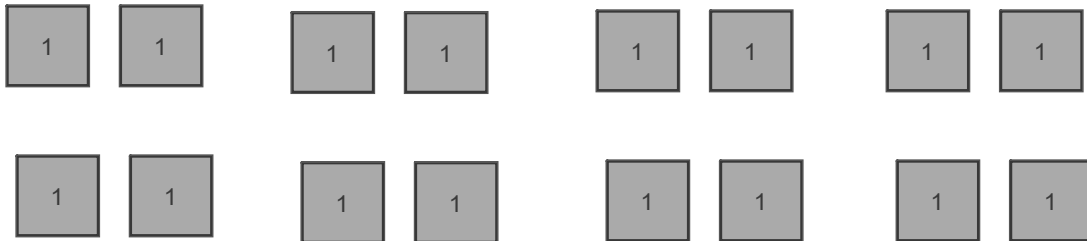
\* 11a)  $(+4) \times (+2) = +8$



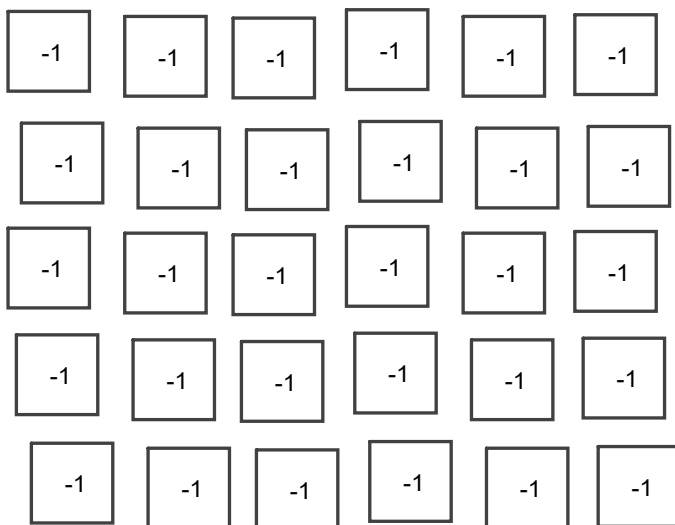
b)  $(-4) \times (-2) = +8$



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



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



$= -30$

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

=

$$= -24$$

-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

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

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

=  $\underbrace{\begin{matrix} \circ & \circ & \circ \\ \circ & \circ & \circ \\ \circ & \circ & \circ \end{matrix}}_{(-6)} \times (+4)$

←  $(+4) \times (-6)$

=  $\begin{matrix} \circ & \circ & \circ & \circ & \circ & \circ \\ \circ & \circ & \circ & \circ & \circ & \circ \\ \circ & \circ & \circ & \circ & \circ & \circ \end{matrix}$

= (-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?

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

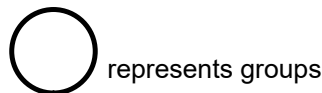
$$\text{ b) } (-5) \times (-1) \times (+3) \\ +5 \times (+3) \\ +15$$

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

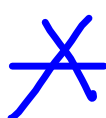
$$\text{ d) } (+2) \times (-3) \times (-6) \\ -6 \times (-6) \\ +36$$



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

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

Multiplying by 0 (Zero Property)

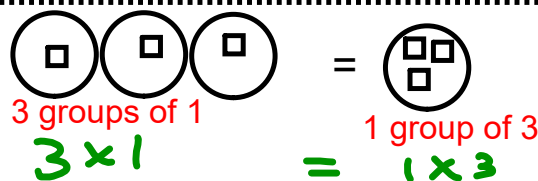
$3 \times 0 = 0$  and  $0 \times 3 = 0$   
 so  $-3 \times 0 = 0$  and  $0 \times -3 = 0$



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

Multiplying by 1 (Multiplicative Identity)

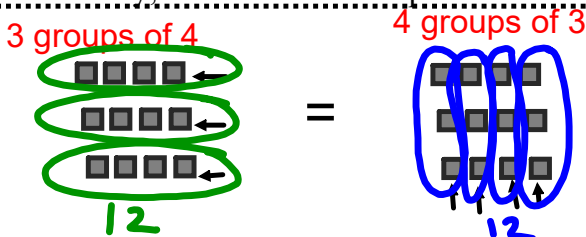
$3 \times 1 = 3$  and  $1 \times 3 = 3$   
 so  $-3 \times 1 = -3$  and  $1 \times -3 = -3$



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

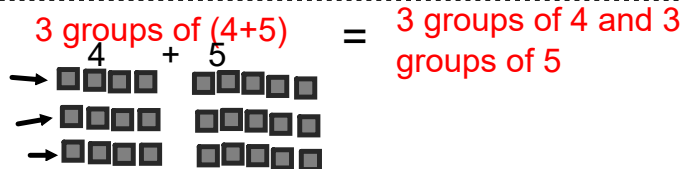
$3 \times 4 = 12$  and  $4 \times 3 = 12$   
 so  $-3 \times 4 = -12$  and  $4 \times (-3) = -12$



That is you can multiply in any order.

Distributive Property

$3 \times (4 + 5) = 3 \times 4 + 3 \times 5$   
 $3 \times 9 = 12 + 15 = 27$   
 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.

## Rules

$$(+) \times (+) \Rightarrow \text{positive}$$

$$(-) \times (-)$$

Sign same

---

$$(+ ) \times (-) \Rightarrow (-)$$

Sign different

Example)

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

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

$(-30)$

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

$(+70)$

↑ ↑  
same

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

$(+18)$

↑ ↑  
same

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

without calculators

Use the rectangle box to help

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

$$\begin{array}{l} (25) \times (48) = \\ \text{20 + 5} = \\ = 1200 \end{array}$$

$$\begin{array}{r} 1 \\ 800 \\ 200 \\ 160 \\ + 40 \\ \hline 1200 \end{array}$$

20	5
40	
$40 \times 20 = 800$	$5 \times 40 = 200$
8	
$8 \times 20 = 160$	$8 \times 5 = 40$

Integers have the same sign so the answer is POSITIVE

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

## Box Method

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

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

$$=$$

$$=$$

$$=$$

$$=$$

$50$	$30$	$50 \times 30$ $= 1500$	$\frac{1500}{+180}$ $1680$
$6$		$6 \times 30$ $= 180$	

$(-1680)$

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

$$=$$

	$20$		$\frac{200}{+100}$ $300$
$10$		$10 \times 20$ $= 200$	
$5$		$5 \times 20$ $= 100$	



# Class/Homework

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## Rules

Same Sign  
 $(+) \times (+) \Rightarrow (+)$   
 or  
 $(-) \times (-) \Rightarrow (+)$

Different Sign  
 $(+) \times (-)$   
 $= (-)$

#3 (a,b,c,d)

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

Box

#6 (a,c, ~~b~~) USE distributive Property

#7 (b,d, ~~a~~) Use The Distributive Property

} show work

#8 (a,b,g,h)

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Quiz Friday so study rules and properties



$$3a) \quad (-6) \times (+2) \\ = (-12)$$

b)

c)