Warm Up Grade 8

Sept. 8

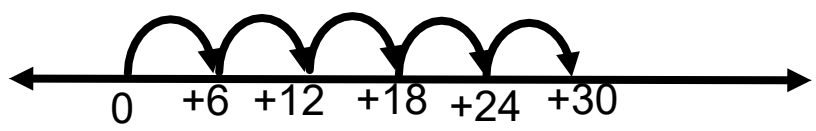
Use tiles to show the following products:

a) (+2) x (-5) = (-10)

b) (-6) x (-3) = (+18)

Redraw answer

What multiplication fact is being modeled?

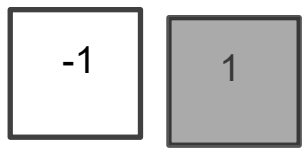


(+5) x (+6) = (+30)

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

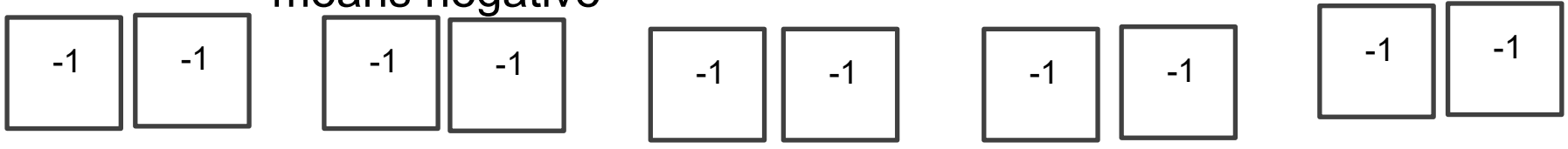
deposit, Yellow, Shaded =+
Withdraw, Red, UNShaded = -



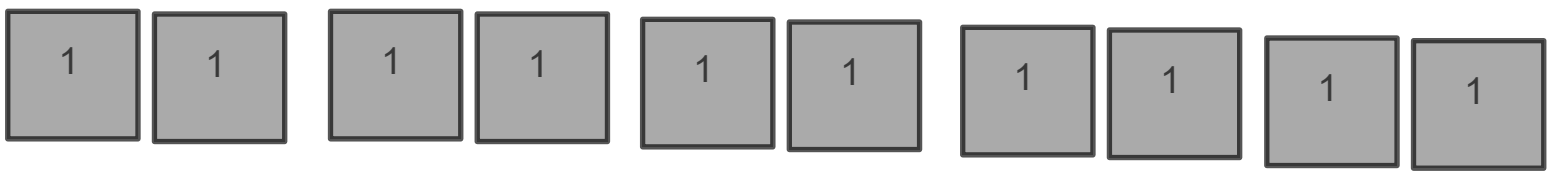
9a) 5 sets of 2 red tiles

(+5) x (-2) = (-10)

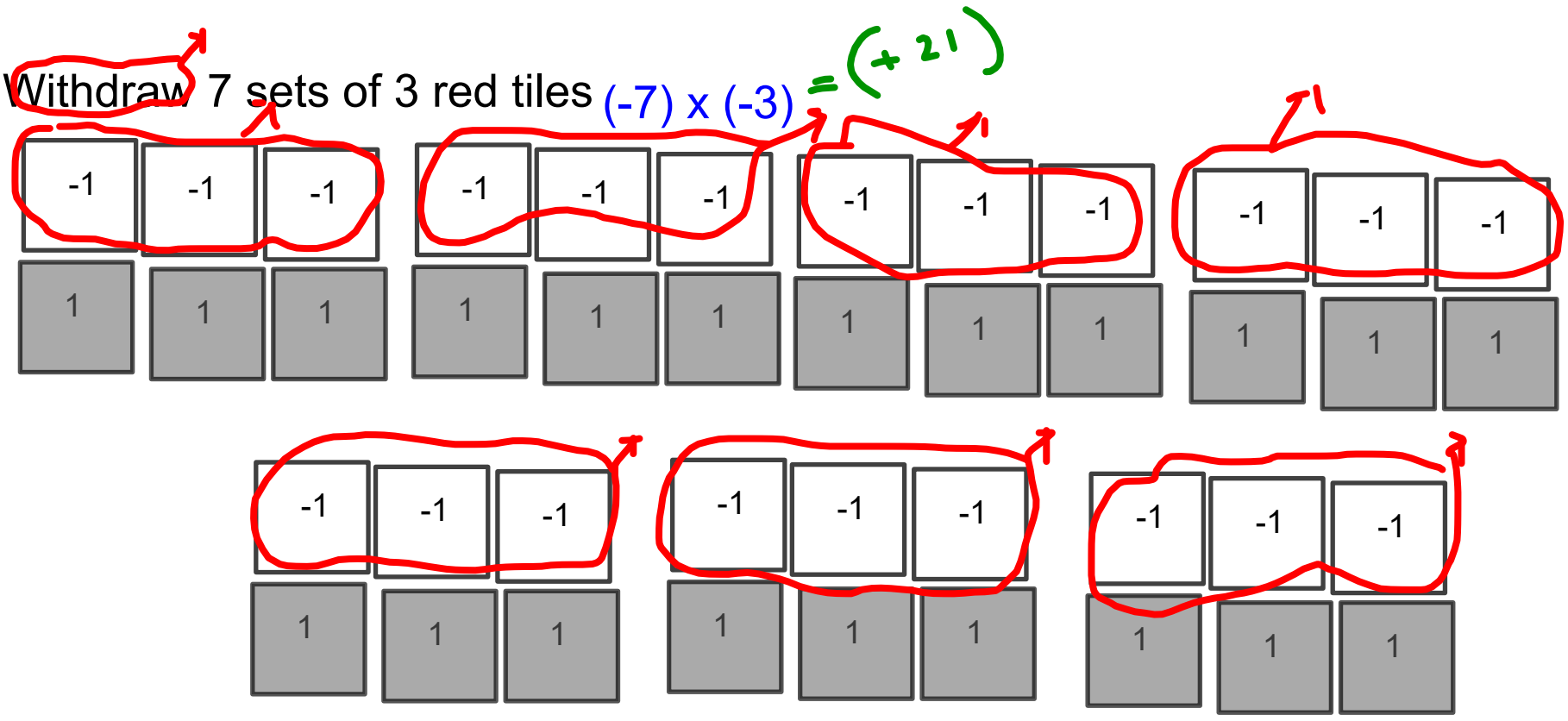
means negative



9b) Deposits 5 sets of 2 yellow tiles (+5) x (+2) = (+10)

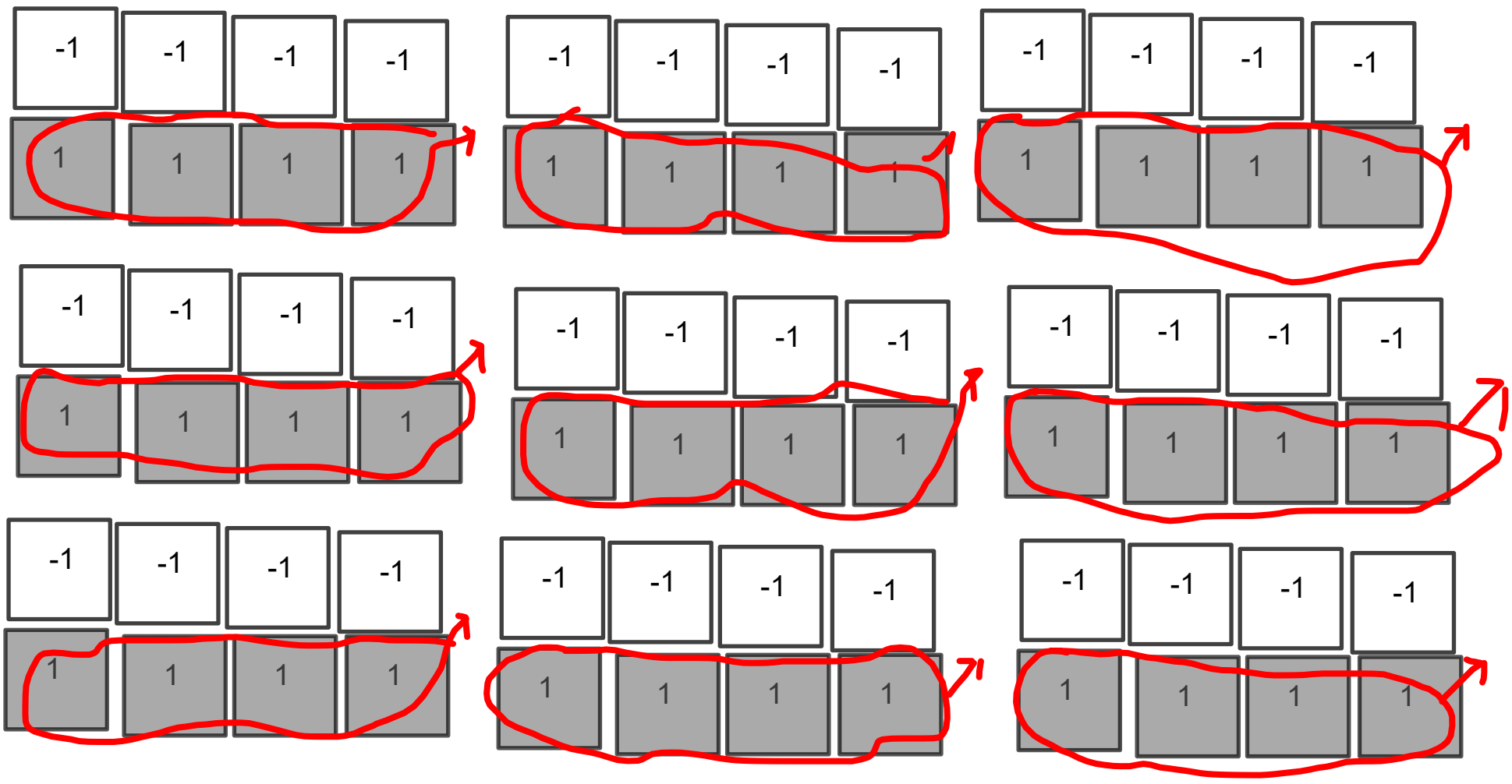


9c) Withdraw 7 sets of 3 red tiles (-7) x (-3) = (+21)



9d) Withdraw 9 sets of 4 yellow tiles

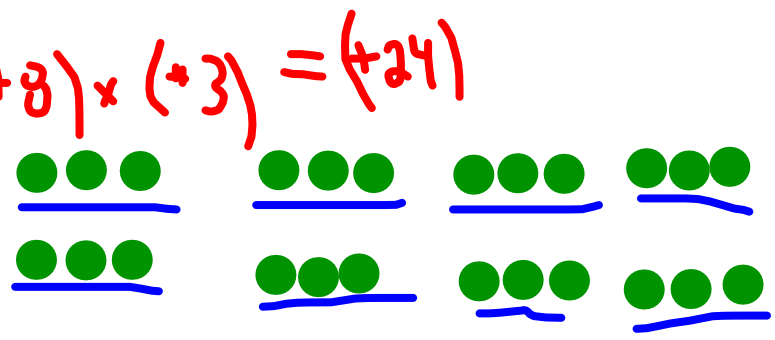
(-9) x (+4) = (-36)



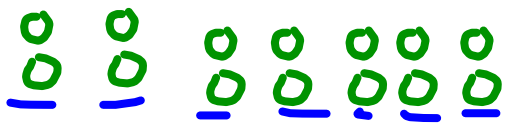
Page 68-69 #5, #6, #7, #8, #9(a,b,c,d), #10(a,b,c,d), #11(a,c,e), #12, #13, #14, #17(a,b), #20(a)

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

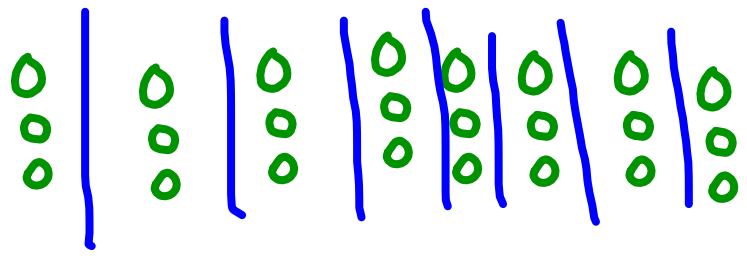
b) $(+8)\times(+3)=(+24)$



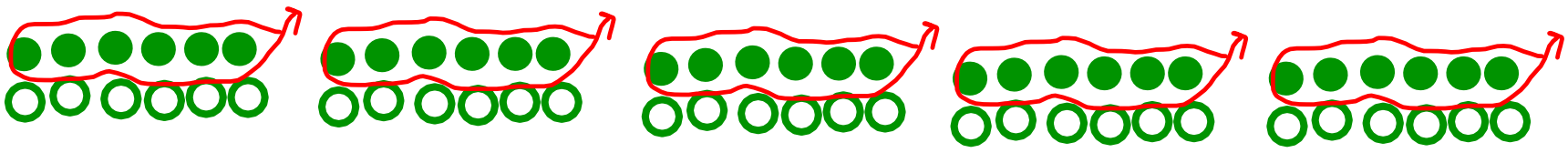
c) $(+1)\times(-2)=-14$



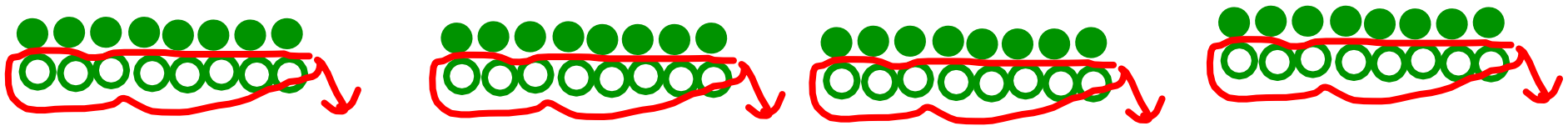
d) $(+8)\times(-3)=-24$



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



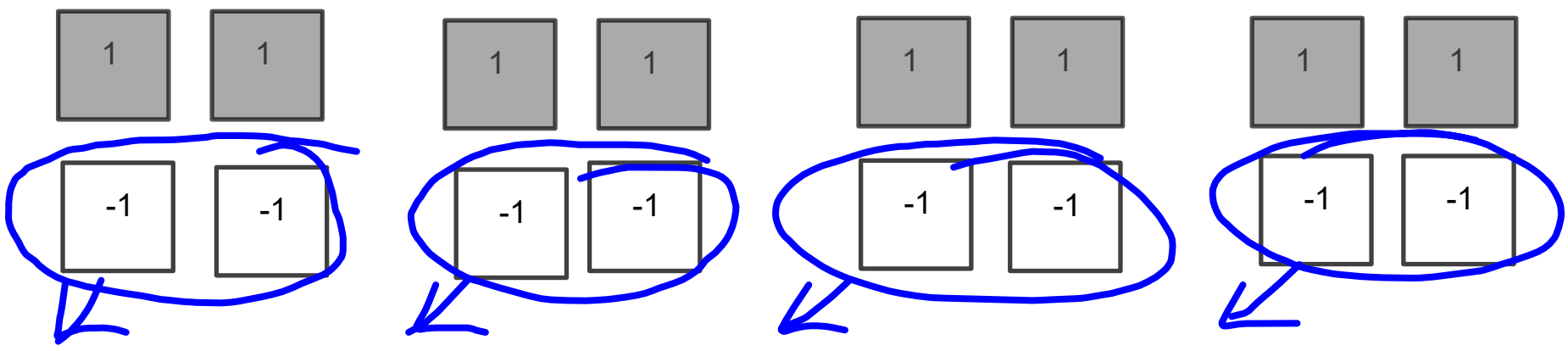
f) $(-4)\times(-8)=+32$



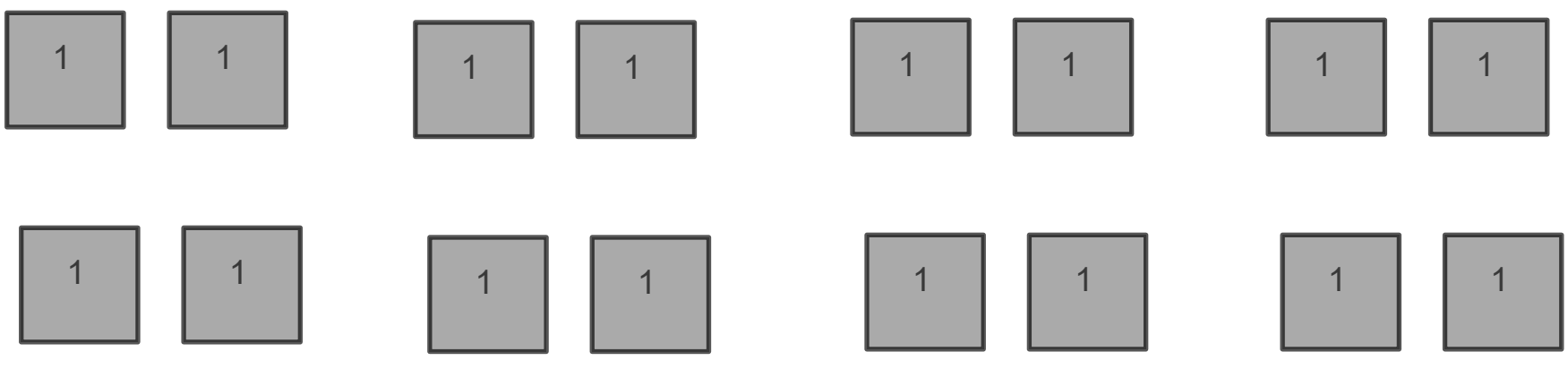
pg. 68 # 11-20

*11a) (+4) x (+2) = +8

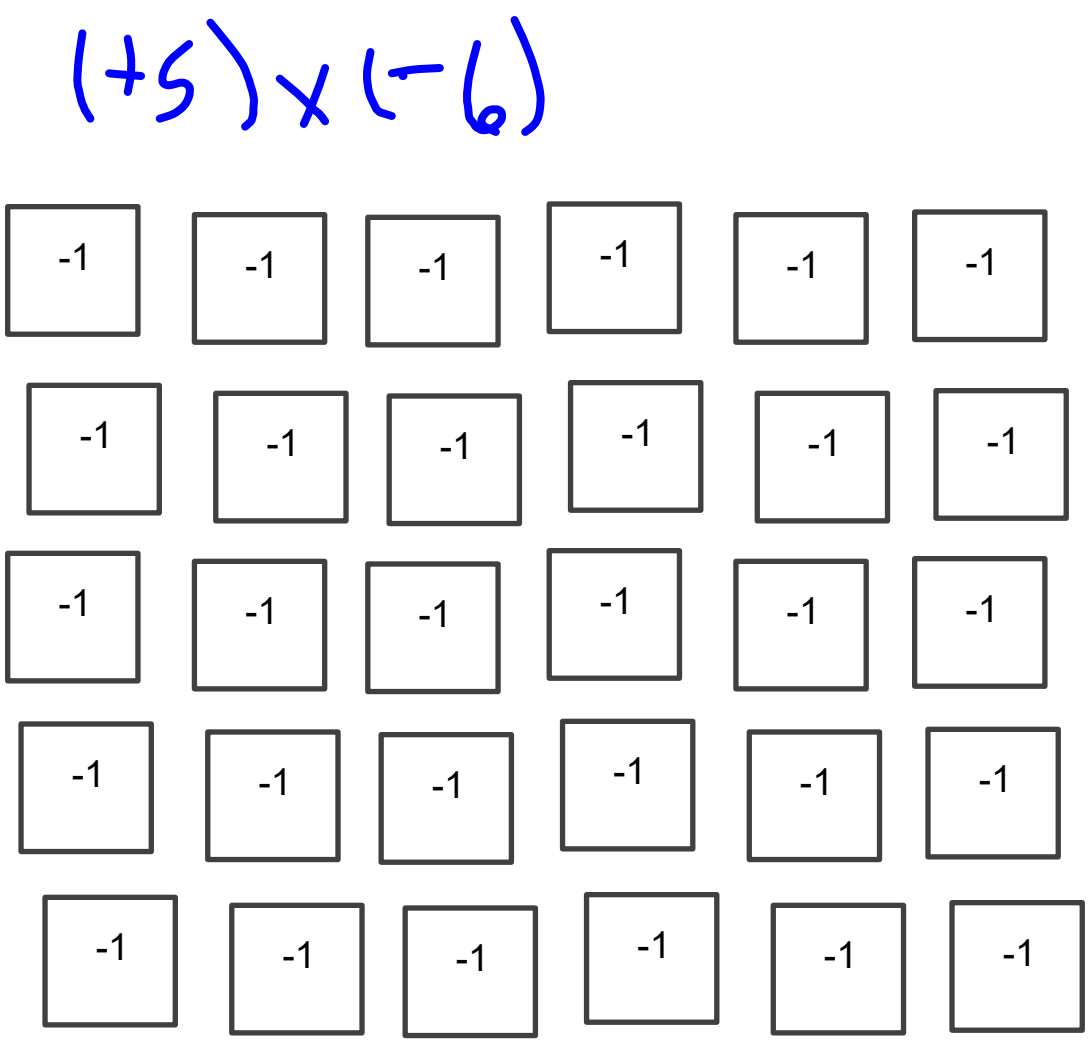
b) (-4) x (-2) = +8



*c) (+2) x (+8) = +16



d) (+5) x (-6)



= -30

e) $(-4) \times (+6) = (-24)$

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

= ....

$= -24$

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

-1

$= +21$

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) x (+9) = (+18) It rose a total of 18°

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

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

(+8) x (-6) = (-48)

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

17b) (+5) x (+2) = (+10) He had $10 more

(-5) x (-2) =>

didn't spend (+5)

20a) (+3) x (-2) x (+4)

= x (+4)

(-6) x (+4)

(+3) x (-2) x (+4)

(-6) X (+4)

= -24

or (+4) x (-6)

= (-24)

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

The temp. rose 18°

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. a) $-4 \times (+10) = -40$

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

$-6 \times (+4)$

-24

b) $(-5) \times (-1) \times (+3)$

$+5 \times (+3)$

$+15$

c) $(-5) \times (-2) \times (-3)$

$+10 \times (-3)$

-30

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

$-6 \times (-6)$

$+36$

= -1 =+1

Multiplying Integers

represents groups

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 x 0 = 0 and 0 x 3 = 0
so -3 x 0 = 0 and 0 x -3 = 0

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

3 groups of zero

Multiplying by 1 (Multiplicative Identity)

3 x 1 = 3 and 1 x 3 = 3
so -3 x 1 = -3 and 1 x -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.

3 groups of 1 = 1 group of 3

Commutative Property

3 x 4 = 12 and 4 x 3 = 12
so -3 x 4 = -12 and 4 x (-3) = -12

That is you can multiply in any order.

3 groups of 4 = 4 groups of 3

Distributive Property

3 x (4 + 5) = 3 x 4 + 3 x 5
so 3 x (-4 + -5) = 3 x (-4) + 3 x (-5)

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

3 groups of (4+5) = 3 groups of 4 and 3 groups of 5

Example)

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

a) (-6) x (+5)

= (-30)

b) (-10) x (-7)

= (+70)

c) (+3) (+6)

= (+18)

Example) Find the product of (-25) x (-48)

without calculators

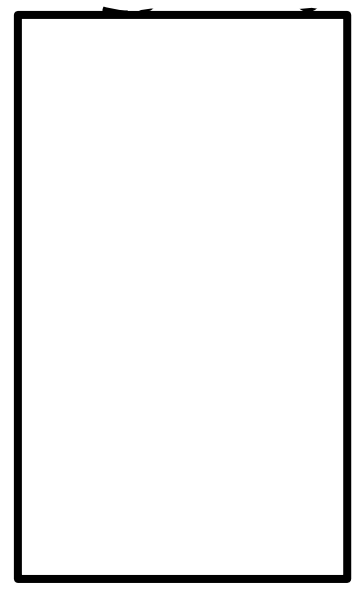
Use the rectangle box to help

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

(25) x (48) =

=

=



Integers have the _____ so the answer is _____

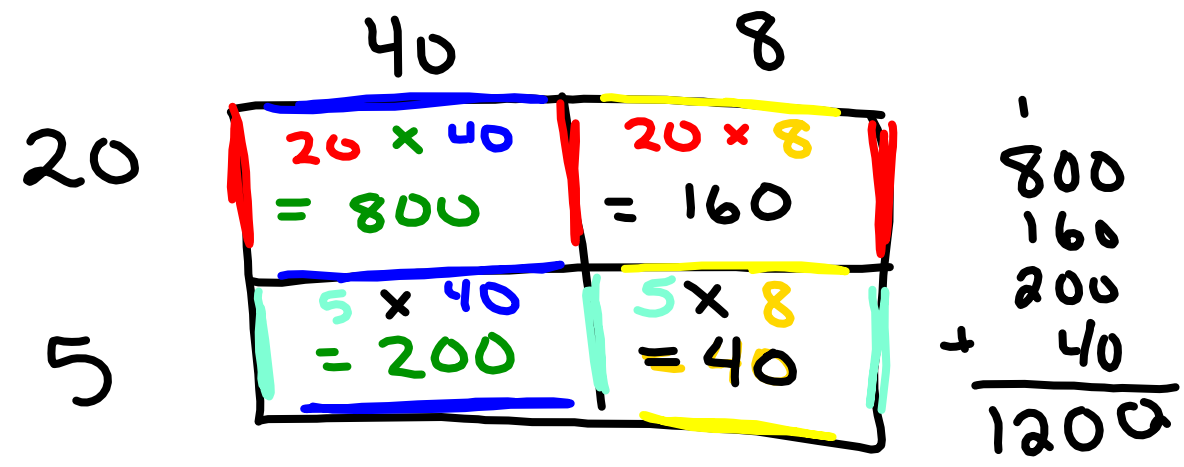
(-25) x (-48) =

25 x 48

20+5 40+8

25 x 48
= 1200

Box Method

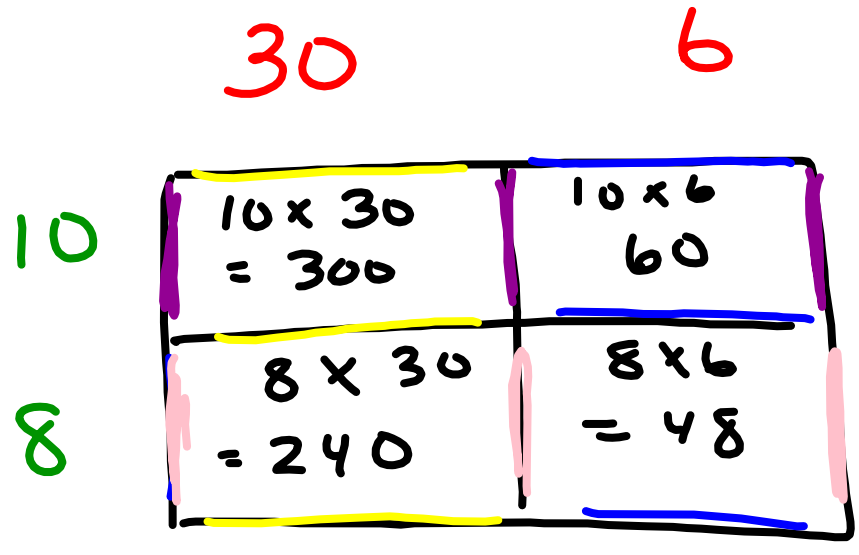


1
800
160
200
+ 40
1200

36 x 18

= 648

OR



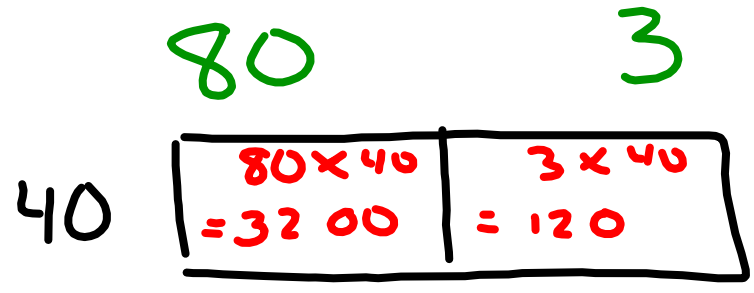
$$\begin{array}{r} 1 \\ 300 \\ 240 \\ 60 \\ +\ 48 \\ \hline 648 \end{array}$$

83 × 40

80 + 3

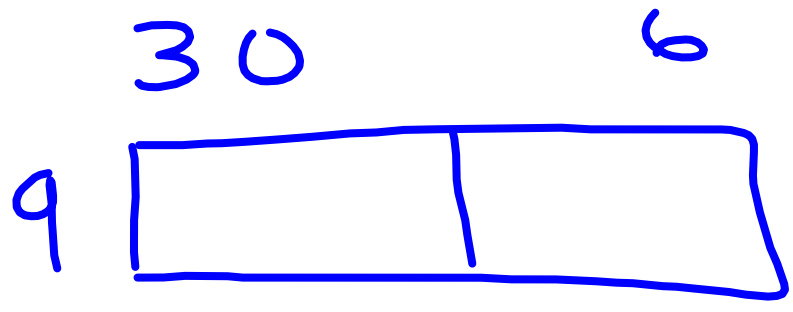
40

83 × 40 = 3320



3200
120
3320

36 x 9



Box Method

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

a) (+30) x (-56)

= 30 (50 + 6)

Ignore sign to end

=

=

=

=

	30
50	50 x 30 = 1500
6	6 x 30 = 180

1500
180
1680

= (−1680)

= b) (+20) x (+15)

same + same = +

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

200
+ 100
300

(+20)(+15) = (+300)

Class/Homework

30) $(-6)\times(+2) = (\quad)$

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#3 (a,b,c,d) → Rules

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

#6 (a,c,e,g) USE distributive Property BOX Method

#7 (b,d,f,h) Use The Distributive Property BOX Method

} show work

#8 (a,b,g,h)

/24

Ex)
6a) 20 x 15

10	5
80	

Quiz Wednesday, so study rules and properties