

MSP

Grade 3 Module 3

Lesson Refreshers

&

Homework Starters

Name _____

Date _____

1. Complete the charts below.

a. A tricycle has 3 wheels.

Number of Tricycles	3 (x 3)	4 (x 3)	5 (x 3)	6 (x 3)	7 (x 3)
Total Number of Wheels	9 ↙	12 ↙	15 ↙	18 ↙	21 ↙

Count by...

b. A tiger has 4 legs.

Number of Tigers			7	8	9
Total Number of Legs	20	24			

c. A package has 5 erasers.

Number of Packages	6				10
Total Number of Erasers		35	40	45	

2. Write two multiplication facts for each array.



Total = number of rows x number of objects in each row

$$24 = 4 \times 6$$

$$24 = 6 \times 4$$



$$\underline{\quad} = \underline{\quad} \times \underline{\quad}$$

$$\underline{\quad} = \underline{\quad} \times \underline{\quad}$$

Name _____

Date _____

1. Each  has a value of 9.



Unit form: _____

Facts: $5 \times \underline{\quad} = \underline{\quad} \times 5$

Total = _____



Unit form: 6 nines = 5 nines + 1 nine

= 45 + _____

= _____

Facts: _____ \times _____ = _____

_____ \times _____ = _____

Name _____

Date _____

1. a. Complete the pattern.



b. Find the value of the unknown.



$10 \times 2 = d$	$d = \underline{20}$	$10 \times 6 = w$	$w = \underline{\quad}$
$3 \times 10 = e$	$e = \underline{\quad}$	$10 \times 7 = n$	$n = \underline{\quad}$
$f = 4 \times 10$	$f = \underline{\quad}$	$g = 8 \times 10$	$g = \underline{\quad}$
$p = 5 \times 10$	$p = \underline{\quad}$		

2. Each equation contains a letter representing the unknown. Find the value of the unknown.

$8 \div 2 = n$	$n = \underline{4}$
$3 \times a = 12$	$a = \underline{\quad}$
$p \times 8 = 40$	$p = \underline{\quad}$
$18 \div 6 = c$	$c = \underline{\quad}$
$d \times 4 = 24$	$d = \underline{\quad}$
$h \div 7 = 5$	$h = \underline{\quad}$
$6 \times 3 = f$	$f = \underline{\quad}$
$32 \div y = 4$	$y = \underline{\quad}$

Name _____

Date _____

1. Use number bonds to help you skip-count by six by either making a ten or adding to the ones.

<p>a. $6 + 6 = 10 + 2 = 12$</p>	
<p>b. $12 + 6 = 10 + 8 = 18$</p>	<p>★ The objective is to form a "10"</p>
<p>c. $18 + 6 = 20 + 4 = 24$</p>	<p>number for easy adding</p>
<p>d. $24 + 6 = 20 + 10 = 30$</p>	<p>★ Do this by "breaking up" one of the</p>
<p>e. $30 + 6 = 36$</p>	<p>numbers</p>
<p>f. $36 + 6 = 40 + 2 = 42$</p>	
<p>g. $42 + 6 = 40 + 8 = 48$</p>	
<p>h. $48 + 6 = 50 + 4 = 54$</p>	
<p>i. $54 + 6 = 50 + 10 = 60$</p>	

JMP

Name _____

Date _____

1. Use number bonds to help you skip-count by seven by making ten or adding to the ones.

<p>a. $7 + 7 = \underline{10} + \underline{4} = \underline{14}$</p>
<p>b. $14 + 7 = \underline{20} + \underline{1} = \underline{21}$</p>
<p>c. $21 + 7 = \underline{20} + \underline{8} = \underline{28}$</p>
<p>d. $28 + 7 = \underline{30} + \underline{5} = \underline{35}$</p>
<p>e. $35 + 7 = \underline{40} + \underline{2} = \underline{42}$</p>
<p>f. $42 + 7 = \underline{40} + \underline{9} = \underline{49}$</p>
<p>g. $49 + 7 = \underline{50} + \underline{6} = \underline{56}$</p>
<p>h. $56 + 7 = \underline{60} + \underline{3} = \underline{63}$</p>

2. Break apart 54 to solve $54 \div 6$.

$54 \div 6$
 $30 \div 6$ $24 \div 6$
 $54 \div 6 = (30 \div 6) + (24 \div 6)$
 $= 5 + 4$
 $= 9$

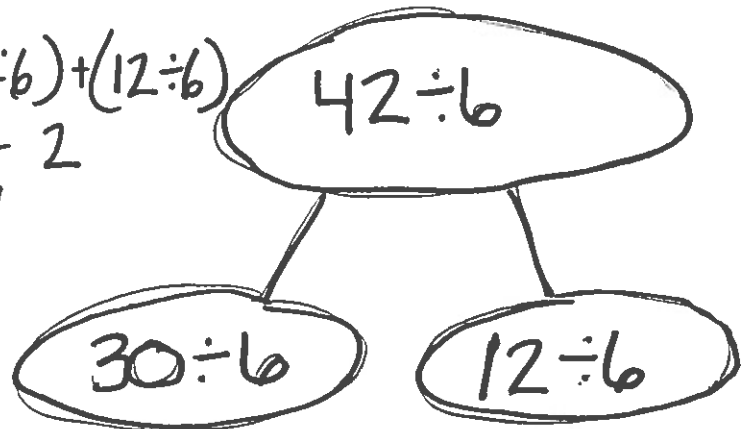
3. Break apart 56 to solve $56 \div 7$.

$56 \div 7$
 $35 \div 7$ $\div 7$
 $56 \div 7 = (___ \div ___) + (___ \div ___)$
 $= 5 + ______$
 $= ______$

4. Forty-two third grade students sit in 6 equal rows in the auditorium. How many students sit in each row?
Show your thinking.

$$\begin{array}{r} 42 \\ - 30 \\ \hline 12 \end{array}$$

$$\begin{aligned} 42 \div 6 &= (30 \div 6) + (12 \div 6) \\ &= 5 + 2 \\ &= 7 \end{aligned}$$



5. Ronaldo solves 7×6 by thinking of it as $(5 \times 7) + 7$. Is he correct? Explain Ronaldo's strategy.

2. Ari sells 6 boxes of pens at the school store.
- Each box of pens sells for \$7. Draw a tape diagram and label the total amount of money he makes as m . Write an equation and solve for m .

- Each box contains 6 pens. Draw a tape diagram and label the total number of pens as p . Write an equation and solve for p .

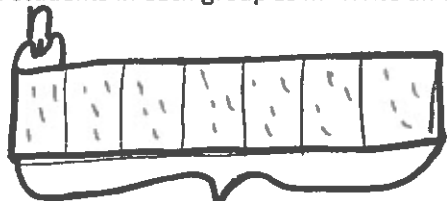
Place a mark for each student in the boxes. One student in each of the seven groups until all students have been placed.

3. Mr. Lucas divides 28 students into 7 equal groups for a project. Draw a tape diagram and label the number of students in each group as n . Write an equation and solve for n .

*There are 28 students in all.

*There are 7 equal groups.

*The unknown is the group size which equals n .



$$28 \div 7 = n$$

$$n = 4$$

There are 4 students in each group.

Name _____

Date _____

1. Solve.

a. $9 - (6 + 3) = \underline{0}$

b. $(9 - 6) + 3 = \underline{6}$

c. $\underline{8} = 14 - (4 + 2)$

d. $\underline{12} = (14 - 4) + 2$

e. $\underline{42} = (4 + 3) \times 6$

f. $\underline{22} = 4 + (3 \times 6)$

g. $(18 \div 3) + 6 = \underline{12}$

h. $18 \div (3 + 6) = \underline{2}$

** Make sure to solve what is in the parentheses first!*

2. Use parentheses to make the equations true.

a. $14 - 8 + 2 = 4$

b. $14 - 8 + 2 = 8$

c. $2 + 4 \times 7 = 30$

d. $2 + 4 \times 7 = 42$

e. $12 = 18 \div 3 \times 2$

f. $3 = 18 \div 3 \times 2$

g. $5 = 50 \div 5 \times 2$

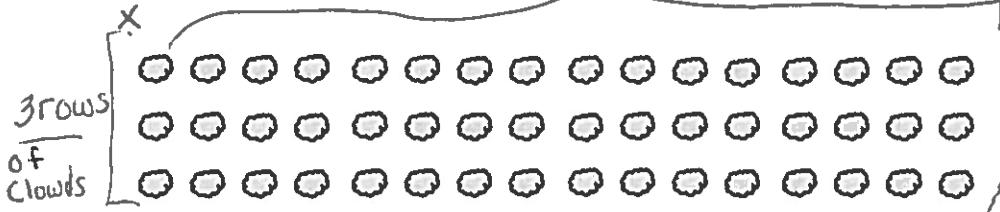
h. $20 = 50 \div 5 \times 2$

CS

Name _____

Date _____

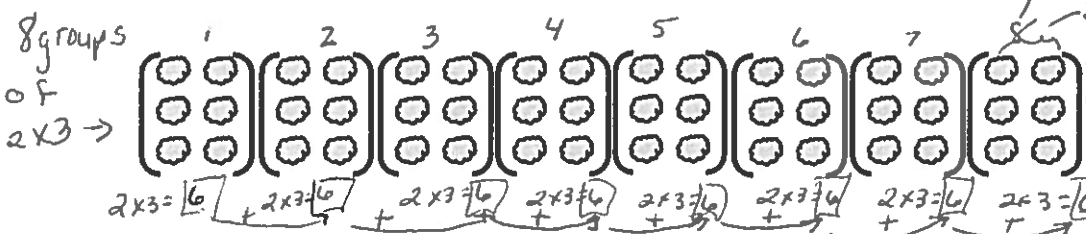
1. Use the array to complete the equation. *16 clouds in each row*



IN Associative property using Parenthesis or (grouping) does not change the product or (answer).

a. $3 \times 16 = 48$

*2 clouds columns in each group
3 clouds in each column
 $3 \times 2 = 6$*

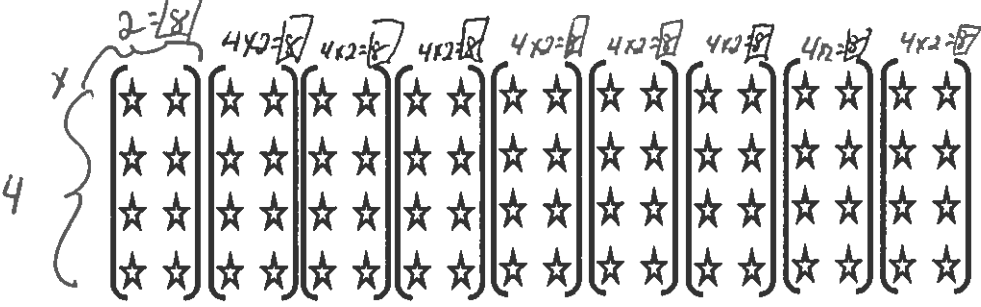


b. $(3 \times 2) \times 8 \rightarrow 8 \text{ groups of clouds}$
 $= 6 \times 8$
 $= 48 \text{ Clouds Total}$

There are 6 clouds in each parentheses (group of clouds) and there are 8 groups of clouds $\rightarrow 6 \times 8 = 48$



c. $4 \times 18 = 72$



d. $(4 \times 2) \times 9$
 $= 8 \times 9$
 $= 72$

Remember in Associative Property of Multiplication \rightarrow Multiply what is in the parenthesis first $\rightarrow 4 \times 2 = 8$
 : Next Multiply the product of the parenthesis by the number of parentheses (or groups)

*The product of each group = 8
 The number of groups = 9
 $\rightarrow 8 \times 9 = 72 \text{ stars}$*

Name _____

Date _____

1. Label the array. Then, fill in the blanks to make the statements true.

$$8 \times 7 = 7 \times 8 = 56$$

5+3

Fact of 5

$(7 \times 5) = 35$

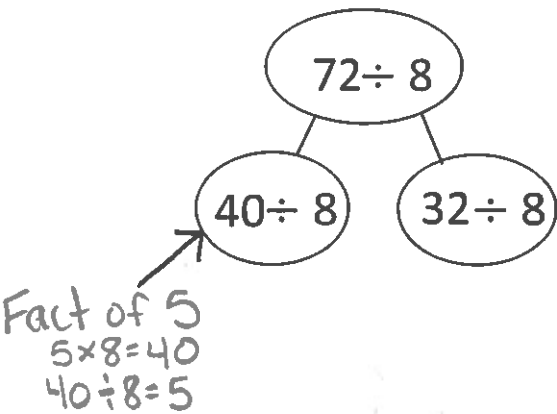
$(7 \times 3) = 21$

★ As we begin to learn the more difficult facts, we build on our easier facts. Here is an example where we pull out a fact of 5.

We are multiplying 7×8 . Pull out a 5 to make a fact of 5.
 $5 + 3 = 8$

$$\begin{aligned}
 8 \times 7 &= 7 \times (5 + 3) \\
 &= (7 \times 5) + (7 \times 3) \\
 &= 35 + 21 \\
 &= 56
 \end{aligned}$$

2. Break apart and distribute to solve $72 \div 8$.



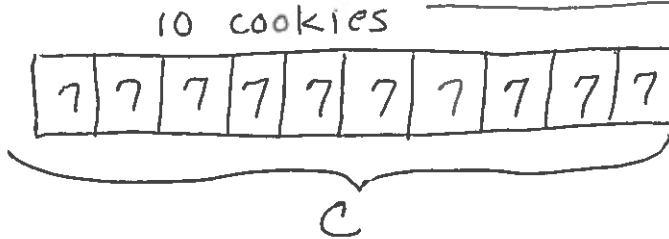
$$\begin{aligned}
 72 \div 8 &= (40 \div 8) + (32 \div 8) \\
 &= 5 + 4 \\
 &= 9
 \end{aligned}$$

★ Decompose 72 into 40 and 32.
 ★ $32 \div 8 = 4$
 ★ $5 + 4 = 9$

Name _____

Date _____

1. Jenny bakes 10 cookies. She puts 7 chocolate chips on each cookie. Draw a tape diagram, and label the total amount of chocolate chips as c . Write an equation, and solve for c .



$$10 \times 7 = c$$

$$c = 70$$

There are a total of 70 chocolate chips.

2. Mr. Lopez arranges 48 dry erase markers into 8 equal groups for his math stations. Draw a tape diagram, and label the number of dry erase markers in each group as v . Write an equation, and solve for v .

3. There are 35 computers in the lab. Five students each turn off an equal number of computers. How many computers does each student turn off? Label the unknown as m , and then solve.

Name _____

Date _____

1. Find the value of each row. Then, add the rows to find the total.

a. Each  has a value of 6.

$9 \times 6 = \underline{54}$



$5 \times 6 = 30$



$4 \times 6 = \underline{24}$

$$\begin{array}{r} \checkmark \\ 30 \\ +24 \\ \hline 54 \end{array}$$

* Remember parentheses go ~~first~~ first

$$\begin{aligned} 9 \times 6 &= (5 + 4) \times 6 \\ &= (5 \times 6) + (4 \times 6) \\ &= 30 + \underline{24} \\ &= \underline{54} \end{aligned}$$

b. Each  has a value of 7.

$9 \times 7 = \underline{63}$



$5 \times 7 = \underline{35}$



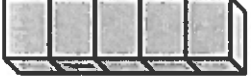
$\underline{4} \times 7 = \underline{28}$

$$\begin{array}{r} \checkmark \\ 35 \\ +28 \\ \hline 63 \end{array}$$

$$\begin{aligned} 9 \times 7 &= (5 + \underline{4}) \times 7 \\ &= (5 \times 7) + (\underline{4} \times 7) \\ &= 35 + \underline{28} \\ &= \underline{63} \end{aligned}$$

c. Each  has a value of 8.

$9 \times 8 = \underline{\quad}$



$5 \times 8 = \underline{\quad}$



$\underline{\quad} \times 8 = \underline{\quad}$

$$\begin{aligned} 9 \times 8 &= (5 + \underline{\quad}) \times 8 \\ &= (5 \times 8) + (\underline{\quad} \times \underline{\quad}) \\ &= 40 + \underline{\quad} \\ &= \underline{\quad} \end{aligned}$$

d. Each  has a value of 9.

$9 \times 9 = \underline{\quad}$



$5 \times 9 = \underline{\quad}$



$\underline{\quad} \times 9 = \underline{\quad}$

$$\begin{aligned} 9 \times 9 &= (5 + \underline{\quad}) \times 9 \\ &= (5 \times 9) + (\underline{\quad} \times \underline{\quad}) \\ &= 45 + \underline{\quad} \\ &= \underline{\quad} \end{aligned}$$

CEA

Name _____

Date _____

1. a. Skip-count by nines down from 90.

90 72 36

b. Look at the *tens* place in the count-by. What is the pattern?

c. Look at the *ones* place in the count-by. What is the pattern?

2. Each equation contains a letter representing the unknown. Find the value of each unknown.

*In division, the big number comes first.
In multiplication, the big number comes last.*

★ Also, draw a house and put the big number in the roof.



Lesson 13: Identify and use arithmetic patterns to multiply.
Date: 7/30/14

engage^{ny}

3.D.27

Name _____

Date _____

1. a. Multiply. Then, add the digits in each product.

$10 \times 9 = 90$ — product	$\underline{9} + \underline{0} = \underline{9}$
$9 \times 9 = 81$	$\underline{8} + \underline{1} = \underline{9}$
$8 \times 9 = 72$	$\underline{7} + \underline{2} = \underline{9}$
$7 \times 9 = 63$	$\underline{6} + \underline{3} = \underline{9}$
$6 \times 9 = 54$	$\underline{5} + \underline{4} = \underline{9}$
$5 \times 9 = 45$	$\underline{4} + \underline{5} = \underline{9}$
$4 \times 9 = 36$	$\underline{3} + \underline{6} = \underline{9}$
$3 \times 9 = 27$	$\underline{2} + \underline{7} = \underline{9}$
$2 \times 9 = 18$	$\underline{1} + \underline{8} = \underline{9}$
$1 \times 9 = 9$	$\underline{0} + \underline{9} = \underline{9}$

b. What pattern did you notice in Problem 1(a)? How can this strategy help you check your work with nines facts?

The digits in the product when added together equal 9.

This strategy can help you when multiplying by 9, the sum of the digits must equal 9. $6 \times 9 = 54$

$5 + 4 = 9$
engage^{ny}

4. Mr. Doyle shares 1 roll of bulletin board paper equally with 8 teachers. The total length of the roll is 72 meters. How much bulletin board paper does each teacher get?

5. There are 9 pens in a pack. Ms. Ochoa buys 9 packs. After giving her students some pens, she has 27 pens left. How many pens did she give away?

Handwritten student work for problem 5:

$$\begin{array}{r} 78 \\ -27 \\ \hline 54 \end{array}$$

$9 \times 9 = 81 \text{ pens}$

She gave away 54 pens.

or

6. Allen buys 9 packs of trading cards. There are 10 cards in each pack. He can trade 30 cards for a comic book. How many comic books can he get if he trades all of his cards?

3. Let $c = 8$. Determine whether the equations are true or false. The first one has been done for you.

a. $c \times 0 = 8$	False
b. $0 \times c = 0$	True
c. $c \times 1 = 8$	True
d. $1 \times c = 8$	True
e. $0 \div c = 8$	False
f. $8 \div c = 1$	True
g. $0 \div c = 0$	True
h. $c \div 0 = 8$	False

4. Rajan says that any number multiplied by 1 equals that number.

a. Write a multiplication equation using n to represent Rajan's statement.

$$n \times 1 = n$$

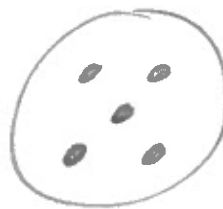
b. Using your equation from Part (a), let $n = 5$, and draw a picture to show that the new equation is true.

$$5 \times 1 = 5$$

5 groups of 1 = 5



1 group of 5 = 5



JMD

e. Explain how $7 \times 6 = (5 \times 6) + (2 \times 6)$ is shown in the table.

f. Use what you know to find the product of 4×16 or 8 fours + 8 fours.

2. Today in class, we found that $n \times n$ is the sum of the first n odd numbers. Use this pattern to find the value of n for each equation below. The first is done for you.

$n = 3$
a. $1 + 3 + 5 = n \times n$

$9 = 3 \times 3$

* count the odd numbers

$n = 4$
b. $1 + 3 + 5 + 7 = n \times n$

$16 = 4 \times 4$

$n = 6$
c. $1 + 3 + 5 + 7 + 9 + 11 = n \times n$

$36 = 6 \times 6$

d. $1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 = n \times n$

$64 = 8 \times 8$

e. $1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19 = n \times n$

$100 = 10 \times 10$

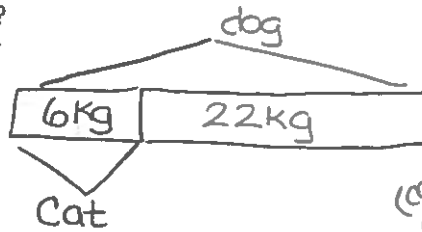
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Name _____

Date _____

Use the RDW process for each problem. Explain why your answer is reasonable.

1. Mrs. Portillo's cat weighs 6 kilograms. Her dog weighs 22 kilograms more than her cat. What is the total weight of her cat and dog?



RDW
* Read
* Draw
* Write

* Make sure to add the weight of the cat and the dog.

2. Darren spends 39 minutes studying for his science test. He then does 6 chores. Each chore takes him 3 minutes. How many minutes does Darren spend studying and doing chores?

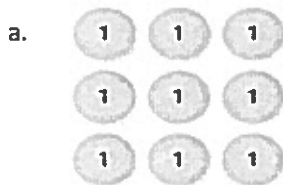
3. Mr. Abbot buys 8 boxes of granola bars for a party. Each box has 9 granola bars. After the party, there are 39 bars left. How many bars were eaten during the party?

axx

Name _____

Date _____

1. Use the disks to complete the blanks in the equations.



$3 \times 3 \text{ ones} = \underline{9} \text{ ones}$
 $3 \times 3 = \underline{9}$



$3 \times 3 \text{ tens} = \underline{9} \text{ tens}$
 $30 \times 3 = \underline{90}$

2. Use the chart to complete the blanks in the equations.

tens	ones
	● ● ● ● ● ● ● ● ● ●

a. $2 \times 5 \text{ ones} = \underline{10} \text{ ones}$
 $2 \times 5 = \underline{10}$

tens	ones
● ● ● ● ● ● ● ● ● ●	

b. $2 \times 5 \text{ tens} = \underline{10} \text{ tens}$
 $2 \times 50 = \underline{100}$

tens	ones
	● ●

c. $5 \times 5 \text{ ones} = \underline{25} \text{ ones}$
 $5 \times 5 = \underline{25}$

tens	ones
● ●	

d. $5 \times 5 \text{ tens} = \underline{25} \text{ tens}$
 $5 \times 50 = \underline{250}$

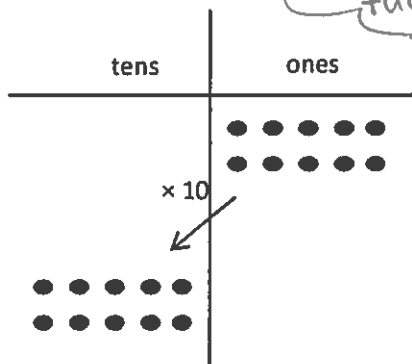
JMD

Name _____

Date _____

1. Use the chart to complete the equations. Then, solve.

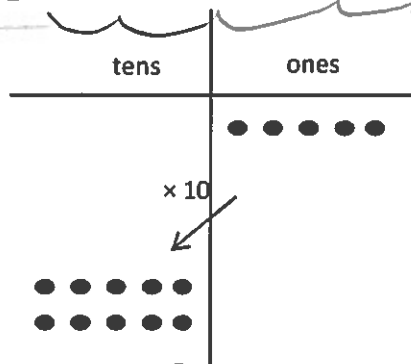
★ When given 2×50 , we can think about a fact of 10 to solve it. $2 \times 50 = 10 \times 10$



a. $(2 \times 5) \times 10$
 $= (10 \text{ ones}) \times 10$
 $= \underline{100}$

$10 \times 10 =$

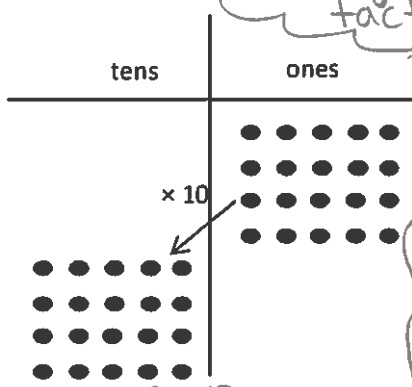
They result in the same product!



b. $2 \times (5 \times 10)$
 $= 2 \times (5 \text{ tens})$
 $= \underline{100}$

2×50

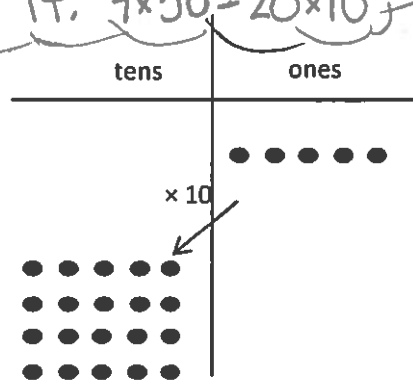
★ When given 4×50 , we can think about a fact of 10 to solve it. $4 \times 50 = 20 \times 10$



c. $(4 \times 5) \times 10$
 $= (\underline{20} \text{ ones}) \times 10$
 $= \underline{200}$

20×10

They result in the same product!



d. $4 \times (5 \times 10)$
 $= 4 \times (\underline{5} \text{ tens})$
 $= \underline{200}$

4×50

Shelton

Name _____

Date _____

Use the RDW process for each problem. Use a letter to represent the unknown.

- There are 60 minutes in 1 hour. Use a tape diagram to find the total number of minutes in 6 hours and 15 minutes.

- Ms. Lemus buys 7 boxes of snacks. Each box has 12 packets of fruit snacks and 18 packets of cashews. How many snack packets does she buy altogether?

$12 + 18 = 30$ packets



$30 \times 7 = 210$ snack packets altogether

Use a tape diagram to organize

- Tamara wants to buy a tablet that costs \$437. She saves \$50 a month for 9 months. Does she have enough money to buy the tablet? Explain why or why not.

Think how much money did she save?

$\$50 \times 9 = \450

Yes, Tamara has enough money because she saved \$450. That is more than she needs to buy a tablet.