EUREKA MATH

A STORY OF UNITS

Mathematics Curriculum

Grade 3 • MODULE 3

Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10

Homework

Video tutorials: http://embarc.online

Version 3

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GRADE 3 • MODULE 3

Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10

Name _____ Date _____

1. Complete the charts below.

   a. A tricycle has 3 wheels.

Number of Tricycles	3		5		7
Total Number of Wheels		12		18	

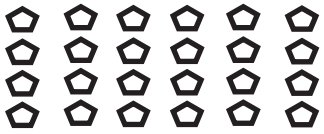
   b. A tiger has 4 legs.

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

   c. A package has 5 erasers.

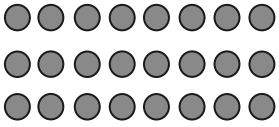
Number of Packages	6				10
Total Number of Erasers		35	40	45	

2. Write two multiplication facts for each array.



_____ = _____ × _____

_____ = _____ × _____



_____ = _____ × _____

_____ = _____ × _____

3. Match the expressions.

3 × 6	7 threes
3 sevens	2 × 10
2 eights	9 × 5
5 × 9	8 × 2
10 twos	6 × 3

4. Complete the equations.

a. 2 sixes = _____ twos
= 12

b. _____ × 6 = 6 threes
= _____

c. 4 × 8 = _____ × 4
= _____

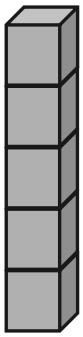
d. 4 × _____ = _____ × 4
= 28

e. 5 twos + 2 twos = _____ × _____
= _____

f. _____ fives + 1 five = 6 × 5
= _____

Name _____ Date _____

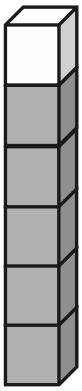
1. Each  has a value of 9.



Unit form: _____

Facts: 5 × _____ = _____ × 5

Total = _____



Unit form: 6 nines = _____ nines + _____ nine

= 45 + _____

= _____

Facts: _____ × _____ = _____

_____ × _____ = _____

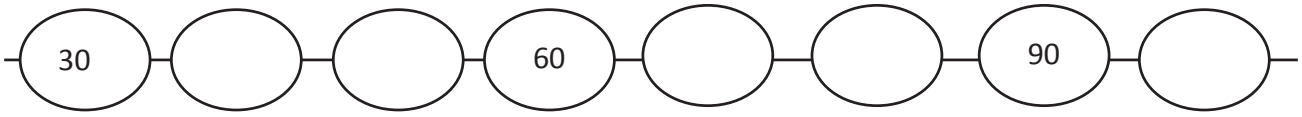
2. There are 6 blades on each windmill. How many total blades are on 7 windmills? Use a fives fact to solve.

3. Juanita organizes her magazines into 3 equal piles. She has a total of 18 magazines. How many magazines are in each pile?

4. Markuo spends $27 on some plants. Each plant costs $9. How many plants does he buy?

Name _____ Date _____

1. a. Complete the pattern.



b. Find the value of the unknown.

10 × 2= d	d = 20	10 × 6 = w	w =_____
3 × 10 = e	e =_____	10 × 7 = n	n =_____
f = 4 × 10	f =_____	g = 8 × 10	g =_____
p = 5 × 10	p =_____		

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

8 ÷ 2 = n	n = _____
3 × a = 12	a = _____
p × 8 = 40	p = _____
18 ÷ 6 = c	c = _____
d × 4= 24	d = _____
h ÷ 7 = 5	h = _____
6 × 3 = f	f = _____
32 ÷ y = 4	y = _____

3. Pedro buys 4 books at the fair for $7 each.

   a. What is the total amount Pedro spends on 4 books? Use the letter *b* to represent the total amount Pedro spends, and then solve the problem.

   b. Pedro hands the cashier 3 ten dollar bills. How much change will he receive? Write an equation to solve. Use the letter *c* to represent the unknown.

4. On field day, the first-grade dash is 25 meters long. The third-grade dash is twice the distance of the first-grade dash. How long is the third-grade dash? Use a letter to represent the unknown and solve.

Name _____ Date _____

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

a. 6 + 6 = 10 + 2 = _____
   (6 → 4, 2)

b. 12 + 6 = 10 + 8 = _____
   (12 → 10, 2)

c. 18 + 6 = _____ + _____ = _____
   (6 → 2, 4)

d. 24 + 6 = _____ + _____ = _____
   (24 → 20, 4)

e. 30 + 6 = _____

f. 36 + 6 = _____ + _____ = _____
   (6 → 4, 2)

g. 42 + 6 = _____ + _____ = _____

h. 48 + 6 = _____ + _____ = _____

i. 54 + 6 = _____ + _____ = _____

2. Count by six to fill in the blanks below.

6, _____, _____, _____, _____

Complete the multiplication equation that represents the final number in your count-by.

6 × _____ = _____

Complete the division equation that represents your count-by.

_____ ÷ 6 = _____

3. Count by six to fill in the blanks below.

6, _____, _____, _____, _____, _____

Complete the multiplication equation that represents the final number in your count-by.

6 × _____ = _____

Complete the division equation that represents your count-by.

_____ ÷ 6 = _____

4. Count by six to solve 48 ÷ 6. Show your work below.

Name _____ Date _____

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

a. 7 + 7 = 10 + 4 = _____
   3 4

b. 14 + 7 = _____ + _____ = _____
   6 1

c. 21 + 7 = _____ + _____ = _____
   20 1

d. 28 + 7 = _____ + _____ = _____
   2 5

e. 35 + 7 = _____ + _____ = _____
   5 2

f. 42 + 7 = _____ + _____ = _____

g. 49 + 7 = _____ + _____ = _____

h. 56 + 7 = _____ + _____ = _____

2. Skip-count by seven to fill in the blanks. Then, fill in the multiplication equation, and use it to write the related division fact directly to the right.

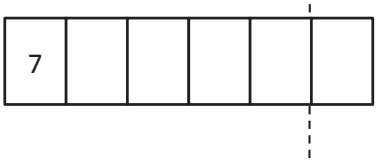
_____	7 × 10 = _____	_____ ÷ 7 = _____
_____	7 × 9 = _____	_____ ÷ 7 = _____
_____	7 × 8 = _____	_____ ÷ 7 = _____
49	7 × 7 = _____	_____ ÷ 7 = _____
_____	7 × 6 = _____	_____ ÷ 7 = _____
_____	7 × 5 = _____	_____ ÷ 7 = _____
28	7 × 4 = _____	_____ ÷ 7 = _____
_____	7 × 3 = _____	_____ ÷ 7 = _____
_____	7 × 2 = _____	_____ ÷ 7 = _____
7	7 × 1 = _____	_____ ÷ 7 = _____

Name _____ Date _____

1. Label the tape diagrams. Then, fill in the blanks below to make the statements true.

a. **6 × 7**= _____

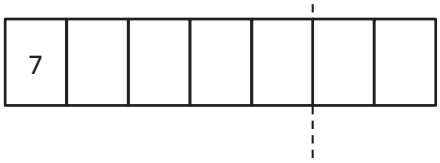
(5 × 7) = _____ (_____ × 7) = _____



(6 × 7) = (5 + 1) × 7
= (5 × 7) + (1 × 7)
= 35 + _____
= _____

b. **7 × 7** = _____

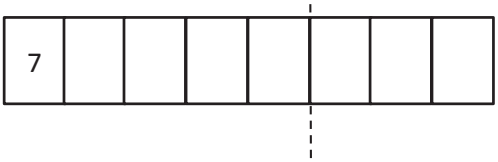
(5 × 7) = _____ (_____ × 7) = _____



(7 × 7) = (5 + 2) × 7
= (5 × 7) + (2 × 7)
= 35 + _____
= _____

c. **8 × 7** = _____

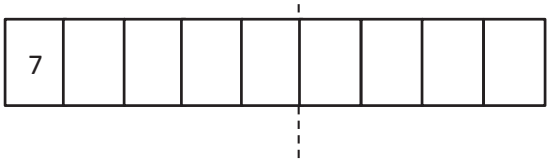
(5 × 7) = _____ (_____ × 7) = _____



8 × 7 = (5 + _____) × 7
= (5 × 7) + (_____ × 7)
= 35 + _____
= _____

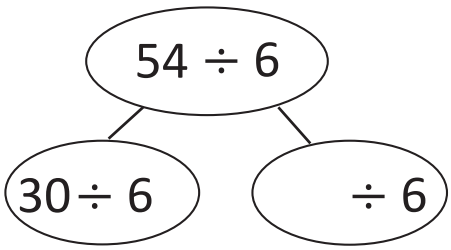
d. **9 × 7** = _____

(5 × 7) = _____ (_____ × 7) = _____



9 × 7 = (5 + _____) × 7
= (5 × 7) + (_____ × 7)
= 35 + _____
= _____

2. Break apart 54 to solve 54 ÷ 6.

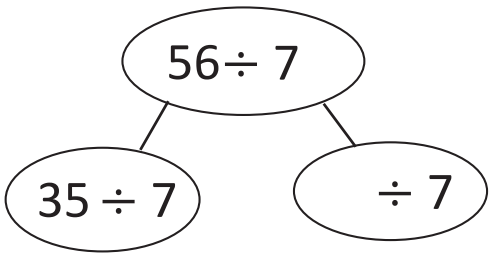


54 ÷ 6 = (30 ÷ 6) + (_____÷ 6)

= 5 + _____

= _____

3. Break apart 56 to solve 56 ÷ 7



56 ÷ 7 = (_____ ÷ _____) + (_____ ÷ _____)

= 5 + _____

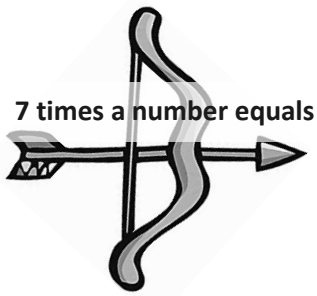
= _____

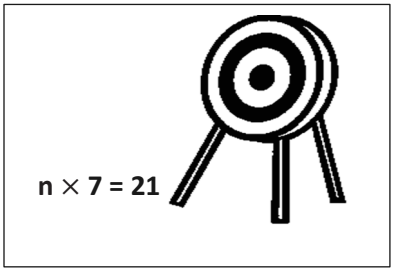
4. Forty-two third grade students sit in 6 equal rows in the auditorium. How many students sit in each row? Show your thinking.

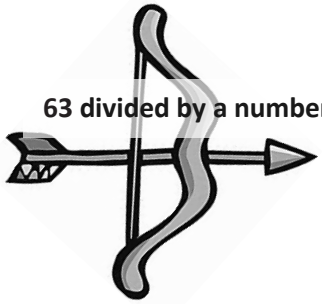
5. Ronaldo solves 7 × 6 by thinking of it as (5 × 7) + 7. Is he correct? Explain Ronaldo's strategy.

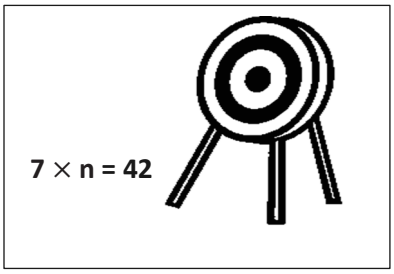
Name _____ Date _____

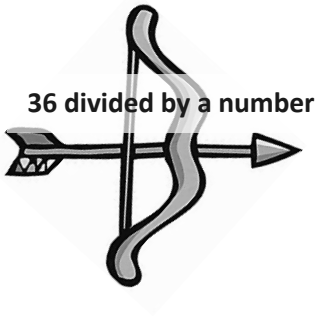
1. Match the words on the arrow to the correct equation on the target.

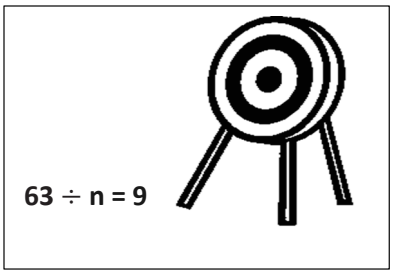


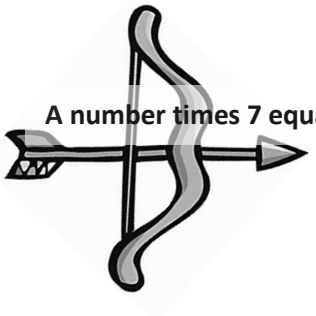


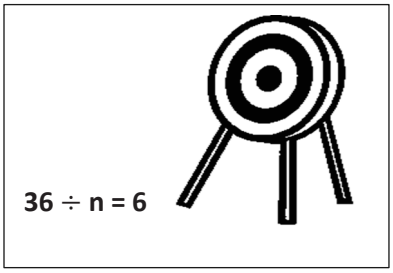












2. Ari sells 6 boxes of pens at the school store.

   a. 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*.

   b. 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*.

---

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*.

Name _____ Date _____

1. Solve.

a. 9 – (6 + 3) = _____

b. (9 – 6) + 3 = _____

c. _____= 14 – (4 + 2)

d. _____ = (14 – 4) + 2

e. _____ = (4 + 3) × 6

f. _____ = 4 + (3 × 6)

g. (18 ÷ 3) + 6 = _____

h. 18 ÷ (3 + 6) = _____

2. Use parentheses to make the equations true.

a. 14 – 8 + 2 = 4

b. 14 – 8 + 2 = 8

c. 2 + 4 × 7 = 30

d. 2 + 4 × 7 = 42

e. 12 = 18 ÷ 3 × 2

f. 3 = 18 ÷ 3 × 2

g. 5 = 50 ÷ 5 × 2

h. 20 = 50 ÷ 5 × 2

3. Determine if the equation is true or false.

a. $(15 - 3) \div 2 = 6$	*Example:* True
b. $(10 - 7) \times 6 = 18$	
c. $(35 - 7) \div 4 = 8$	
d. $28 = 4 \times (20 - 13)$	
e. $35 = (22 - 8) \div 5$	

4. Jerome finds that $(3 \times 6) \div 2$ and $18 \div 2$ are equal. Explain why this is true.

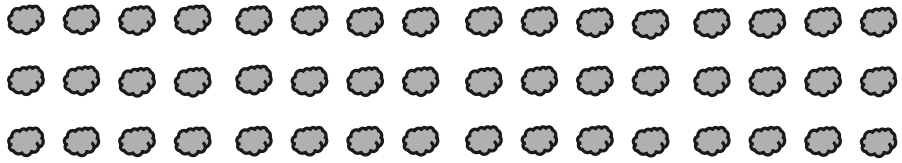
5. Place parentheses in the equation below so that you solve by finding the difference between 28 and 3. Write the answer.

$4 \times 7 - 3 =$ _____

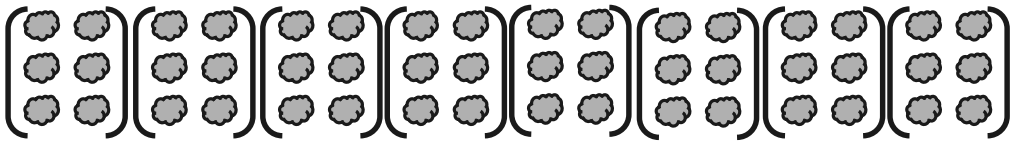
6. Johnny says that the answer to $2 \times 6 \div 3$ is 4 no matter where he puts the parentheses. Do you agree? Place parentheses around different numbers to help you explain his thinking.

Name _____ Date _____

1. Use the array to complete the equation.



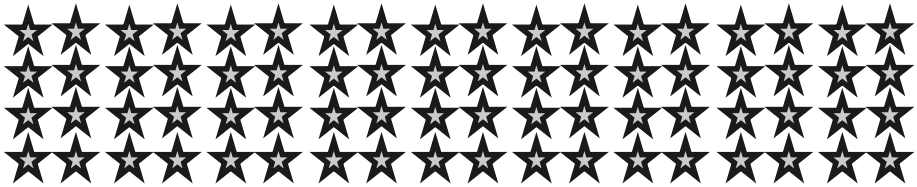
a. 3 × 16 = _____



b. (3 × ____) × 8

= _____ × _____

= _____



c. 4 × 18 = _____

d. (4 × ____) × 9

= _____ × _____

= _____

2. Place parentheses in the equations to simplify and solve.

$12 \times 4 = (6 \times 2) \times 4$
$= 6 \times (2 \times 4)$
$= 6 \times \_\_8\_\_$
$= \_\_48\_\_$

a. $3 \times 14 = 3 \times (2 \times 7)$
$= 3 \times 2 \times 7$
$= \_\_\_\_\_ \times 7$
$= \_\_\_\_\_$

b. $3 \times 12 = 3 \times (3 \times 4)$
$= 3 \times 3 \times 4$
$= \_\_\_\_ \times 4$
$= \_\_\_\_\_$

3. Solve. Then, match the related facts.

a. $20 \times 2 = \_\_40\_\_ =$
b. $30 \times 2 = \_\_\_\_\_ =$
c. $35 \times 2 = \_\_\_\_\_ =$
d. $40 \times 2 = \_\_\_\_\_ =$

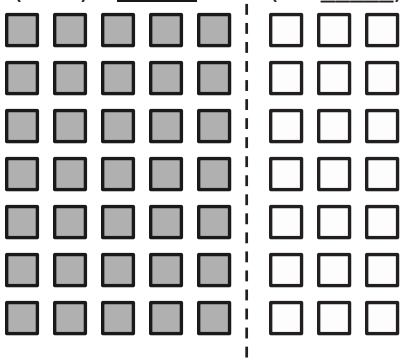
$6 \times (5 \times 2)$
$8 \times (5 \times 2)$
$4 \times (5 \times 2)$
$7 \times (5 \times 2)$

Name _____ Date _____

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

8 × 7 = 7 × 8 =_____

(7 × 5) = _____ (7 × _____) = _____



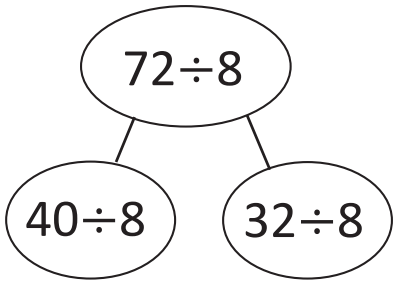
8 × 7 = 7 × (5 + _____)

= (7 × 5) + (7 × _____)

= 35 + _____

= _____

2. Break apart and distribute to solve 72 ÷ 8.



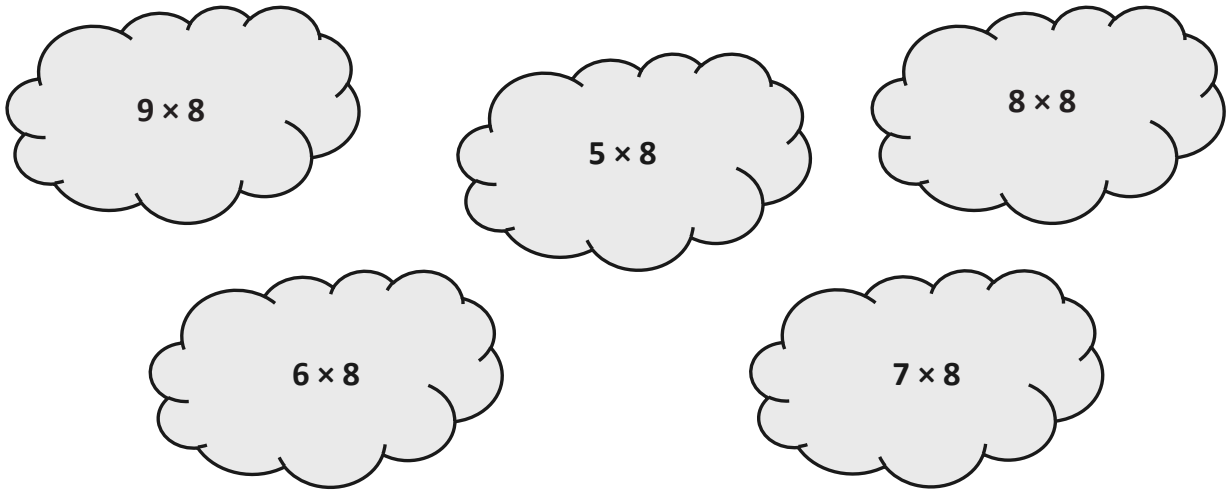
72 ÷ 8 = (40 ÷ 8) + (_____÷ 8)

= 5 + _____

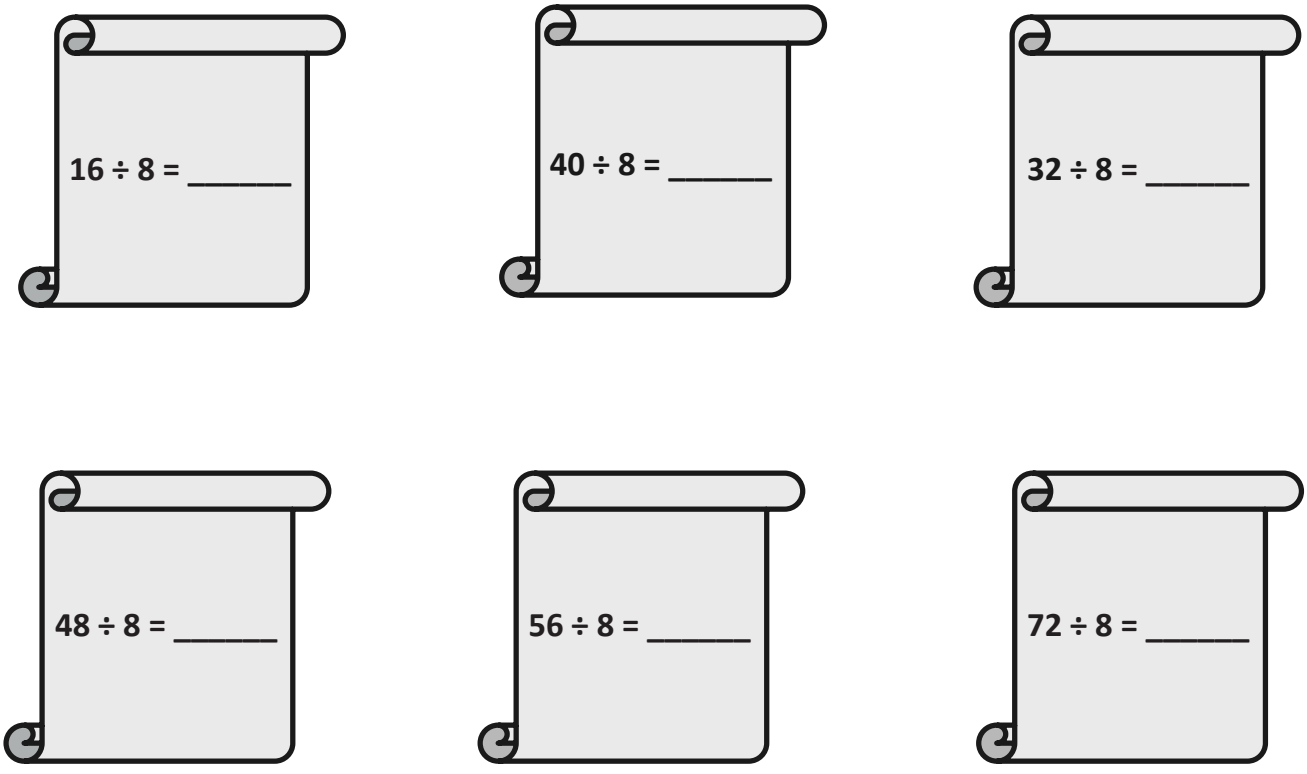
= _____

3. Count by 8. Then, match each multiplication problem with its value.

8, _____, _____, _____, _____, _____, _____, _____, _____, _____



4. Divide.



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*.

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.

4. There are 9 bins of books. Each bin has 6 comic books. How many comic books are there altogether?

5. There are 8 trail mix bags in one box. Clarissa buys 5 boxes. She gives an equal number of bags of trail mix to 4 friends. How many bags of trail mix does each friend receive?

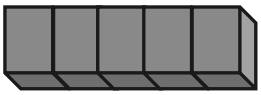
6. Leo earns $8 each week for doing chores. After 7 weeks, he buys a gift and has $38 left. How much money does he spend on the gift?

Name _____ Date _____

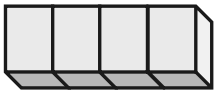
1. Find the value of each row. Then, add the rows to find the total.

a. Each  has a value of 6.

9 × 6 = _____



5 × 6 = 30



4 × 6 = _____

9 × 6 = (5 + 4) × 6

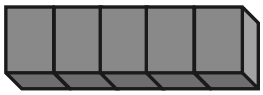
= (5 × 6) + (4 × 6)

= 30 + _____

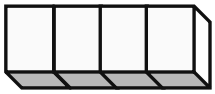
= _____

b. Each  has a value of 7.

9 × 7 = _____



5 × 7 = _____



_____ × 7 = _____

9 × 7 = (5 + _____) × 7

= (5 × 7) + (_____ × 7)

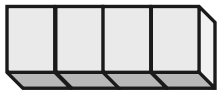
= 35 + _____

= _____

c. Each  has a value of 8.

9 × 8 = _____

5 × 8 = _____



_____ × 8 = _____

9 × 8 = (5 + _____) × 8

= (5 × 8) + (_____ × _____)

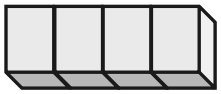
= 40 + _____

= _____

d. Each  has a value of 9.

9 × 9 = _____

5 × 9 = _____



_____ × 9 = _____

9 × 9 = (5 + _____) × 9

= (5 × 9) + (_____ × _____)

= 45 + _____

= _____

2. Match.

a. **9 fives** = 10 fives – 1 five

= 50 – 5

b. **9 sixes** = 10 sixes – 1 six

=_____ – 6

c. **9 sevens** = 10 sevens – 1 seven

= _____ – 7

d. **9 eights** = 10 eights – 1 eight

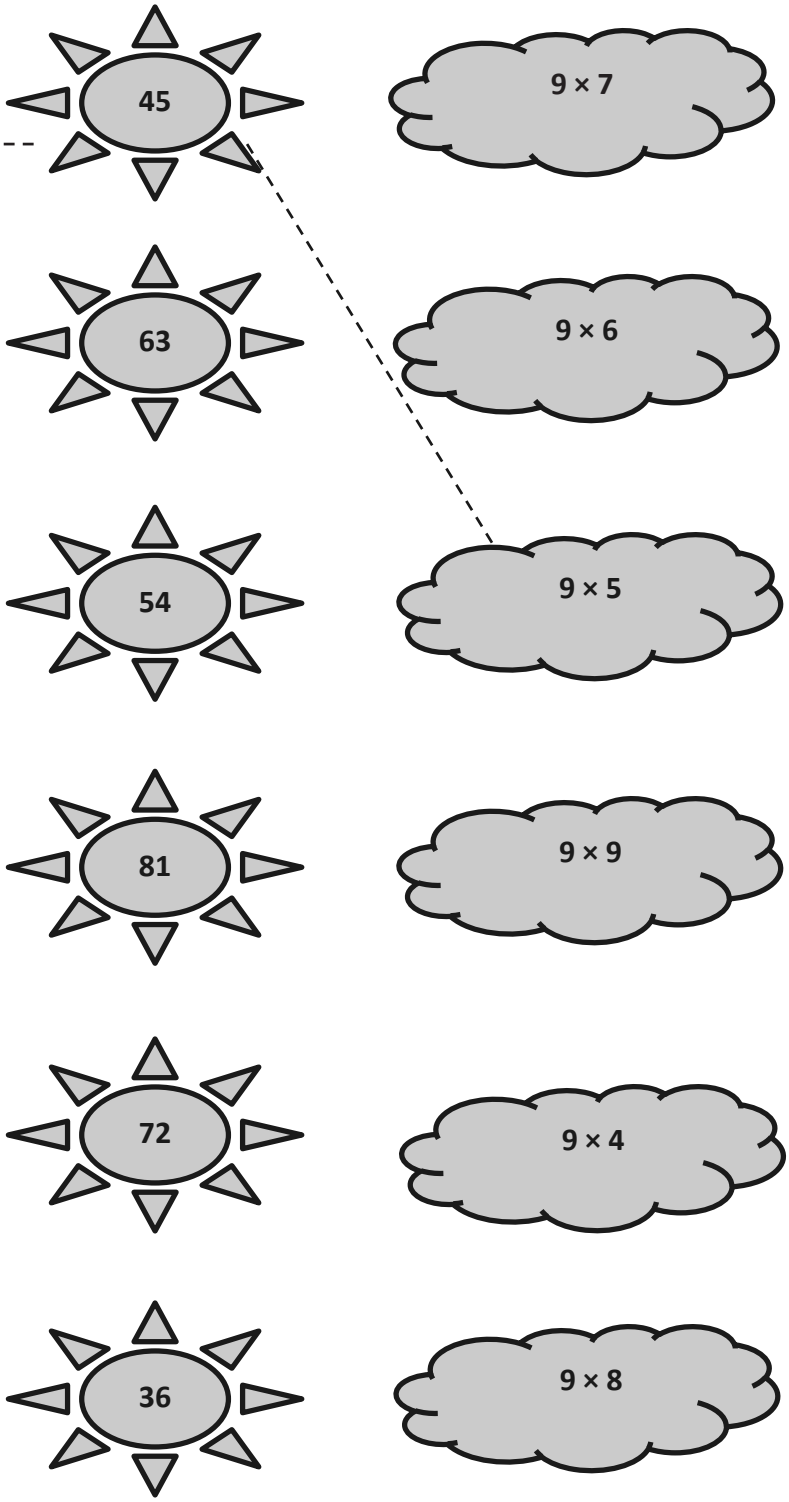
= _____ – 8

e. **9 nines** = 10 nines – 1 nine

= _____ – _____

f. **9 fours** = 10 fours – 1 four

= _____ – _____



Name _____ Date _____

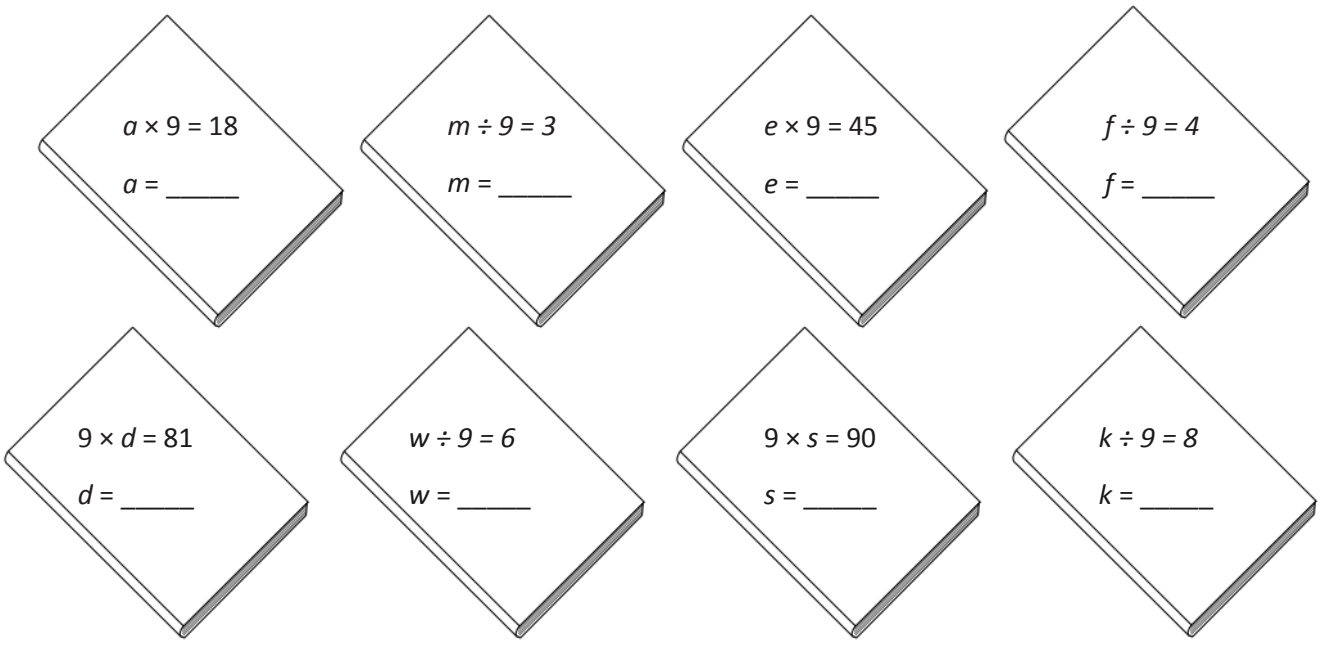
1. a. Skip-count by nines down from 90.

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.



3. Solve.

a. What is 10 more than 0? ____
What is 1 less? ____
1 × 9 = ____

b. What is 10 more than 9? ____
What is 1 less? ____
2 × 9 = ____

c. What is 10 more than 18? ____
What is 1 less? ____
3 × 9 = ____

d. What is 10 more than 27? ____
What is 1 less? ____
4 × 9 = ____

e. What is 10 more than 36? ____
What is 1 less? ____
5 × 9 = ____

f. What is 10 more than 45? ____
What is 1 less? ____
6 × 9 = ____

g. What is 10 more than 54? ____
What is 1 less? ____
7 × 9 = ____

h. What is 10 more than 63? ____
What is 1 less? ____
8 × 9 = ____

i. What is 10 more than 72? ____
What is 1 less? ____
9 × 9 = ____

j. What is 10 more than 81? _____
What is 1 less? _____
10 × 9 = _____

4. Explain the pattern in Problem 3, and use the pattern to solve the next 3 facts.

11 × 9 = _____ 12 × 9 = _____ 13 × 9 = _____

Name _____ Date _____

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

10 × 9 = 90	9 + 0 = 9
9 × 9 = 81	8 + 1 = 9
8 × 9 =	_____ + _____ = _____
7 × 9 =	_____ + _____ = _____
6 × 9 =	_____ + _____ = _____
5 × 9 =	_____ + _____ = _____
4 × 9 =	_____ + _____ = _____
3 × 9 =	_____ + _____ = _____
2 × 9 =	_____ + _____ = _____
1 × 9 =	_____ + _____ = _____

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

2. Thomas calculates 9 × 7 by thinking about it as 70 – 7 = 63. Explain Thomas' strategy.

3. Alexia figures out the answer to 6 × 9 by lowering the thumb on her right hand (shown). What is the answer? Explain Alexia's strategy.

4. Travis writes 72 = 9 × 8. Is he correct? Explain at least 2 strategies Travis can use to check his work.

Name _____ Date _____

1. The store clerk equally divides 36 apples among 9 baskets. Draw a tape diagram, and label the number of apples in each basket as a. Write an equation, and solve for a.

2. Elijah gives each of his friends a pack of 9 almonds. He gives away a total of 45 almonds. How many packs of almonds did he give away? Model using a letter to represent the unknown, and then solve.

3. Denice buys 7 movies. Each movie costs $9. What is the total cost of 7 movies? Use a letter to represent the unknown. Solve.

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?

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?

Name _____ Date _____

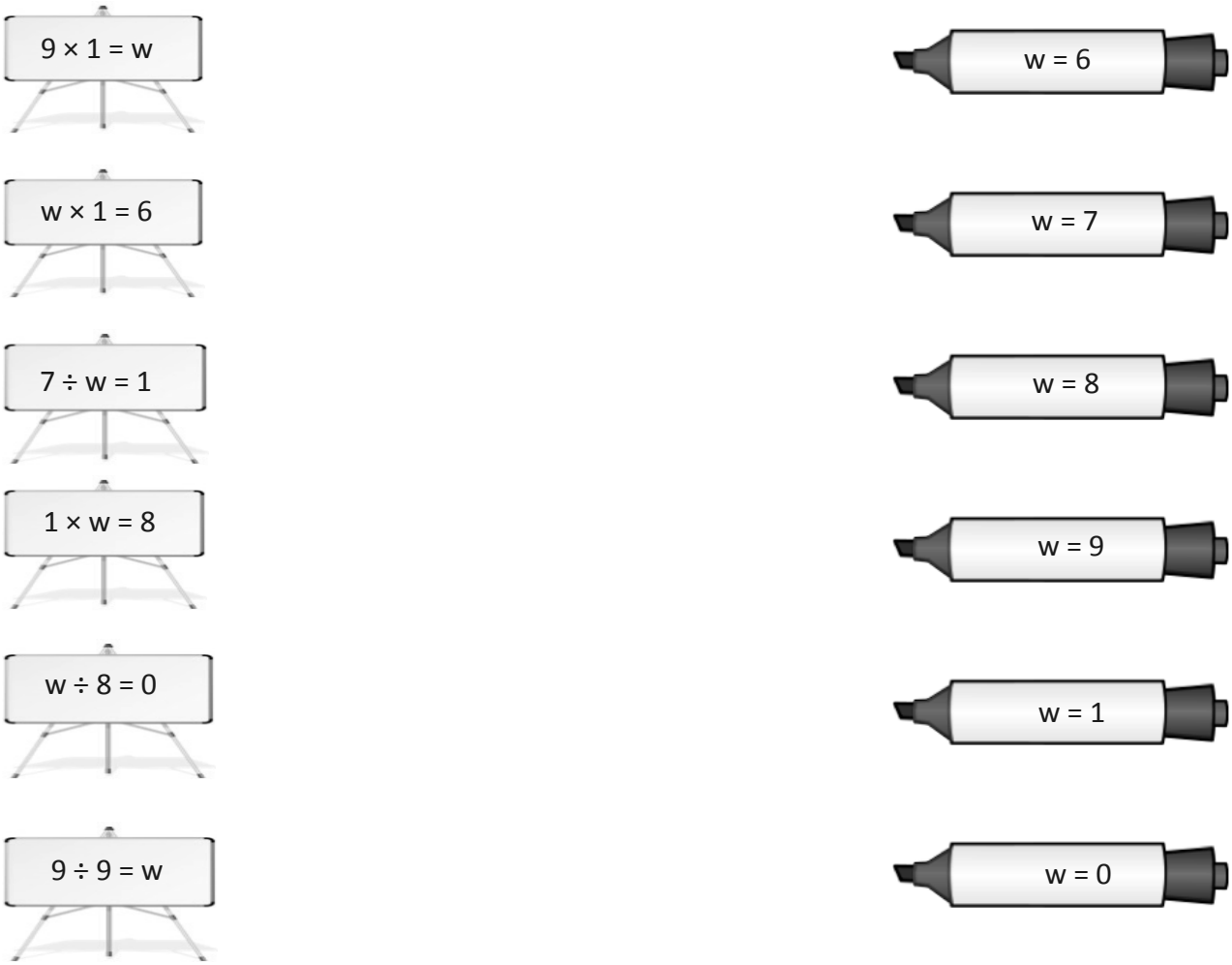
1. Complete.

a. 4 × 1 = _____ b. 4 × 0 = _____ c. _____ × 1 = 5 d. _____ ÷ 5 = 0

e. 6 × _____ = 6 f. _____ ÷ 6 = 0 g. 0 ÷ 7 = _____ h. 7 × _____ = 0

i. 8 ÷ _____ = 8 j. _____ × 8 = 8 k. 9 × _____ = 9 l. 9 ÷ _____ = 1

2. Match each equation with its solution.



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. $0 \times c = 0$	
c. $c \times 1 = 8$	
d. $1 \times c = 8$	
e. $0 \div c = 8$	
f. $8 \div c = 1$	
g. $0 \div c = 0$	
h. $c \div 0 = 8$	

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

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

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

Name _____ Date _____

1. a. Write the products into the chart as fast as you can.

×	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

b. Color the rows and columns with even factors yellow.

c. What do you notice about the factors and products that are left unshaded?

d. Complete the chart by filling in each blank and writing an example for each rule.

Rule	Example
odd times odd equals _____	
even times even equals _____	
even times odd equals _____	

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.

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

$9 = 3 \times 3$

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

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

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

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

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?

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?

4. Leslie weighs her marbles in a jar, and the scale reads 474 grams. The empty jar weighs 439 grams. Each marble weighs 5 grams. How many marbles are in the jar?

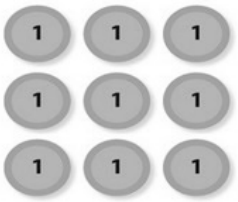
5. Sharon uses 72 centimeters of ribbon to wrap gifts. She uses 24 centimeters of her total ribbon to wrap a big gift. She uses the remaining ribbon for 6 small gifts. How much ribbon will she use for each small gift if she uses the same amount on each?

6. Six friends equally share the cost of a gift. They pay $90 and receive $42 in change. How much does each friend pay?

Name _____ Date _____

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

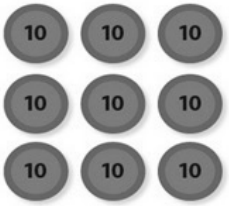
a.



3 × 3 ones = _____ ones

3 × 3 = _____

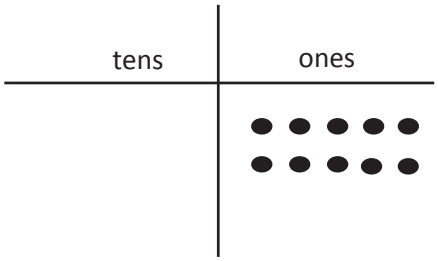
b.



3 × 3 tens = _____ tens

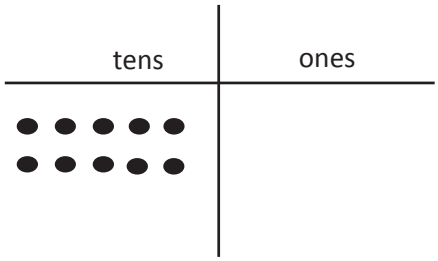
30 × 3 = _____

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



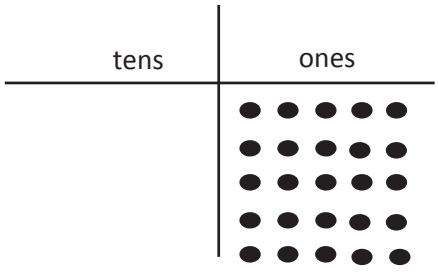
a. 2 × 5 ones = _____ ones

2 × 5 = _____



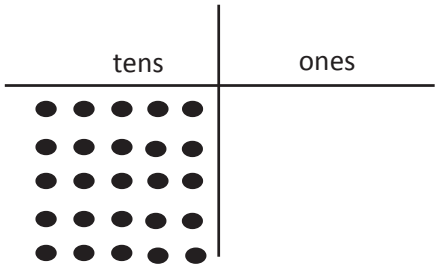
b. 2 × 5 tens = _____ tens

2 × 50 = _____



c. 5 × 5 ones = _____ ones

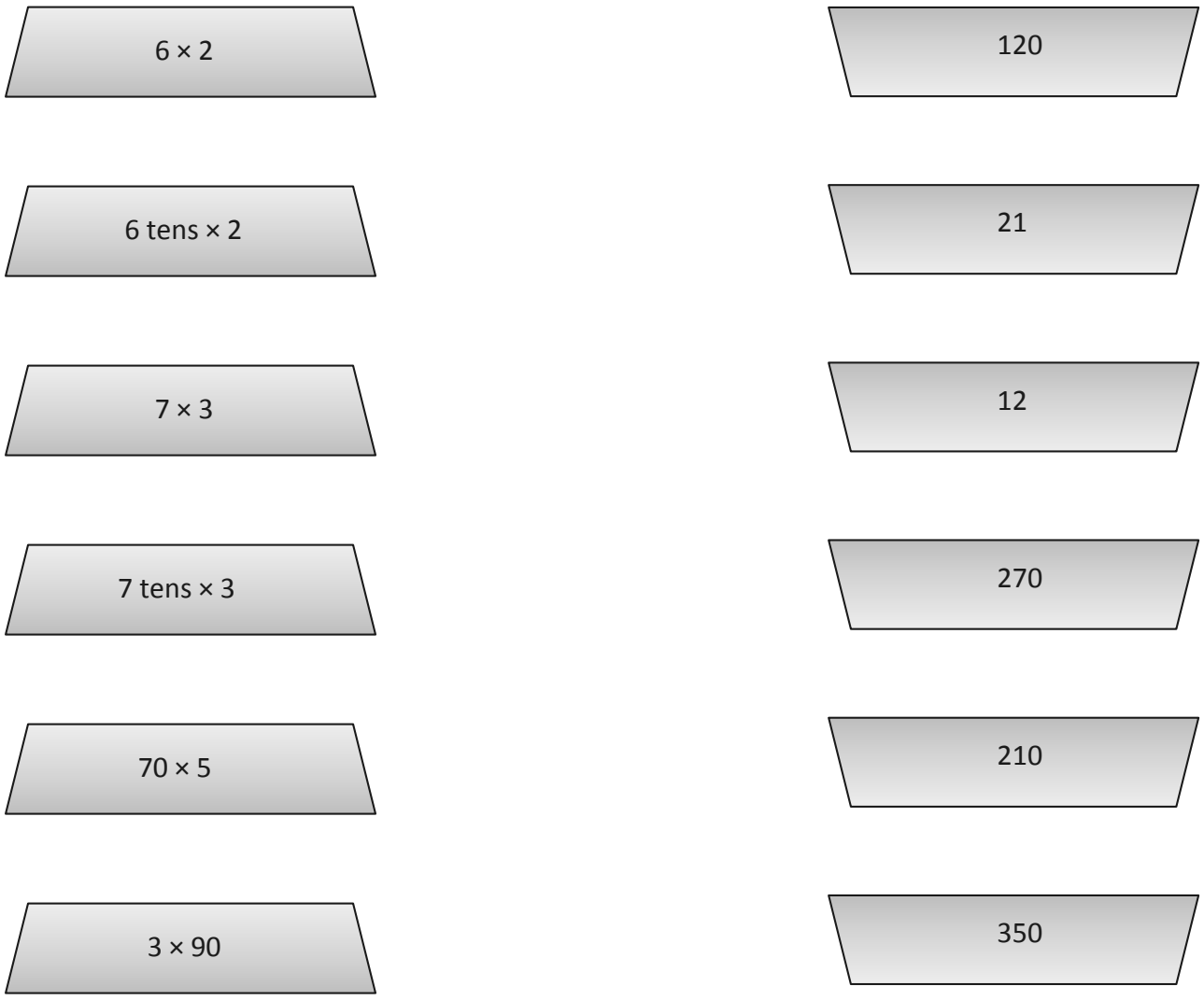
5 × 5 = _____



d. 5 × 5 tens = _____ tens

5 × 50 = _____

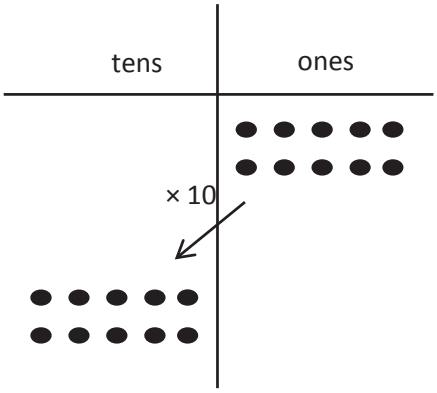
3. Match.



4. Each classroom has 30 desks. What is the total number of desks in 8 classrooms? Model with a tape diagram.

Name _____ Date _____

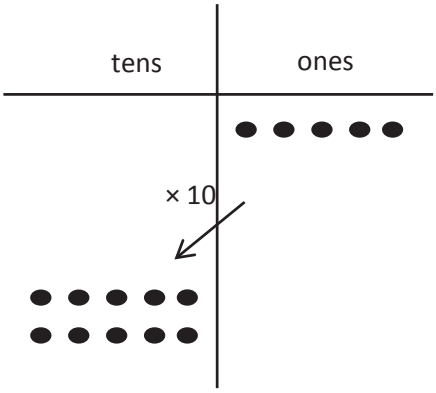
1. Use the chart to complete the equations. Then, solve.



a. (2 × 5) × 10

= (10 ones) × 10

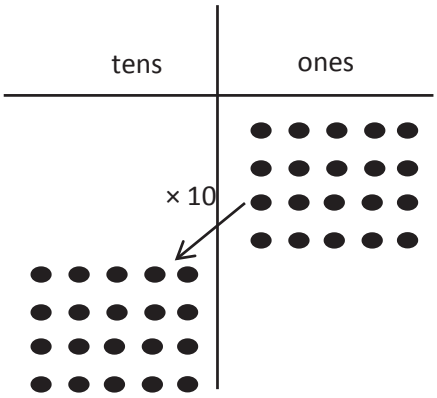
= _____



b. 2 × (5 × 10)

= 2 × (5 tens)

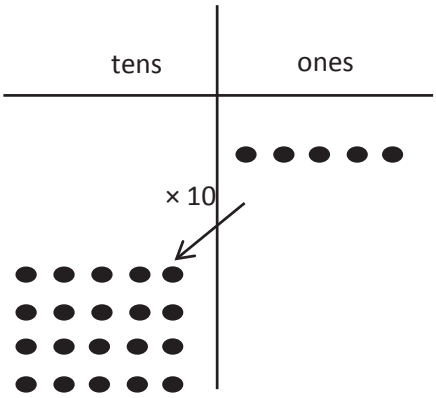
= _____



c. (4 × 5) × 10

= (_____ ones) × 10

= _____



d. 4 × (5 × 10)

= 4 × (____ tens)

= _____

2. Solve. Place parentheses in (c) and (d) as needed to find the related fact.

a. $3 \times 20 = 3 \times (2 \times 10)$

$= (3 \times 2) \times 10$

$= \_\_6\_\_ \times 10$

$= \_\_\_\_\_$

b. $3 \times 30 = 3 \times (3 \times 10)$

$= (3 \times 3) \times 10$

$= \_\_\_\_\_ \times 10$

$= \_\_\_\_\_$

c. $3 \times 40 = 3 \times (4 \times 10)$

$= 3 \times 4 \times 10$

$= \_\_\_\_\_ \times 10$

$= \_\_\_\_\_$

d. $3 \times 50 = 3 \times 5 \times 10$

$= 3 \times 5 \times 10$

$= \_\_\_\_\_ \times 10$

$= \_\_\_\_\_$

3. Danny solves 5×20 by thinking about 10×10. Explain his strategy.

Name _____ Date _____

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

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

2. 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?

3. 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.

4. Mr. Ramirez receives 4 sets of books. Each set has 16 fiction books and 14 nonfiction books. He puts 97 books in his library and donates the rest. How many books does he donate?

5. Celia sells calendars for a fundraiser. Each calendar costs $9. She sells 16 calendars to her family members and 14 calendars to the people in her neighborhood. Her goal is to earn $300. Does Celia reach her goal? Explain your answer.

6. The video store sells science and history movies for $5 each. How much money does the video store make if it sells 33 science movies and 57 history movies?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