

MSP

Grade 3 Module 1

Lesson Refreshers

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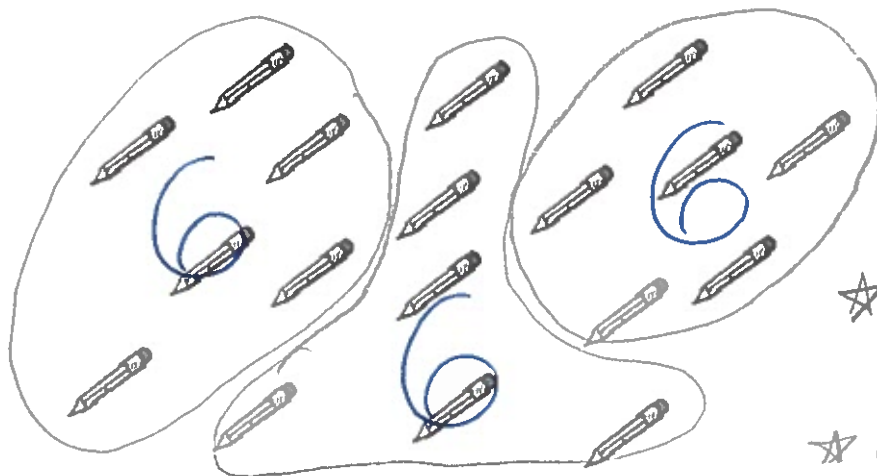
Homework Starters

2. The picture below shows 3 groups of hot dogs. Does the picture show 3×3 ? Explain why or why not.



3. Draw a picture to show $4 \times 2 = 8$.

4. Circle the pencils below to show 3 groups of 6. Write a repeated addition and a multiplication sentence to represent the picture.



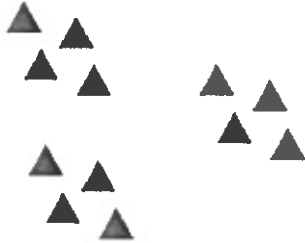
★ Be sure to make 3 groups with 6 pencils inside EACH group.

★ Repeated addition = $6 + 6 + 6 = 18$

★ Multiplication = $6 \times 3 = 18$

Handwritten signature

5. The triangles below show 3 groups of four.



a. Redraw the triangles as an array that shows 3 rows of four.

b. Compare the drawing to your array. How are they the same? How are they different?

6. Roger has a collection of stamps. He arranges the stamps into 5 rows of four. Draw an array to represent Roger's stamps. Then, write a multiplication equation to describe the array.

★ Rows go across left to right
 ★ "of four" means 4 in each row

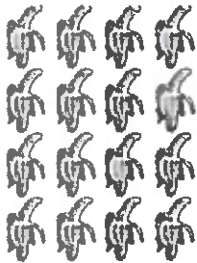


$$5 \times 4 = 20$$

7. Kimberly arranges her 18 markers as an array. Draw an array that Kimberly might make. Then, write a multiplication equation to describe your array.

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3. There are 4 bananas in each row. How many bananas are there in _____ rows?



a. Number of rows: _____ Size of each row: _____

b. _____ \times 4 = _____

c. There are _____ bananas altogether.

4. There are _____ peppers in each row. How many peppers are there in 6 rows?



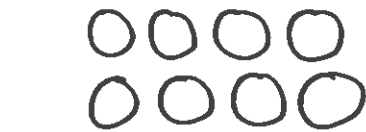
a. Number of rows: _____ Size of each row: _____

b. _____ \times _____ = _____

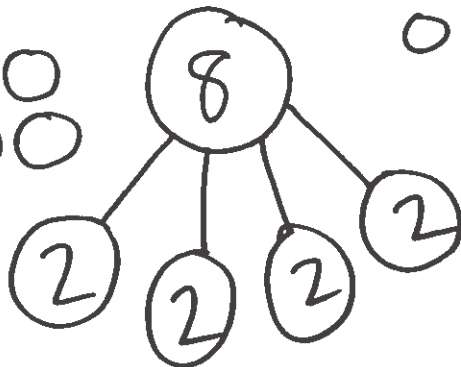
c. There are _____ peppers altogether.

Think $4 \times 2 = 8$

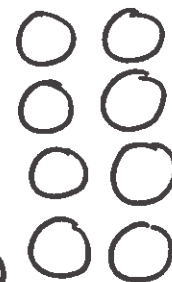
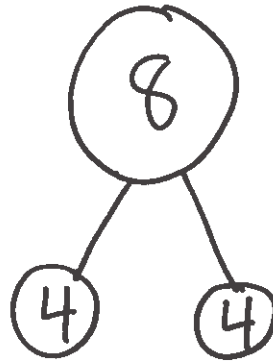
5. Draw an array using factors 4 and 2. Then, show a number bond where each part represents the amount in one row.



2 rows of 4



or



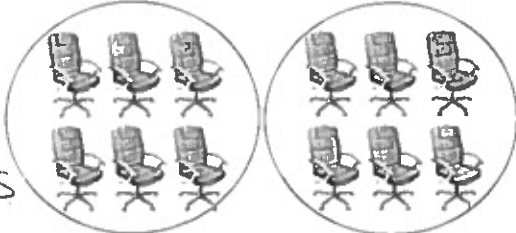
4 rows of 2

An array arranges objects in rows and columns.

Name _____

Date _____

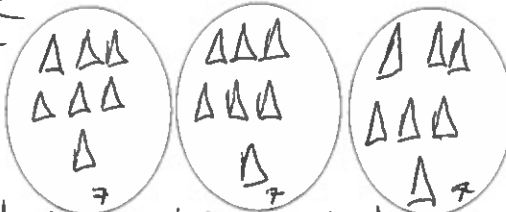
Partitive

1. 

12 chairs are divided into 2 equal groups.

There are 6 chairs in each group.

number of chairs for

2. 


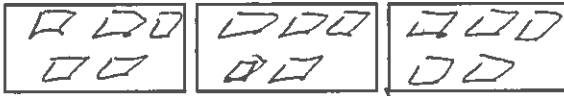
Divide the 21 triangles into 3 groups with the same number of triangles in each group.

There are 7 triangles in each group.

We know the total of triangles (21)

We know how many groups there are (3)

We need to figure out how many triangles are in each group (circle)

3. 


25 erasers are divided into 5 equal groups.

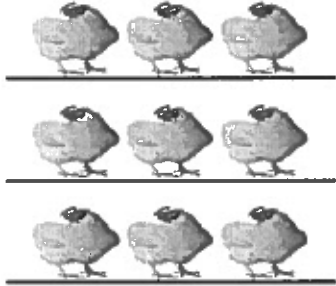
There are 5 erasers in each group.

Partitive Division

We know there are 25

We know there are 5 groups

We need to figure out how

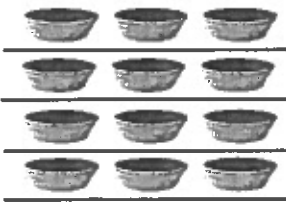
4. 

9 chickens are divided into 3 equal groups.

There are 3 chickens in each group.

$9 \div 3 = \underline{\quad}$

$21 \div 3 =$
 $3 \text{ groups} \times \text{triangles} = 21 \text{ triangles}$

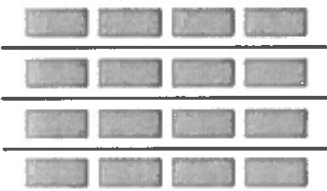
5. 

There are 3 buckets in each group.

$12 \div 4 = \underline{\quad}$

many erasers go into each group.

5 x = 25

6. 

$16 \div 4 = \underline{\quad}$

Division is opposite of multiplication

Kirch

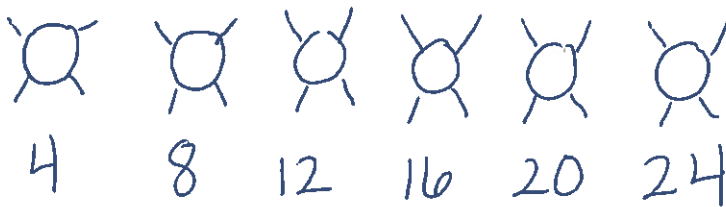
5. Daniel has 12 apples. He puts 6 apples in each bag. Circle the apples to find the number of bags Daniel makes.



- a. Write a division sentence where the answer represents the number of Daniel's bags.
- b. Draw a number bond to represent the problem.

6. Jacob draws cats. He draws 4 legs on each cat for a total of 24 legs.

- a. Use a count-by to find the number of cats Jacob draws. Make a drawing to match your counting.



★ To count-by means to skip
 count skip 4 skip 4
 1-2-3-4-5-6-7-8-9-10-11-12
 13-14-15-16-17-18-19-20

- b. Write a division sentence to represent the problem.

$24 \div 4 = 6$ Jacob draws 6 cats.

JMD

4. Judy washes 24 dishes. She then dries and stacks the dishes equally into 4 piles. How many dishes are in each pile?

$$24 \div 4 = \underline{\hspace{2cm}}$$

$$4 \times \underline{\hspace{2cm}} = 24$$

What is the meaning of the unknown factor and quotient? _____

5. Nate solves the equation $\underline{3} \times 5 = 15$ by writing and solving $15 \div 5 = \underline{3}$. Explain why Nate's method works.



Nate's method works because in both problems we have 3 groups of 5, and a total of 15. The quotient in a division equation is like finding the unknown factor in a multiplication equation.

6. The blanks in Problem 5 represent the number of groups. Draw an array to represent the equations.

Name _____

Date _____

1. a. Draw an array that shows 7 rows of 2.

b. Write a multiplication sentence where the first factor represents the number of rows.

_____ × _____ = _____

2. a. Draw an array that shows 2 rows of 7.



Be sure to have 2 rows with 7 things.

b. Write a multiplication sentence where the first factor represents the number of rows.

$\frac{2}{\text{rows}} \times \frac{7}{\text{things}} = \frac{14}{\text{Total Things}}$

* Pay attention to what number should be first

3. a. Turn your paper to look at the arrays in Problems 1 and 2 in different ways. What is the same and what is different about them?

b. Why are the factors in your multiplication sentences in a different order?

4. Write a multiplication sentence to match the number of groups. Skip-count to find the totals. The first one is done for you.

a. 2 twos: $2 \times 2 = 4$

d. 2 fours: _____

g. 2 fives: _____

b. 3 twos: _____

e. 4 twos: _____

h. 6 twos: _____

c. 2 threes: _____

f. 5 twos: _____

i. 2 sixes: _____

ax

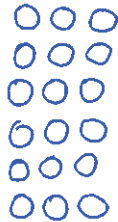
Name _____

Date _____

1. Draw an array that shows 6 rows of 3.

2. Draw an array that shows 3 rows of 6.

Make sure to pay attention to how many rows are required



$6 \times 3 = 18$

3. Write multiplication expressions for the arrays in Problems 1 and 2. Let the first factor in each expression represent the number of rows. Use the commutative property to make sure the equation below is true.

_____ \times _____ = _____ \times _____
Problem 1 **Problem 2**

4. Write a multiplication sentence for each expression. You might skip-count to find the totals. The first one is done for you.

- a. 5 threes: $5 \times 3 = 15$
- b. 3 fives: _____
- c. 6 threes: _____
- d. 3 sixes: _____
- e. 7 threes: _____
- f. 3 sevens: _____
- g. 8 threes: _____
- h. 3 nines: _____
- i. 10 threes: _____

5. Find the unknowns that make the equations true. Then, draw a line to match related facts.

- a. $3 + 3 + 3 + 3 + 3 + 3 =$ _____
- b. $3 \times 5 =$ _____
- c. 8 threes + 1 three = _____
- d. $3 \times 9 =$ _____
- e. _____ = 6×3
- f. $15 = 5 \times$ _____

Handwritten initials

4. Franklin collects stickers. He organizes his stickers in 5 rows of four.

a. Draw an array to represent Franklin's stickers. Use an x to show each sticker.



An array has equal rows and equal columns

★ Rows go ACROSS

★ Columns go DOWN

b. Solve the equation to find Franklin's total number of stickers. $5 \times 4 = 20$

5. Franklin adds 2 more rows. Use circles to show his new stickers on the array in Problem 4(a).

a. Write and solve an equation to represent the circles you added to the array.

$$\underline{2} \times 4 = \underline{8}$$

b. Complete the equation to show how you add the totals of 2 multiplication facts to find Franklin's total number of stickers.

$$\underline{20} + \underline{8} = 28$$

c. Complete the unknown to show Franklin's total number of stickers.

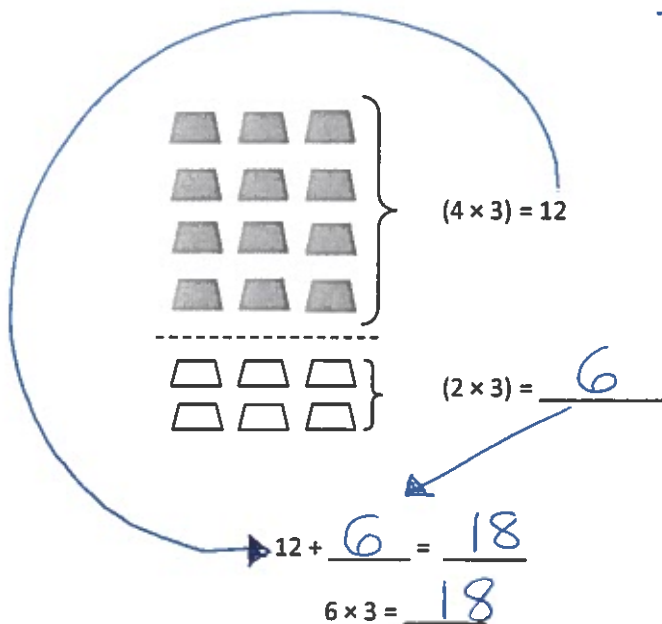
$$\underline{7} \times 4 = 28$$

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Name _____

Date _____

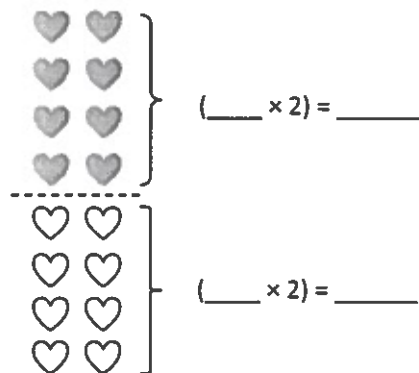
1. $6 \times 3 = \underline{18}$



$$\begin{aligned} \underline{6} \times 3 &= (\underline{4} \times 3) + (\underline{2} \times 3) \\ &= 12 + 6 \\ &= 18 \end{aligned}$$

★ Break apart the 6
Keep $\times 3$ the same

2. $8 \times 2 = \underline{\hspace{2cm}}$



$(4 \times 2) + (4 \times 2) = \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$

$\underline{\hspace{2cm}} \times 2 = \underline{\hspace{2cm}}$

Name _____

Date _____

1. Fred has 10 pears. He puts 2 pears in each basket. How many baskets does he have?

a. Draw an array where each column represents the number of pears in each basket.

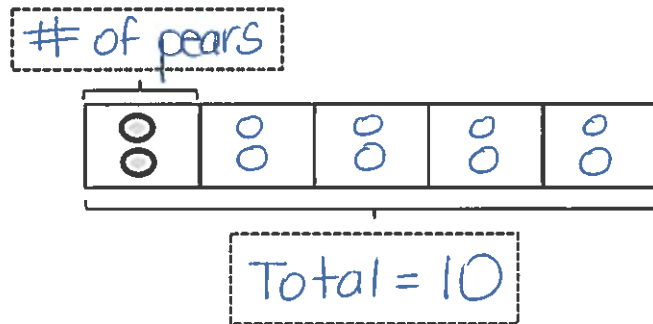
★ equal rows
equal columns



★ Columns go DOWN

$$\underline{10} \div 2 = \underline{5}$$

b. Redraw the pears in each basket as a unit in the tape diagram. Label the diagram with known and unknown information from the problem.



2. Ms. Meyer organizes 15 clipboards equally into 3 boxes. How many clipboards are in each box? Model the problem with both an array and a labeled tape diagram. Show each column as the number of clipboards in each box.

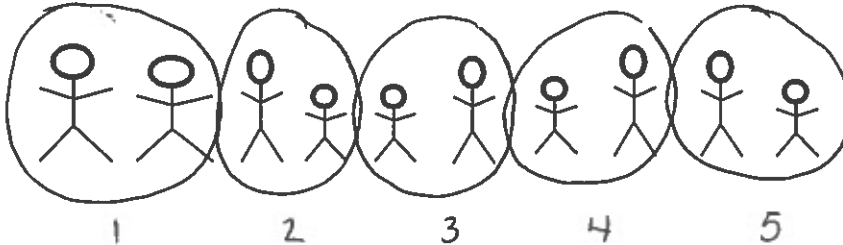
There are _____ clipboards in each box.

VL

Name _____

Date _____

1. Ten people wait in line for the roller coaster. Two people sit in each car. Circle to find the total number of cars needed.

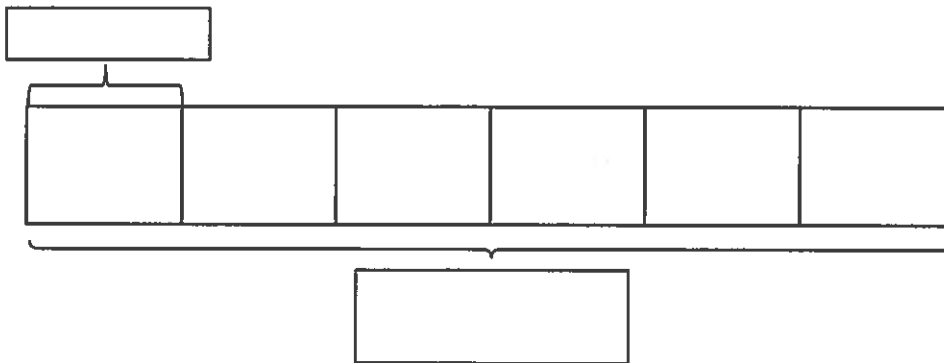


Circle groups of 2, because 2 people fit in a car.

$10 \div 2 = 5$

There are 5 cars needed.

2. Mr. Ramirez divides 12 frogs equally into 6 groups for students to study. Draw frogs to find the number in each group. Label known and unknown information on the tape diagram to help you solve.

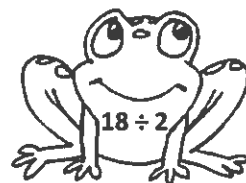


$6 \times \underline{\hspace{2cm}} = 12$

$12 \div 6 = \underline{\hspace{2cm}}$

There are _____ frogs in each group.

3. Match.



Andrzejewski

Name _____

Date _____

1. Fill in the blanks to make true number sentences.

$2 \times 3 = 6$ $6 \div 3 = \underline{\quad}$
--

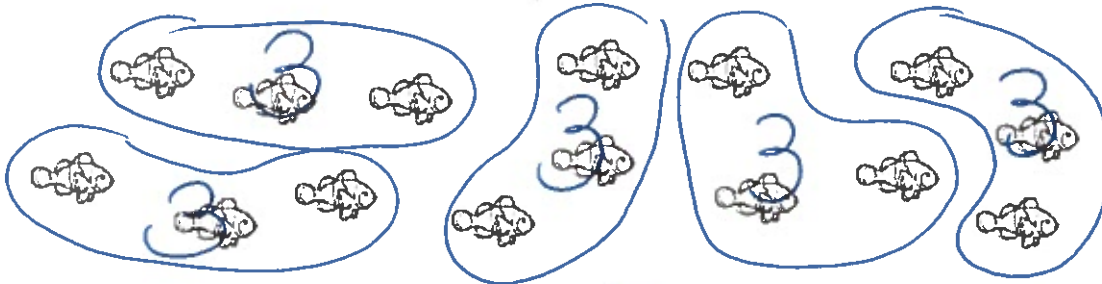
$1 \times 3 = \underline{\quad}$ $\underline{\quad} \div 3 = 1$
--

$7 \times 3 = \underline{\quad}$ $\underline{\quad} \div 3 = 7$
--

$9 \times 3 = \underline{\quad}$ $\underline{\quad} \div 3 = 9$
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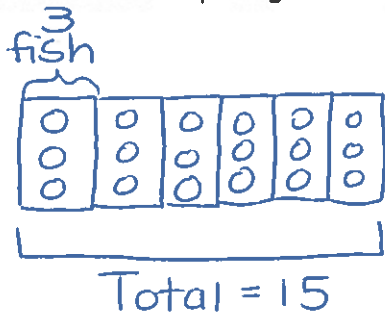
2. Ms. Gillette's pet fish are shown below. She keeps 3 fish in each tank.

a. Circle to show how many fish tanks she has. Then, skip-count to find the total number of fish.



3, 6, 9, 12, 15 → skip-counting
 ① ② ③ ④ ⑤

b. Draw and label a tape diagram to represent the problem.



tape diagram - a drawing that looks like a piece of tape, used to show number relationships.

$$\underline{15} \div 3 = \underline{5}$$

Ms. Gillette has 5 fish tanks.

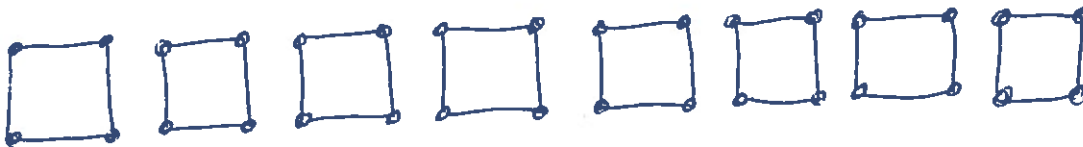
AC

2. Lisa places 5 rows of 4 juice boxes in the refrigerator. Draw an array and skip-count to find the total number of juice boxes.

There are _____ juice boxes in total.

3. Six folders are placed on each table. How many folders are there on 4 tables? Draw and label a tape diagram to solve.

4. Find the total number of corners on 8 squares.



★ 4 corners on each square

★ 8 groups of 4

★ $8 \times 4 = 32$

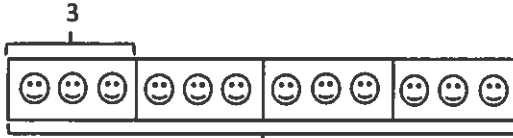
★ $4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 = 32$

Name _____

Date _____

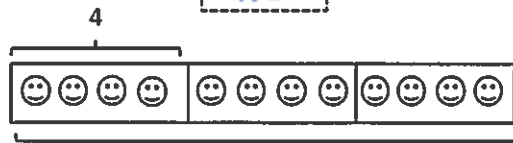
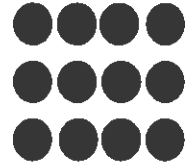
1. Label the tape diagrams and complete the equations. Then, draw an array to represent the problems.

a.



$4 \times 3 = 12$

12

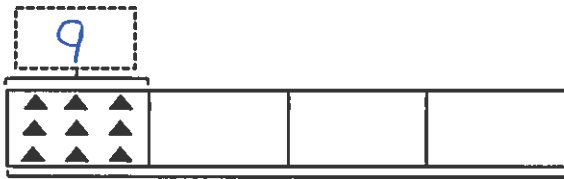


$3 \times 4 = 12$

12

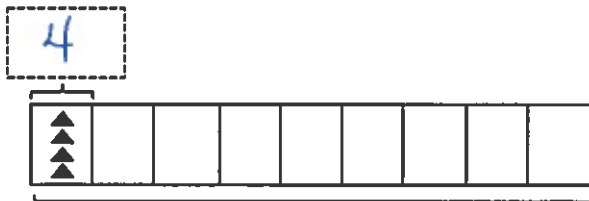
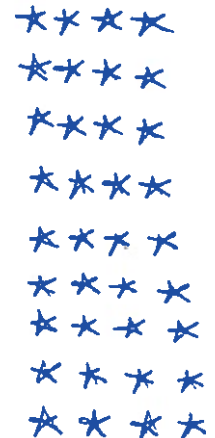
**Be sure to know the difference of 3 groups of 4 and 4 groups of 3.*

b.



$4 \times 9 = 36$

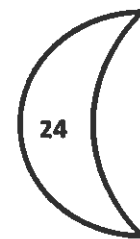
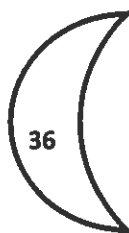
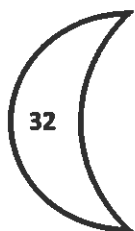
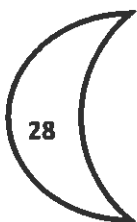
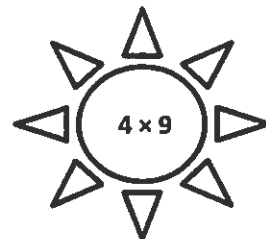
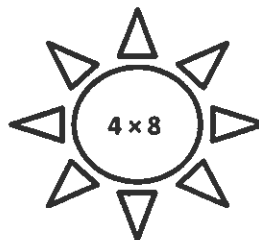
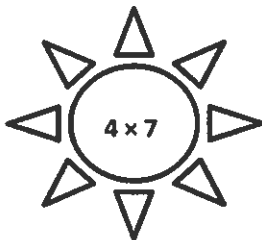
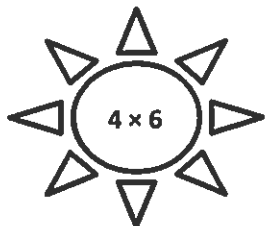
36



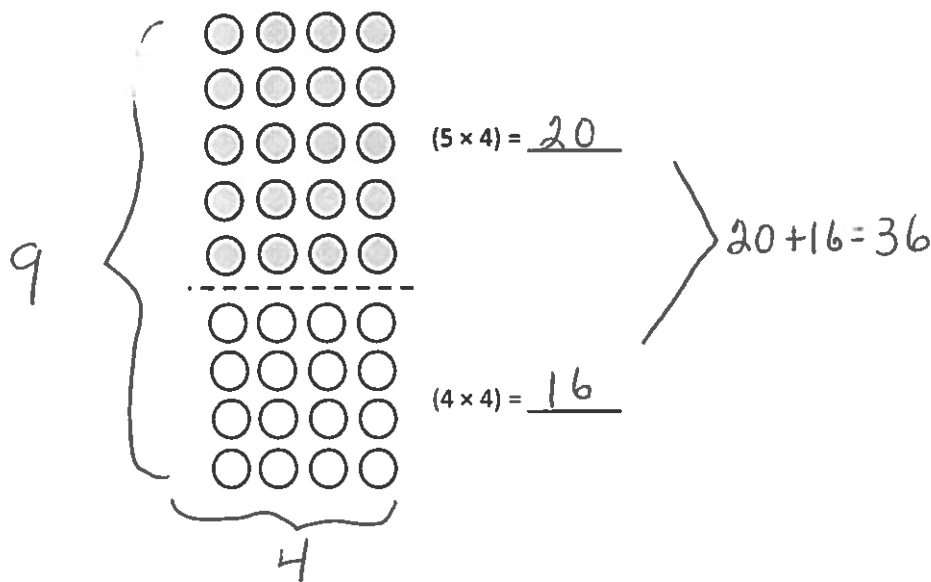
$9 \times 4 = 36$

36

2. Match the multiplication expressions with their answers.



3. The array below shows one strategy for solving 9×4 . Explain the strategy using your own words.



To solve 9×4 , break apart the array into 2 smaller arrays. I know $5 \times 4 = 20$ and $4 \times 4 = 16$. I add $20 + 16$ and get my answer 36.

★ When we distribute we break apart.

2. The teacher puts 32 students into groups of 4. How many groups does she make? Draw and label a tape diagram to solve.

3. The store clerk arranges 24 toothbrushes into 4 equal rows. How many toothbrushes are in each row?

4. An art teacher has 40 paintbrushes. She divides them equally among her 4 students. She finds 8 more brushes and divides these equally among the students, as well. How many brushes does each student receive?

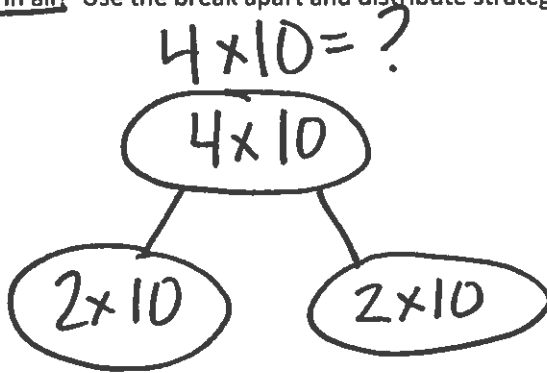
\swarrow total \swarrow \div
 $40 \div 4 = 10$ Each student gets 10 paintbrushes.

THEN \downarrow

$8 \div 4 = 2$ Each student gets 2 MORE paintbrushes.

Add $10 + 2 = 12$ to get the TOTAL number of paintbrushes that each person gets.

3. Lydia makes 10 pancakes. She tops each pancake with 4 blueberries. How many blueberries does Lydia use in all? Use the break apart and distribute strategy, and draw a number bond to solve.



$$(2 \times 10) + (2 \times 10) = 4 \times 10$$

$$20 + 20 = 40$$

$$4 \times 10 = 40$$

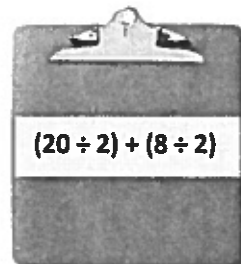
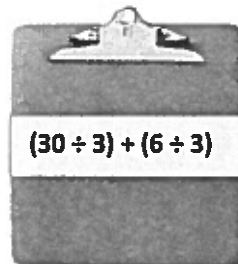
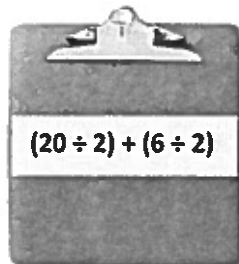
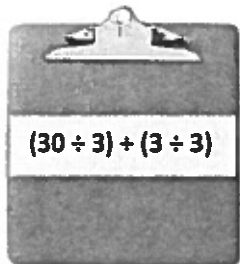
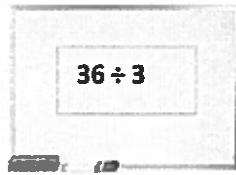
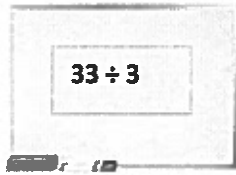
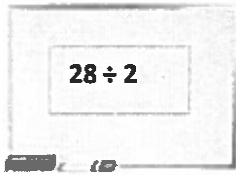
Lydia uses 40 blueberries in all.

4. Steven solves 7×3 using the break apart and distribute strategy. Show an example of what Steven's work might look like below.

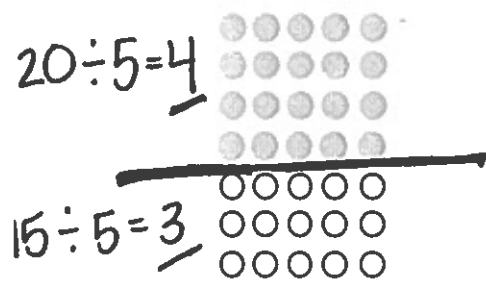
5. There are 7 days in 1 week. How many days are there in 10 weeks?

AK

2. Match equal expressions.



3. Alex draws the array below to find the answer to $35 \div 5$. Explain Alex's strategy.



Alex breaks apart 35 into 5 fours and 5 threes. 5 fours = 20. 5 threes = 15. He adds the quotients together to get 7.

$$4 + 3 = 7$$

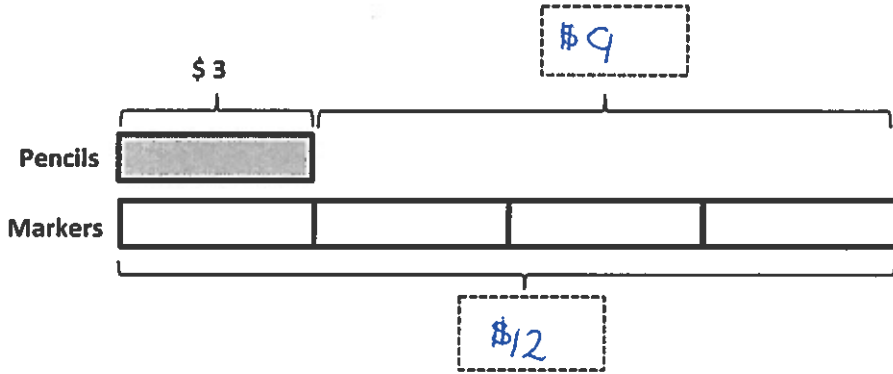
$$35 \div 5 = 7$$

AK

Name _____

Date _____

1. Jerry buys a pack of pencils that costs \$3. David buys 4 sets of markers. Each set of markers also costs \$3.



*Be sure to get the total cost. If 1 pack costs \$3 how much does 4 packs cost?
 $\$3 \times 4 = \12

a. What is the total cost of the markers?

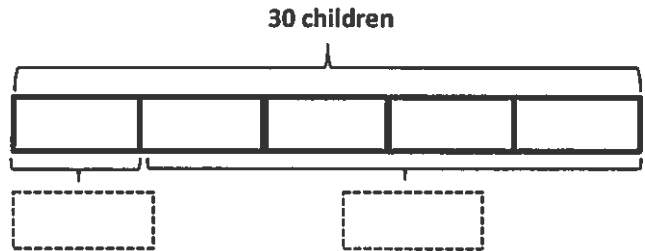
$\$12$

b. How much more does David spend on 4 sets of markers than Jerry spends on a pack of pencils?

$\$12 - 3 = \9 more

2. Thirty students are eating lunch at 5 tables. Each table has the same number of students.

a. How many students are sitting at each table?

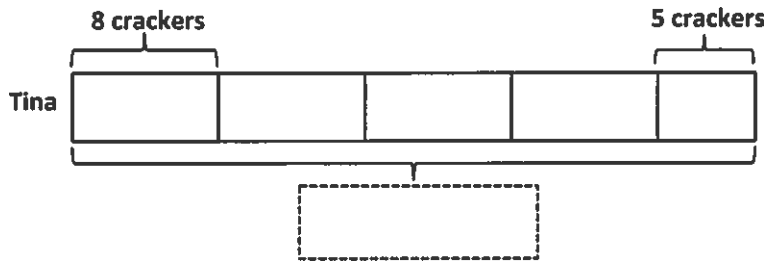


b. How many students are sitting at 4 tables?

Name _____

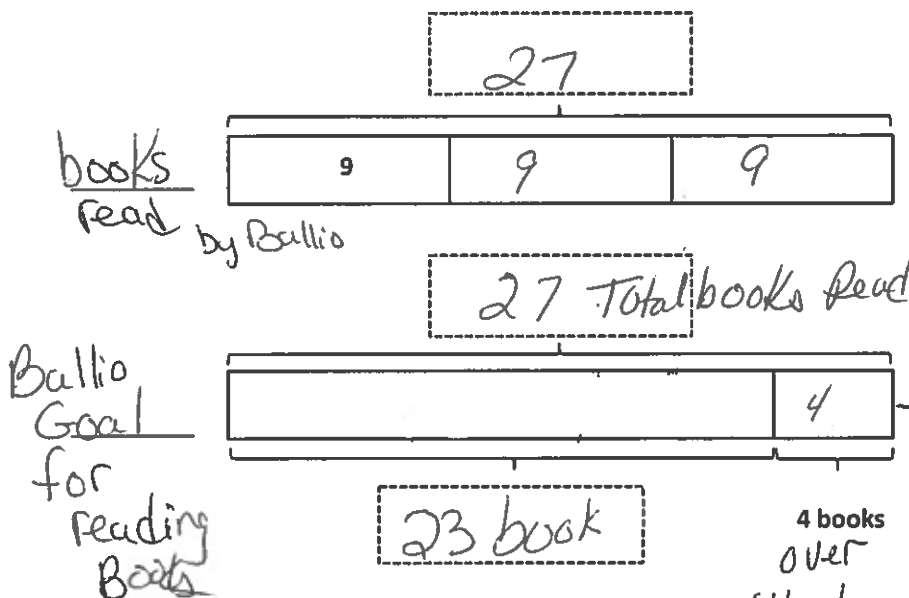
Date _____

1. Tina eats 8 crackers for a snack each day at school. On Friday, she drops 3 and only eats 5. Write and solve an equation to show the total number of crackers Tina eats during the week.



Tina eats _____ crackers.

2. Ballio has a reading goal. He checks 3 boxes of 9 books out from the library. After finishing them, he realizes that he beat his goal by 4 books! Label the tape diagrams to find Ballio's reading goal.



1) multiply the 9 books by the 3 boxes → to check.
 $9 \times 3 = 27$ get total product of 27 books
 2) Ballio went over by 4 → subtract 4 from 27 $(27 - 4 = 23)$

$27 - 4 = 23$
 4 books over that Ballio read.
 Ballio's goal is to read 23 books.

know