

TEK: 3.4K/3.4F

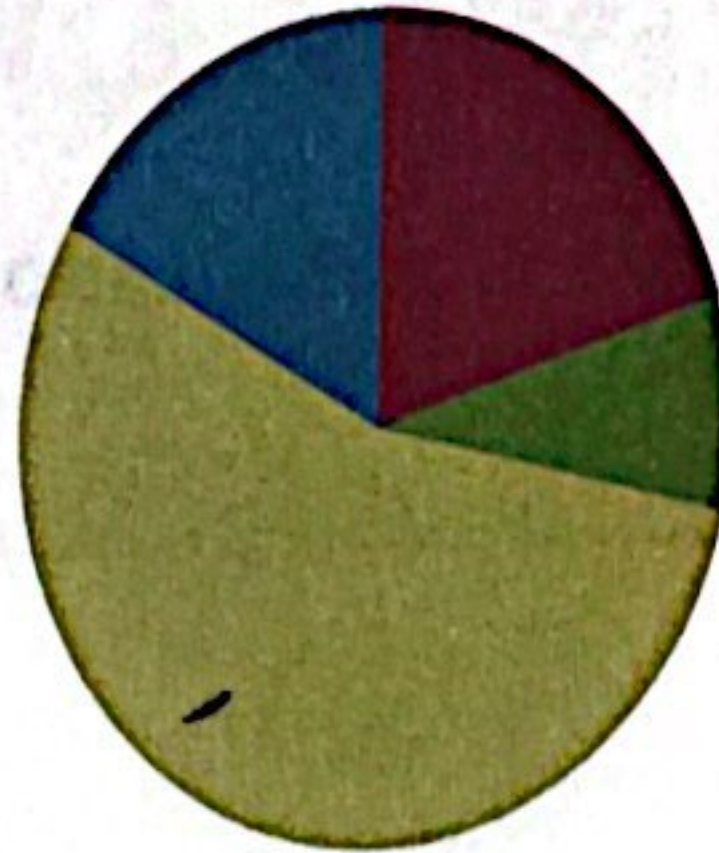
Lesson 14

Objective: Skip-count objects in models to build fluency with multiplication facts using units of 4.

Spark: Math 4/8

Suggested Lesson Structure

Fluency Practice	(12 minutes)
Application Problem	(5 minutes)
Concept Development	(33 minutes)
Student Debrief	(10 minutes)
Total Time	(60 minutes)



Vocab

- group/factor
- each/factor
- total/product
- partition
- Fact Family

Fluency Practice (12 minutes)

- Sprint: Multiply or Divide by 3 3.4F (9 minutes)
- Read Strip Diagrams 3.4K (3 minutes)

Sprint: Multiply or Divide by 3 ~~(9 minutes)~~ ^{5 mins}

Materials: (S) Multiply or Divide by 3 Sprint

Note: This activity builds fluency with multiplication and division using units of 3. It works toward students' fluency within 100. See Lesson 2 for the directions for administering a Sprint.

Instead of movement exercises between Sprints, have students:

- Count by twos to 20 forward and backward.
- Count by fours to 40 forward and backward.

Read Strip Diagrams (3 minutes)

Materials: (S) Personal white board

Note: Students practice *reading* the difference between the value of the unit (the size of the groups) and the number of units. The activity anticipates using the strip diagram as a model for commutativity.

T: (Project a strip diagram partitioned into 5 equal units, drawing 2 stars in the first unit.) What is the value of each unit?

S: 2 stars.

T: How many units are there?

S: 5 units.

Scaffolds

- use counter chips to aid students in skip counting
- use 100s chart

T: Write a multiplication sentence for this strip diagram.

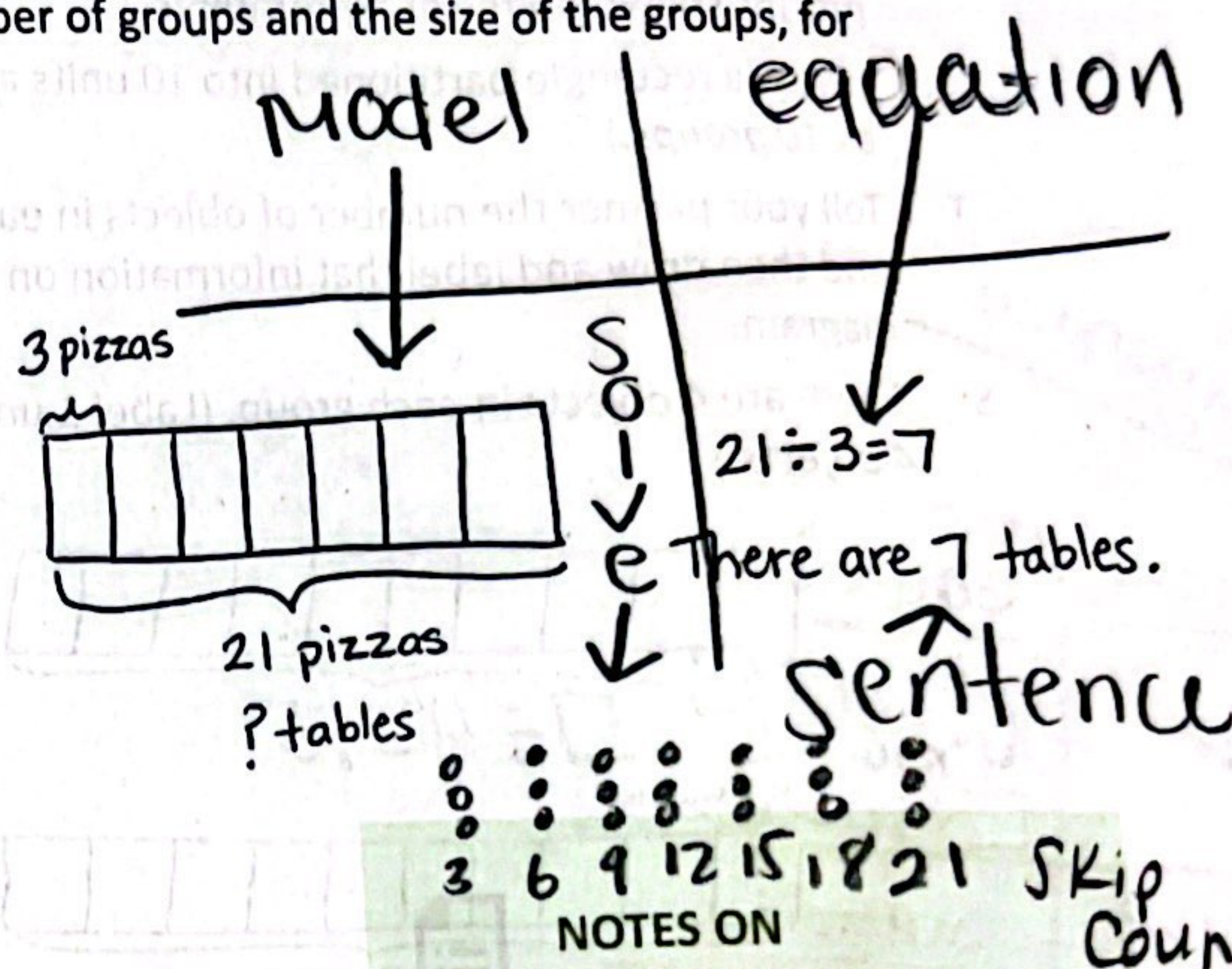
S: (Write $5 \times 2 = 10$.)

Repeat the process, alternating between finding the number of groups and the size of the groups, for $4 \times 3 = 12$, $8 \div 4 = 2$, and $15 \div 3 = 5$.

Application Problem (5 minutes)

Jackie buys 21 pizzas for a party. She places 3 pizzas on each table. How many tables are there?

Note: This problem reviews division from Lesson 13 where the unknown is the number of groups. In preparation for today's lesson, the teacher might choose to have students solve by skip-counting to add units until they reach the total of 21.



Concept Development (33 minutes)

Materials: (S) Personal white board, fours array (Template) (pictured below)

Problem 1: Skip-count by fours using an array to multiply.

Students start with the template inserted into their personal white board.

T: Let's count to 40 using the array. Hum the number you count as you point to each dot. For the last dot in each row, say the number out loud and write it to the right of the row.

S: Hum, hum, hum, 4. (Write 4. Continue counting in this manner to 40.)

T: At the signal, tell what unit we counted by. (Signal.)

S: Fours!

T: I will say a multiplication expression. You find the answer on your array. Write the expression and an equal sign next to the answer to make an equation. (Say expressions that correspond to the array out of order, for example, 4×4 , 9×4 , etc.)

S: (Write expressions and equal signs next to each answer.)

T: I will say the answer; you say the equation. 20.

S: $20 = 5 \times 4$.

Fours Array Template (Labeled)

○	○	○	○	4
○	○	○	○	8
○	○	○	○	12
○	○	○	○	16
○	○	○	○	20
○	○	○	○	24
○	○	○	○	28
○	○	○	○	32
○	○	○	○	36
○	○	○	○	40

It may be tempting to skip the template for this problem; however, the template helps connect spoken numbers with their physical value. It illustrates the relationship between counting by fours and multiplying with units of 4. All students, particularly English language learners, may benefit from the presentation of information in more than one mode.

Cut

I do: Ex 1 Explicit teacher model

Problem 2: Use a strip diagram to model and solve multiplication. → monitor for students being on task.

T: Draw a strip diagram that represents the number of groups shown on the array template.

S: (Draw a rectangle partitioned into 10 units and label it as 10 groups.)

T: Tell your partner the number of objects in each group, and then draw and label that information on your diagram.

S: There are 4 objects in each group. (Label 1 unit as 4 objects.)

organize

Model

equa

$$10 \times 4 = \square$$

$$4 \times 10 = \square$$

$$\square \div 10 = 4$$

$$\square \div 4 = 10$$

solve

Skip
count

T: Label the unknown on your diagram. Check your work with your partner's.

S: (Label the total unknown and check with a partner.)

T: Skip-count units to find the total value of your strip diagram.

S: 4, 8, 12, 16, 20, 24, 28, 32, 36, 40.

T: Write and solve an equation to represent the problem.

S: (Write $10 \times 4 = 40$.)

Repeat the process using 7×4 and 4×5 . Consider asking students to draw the arrays, or vary practice by adding context to one or both of these problems.

Problem Set (10 minutes)

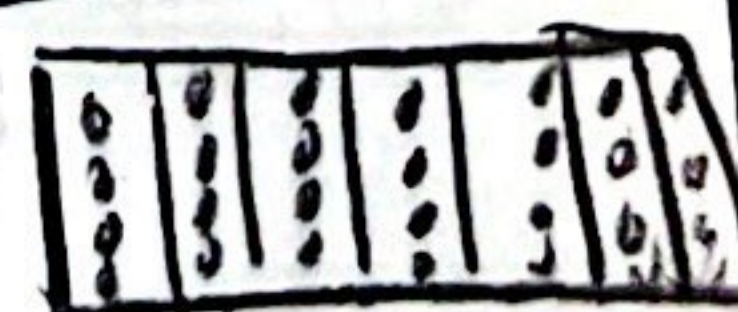
Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method for solving. Students should solve these problems using the RDW approach used for Application Problems.

We do: Ex 2

• Stamp CFS

• create anchor chart

Model



4, 8, 12, 16, 20, 24, 28, 32, 36, 40

Equa

$$7 \times 4 = \square$$

$$4 \times 7 = \square$$

$$\square \div 7 = 4$$

$$\square \div 4 = 7$$

Solve

Name: Gina Date: _____

1. Skip count by fours. Match each answer to the appropriate expression.

	4	
	8	
	12	
	16	
	20	
	24	
	28	
	32	
	36	
	40	

• GET strategy will be used in word problems

Student Debrief (10 minutes)

Lesson Objective: Skip-count objects in models to build fluency with multiplication facts using units of 4.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

Any combination of the questions below may be used to lead the discussion.

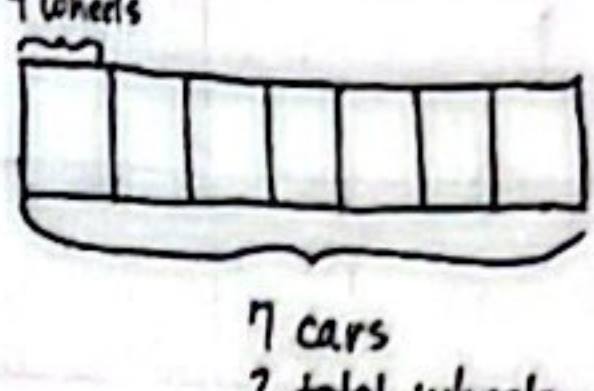
- Discuss differences between the strip diagrams and unknowns in Problems 2 and 3. (In Problem 2, the value of the unit is four, and in Problem 3, the number 4 represents the number of units.)
- If you were to skip-count to solve Problem 3, what would you skip-count by? How would that be different from a skip-counting strategy to solve Problem 4?
- Could you skip-count Problem 4 without drawing a model? How?
- How did the array in Problem 1 help you solve the other problems on the Problem Set?

Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help with assessing students' understanding of the concepts that were presented in today's lesson and planning more effectively for future lessons. The questions may be read aloud to the students.

2. Mr. Schmidt replaces each of the 4 wheels on 7 cars. How many wheels does he replace? Draw and label a strip diagram to solve.

4 wheels

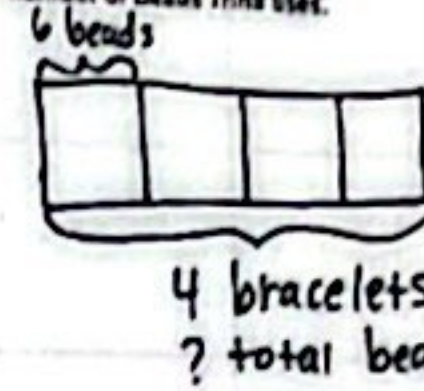


$7 \times 4 = 28$

Mr. Schmidt replaces 28 wheels.

3. Trina makes 4 bracelets. Each bracelet has 6 beads. Draw and label a strip diagram to show the total number of beads Trina uses.

6 beads

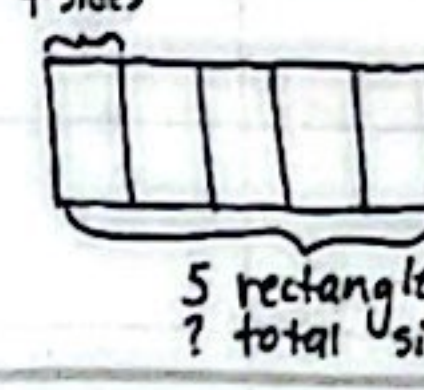


$4 \times 6 = 24$

Trina uses 24 beads.

4. Find the total number of sides on 5 rectangles.

4 sides



$5 \times 4 = 20$

There are 20 sides on 5 rectangles.

CFS

- ① Use GET strategy
- ② Draw model
- ③ Write fact family

- ④ Solve using skip-counting
- ⑤ Write a sentence

Name

Cut or use for early finishers

Date

1. Skip-count by fours. Match each answer to the appropriate expression.

4

8

12

16

20

24

28

32

36

40

6 × 4

10 × 4

5 × 4

1 × 4

4 × 4

9 × 4

2 × 4

8 × 4

7 × 4

3 × 4

We do → a academic lap to CFU
Ex: 3

2. Mr. Schmidt replaces each of the 4 wheels on 7 cars. How many wheels does he replace? Draw and label a strip diagram to solve.

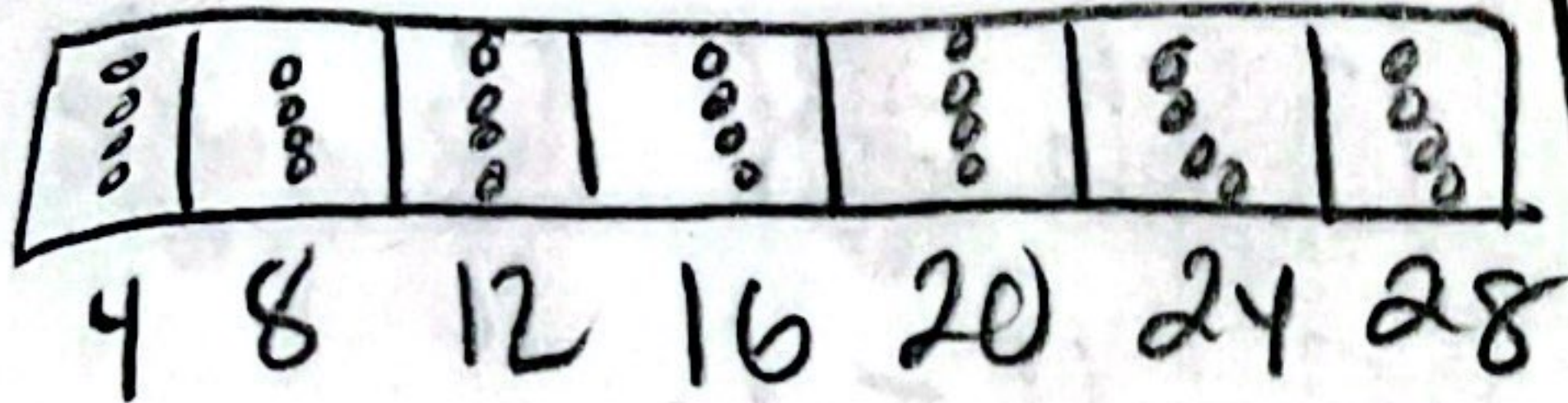
G	E	T
7	4	?
Cars	wheels	

$$7 \times 4 = 28$$

$$4 \times 7 = 28$$

$$28 \div 4 = 7$$

$$28 \div 7 = 4$$



Mr. Schmidt replaces 28 wheels.

3. Trina makes 4 bracelets. Each bracelet has 6 beads. Draw and label a strip diagram to show the total number of beads Trina uses.

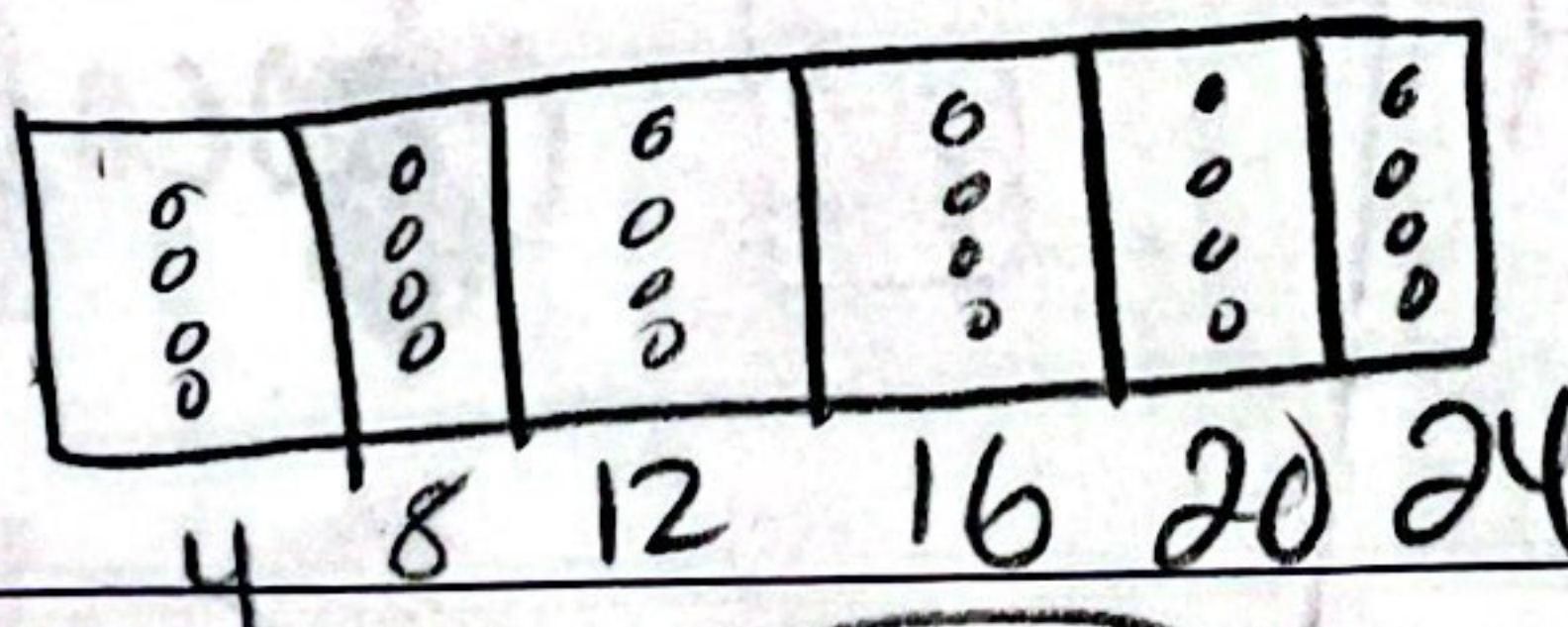
G	E	T
4	6	
bracelets	beads	

$$4 \times 6 = 24$$

$$6 \times 4 = 24$$

$$24 \div 4 = 6$$

$$24 \div 6 = 4$$



Trina uses 24 beads

4. Find the total number of sides on 5 rectangles.

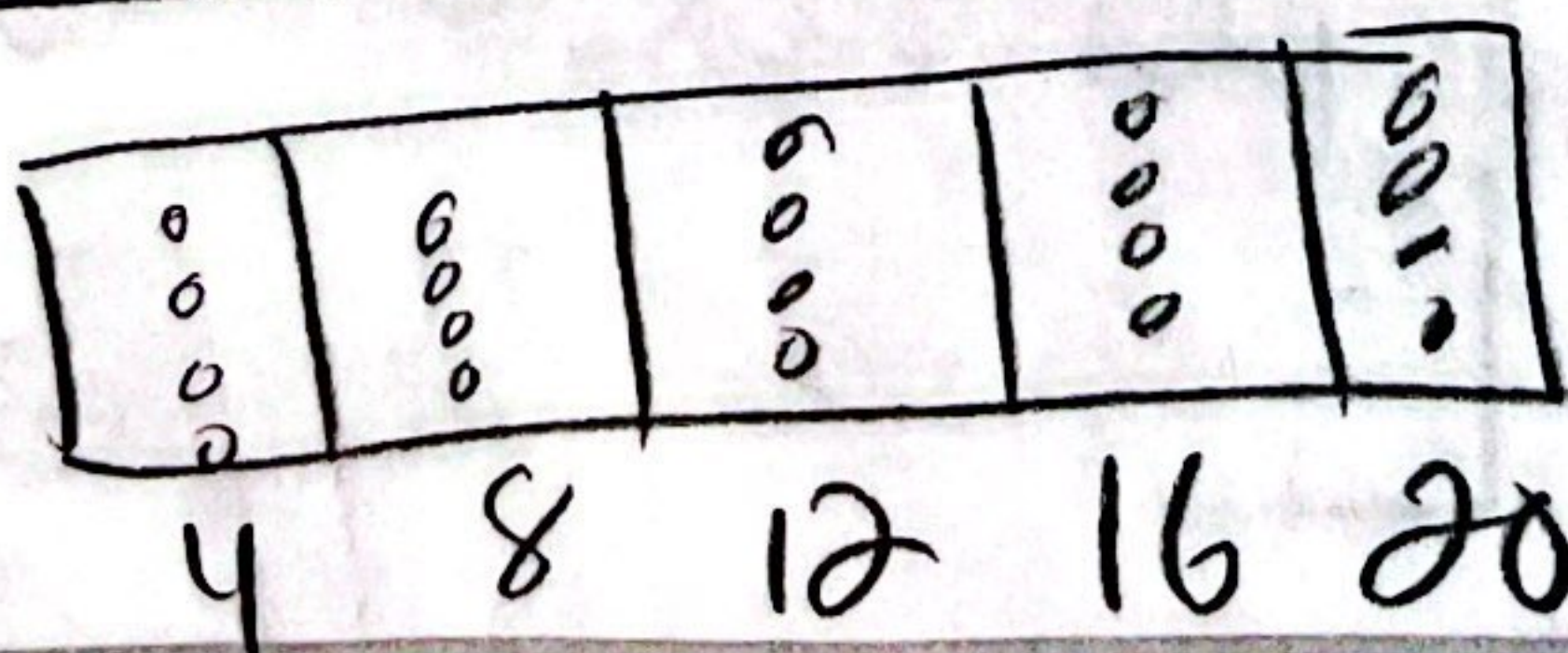
G	E	T
5	4	
rec	sides	

$$5 \times 4 = 20$$

$$4 \times 5 = 20$$

$$20 \div 5 = 4$$

$$20 \div 4 = 5$$



There are 20 sides in 5 rectangles

You do | We do \Rightarrow struggling students

* Could do

Name _____

Date _____

Arthur has 4 boxes of chocolates. Each box has 6 chocolates inside. How many chocolates does Arthur have altogether? Draw and label a strip diagram to solve.

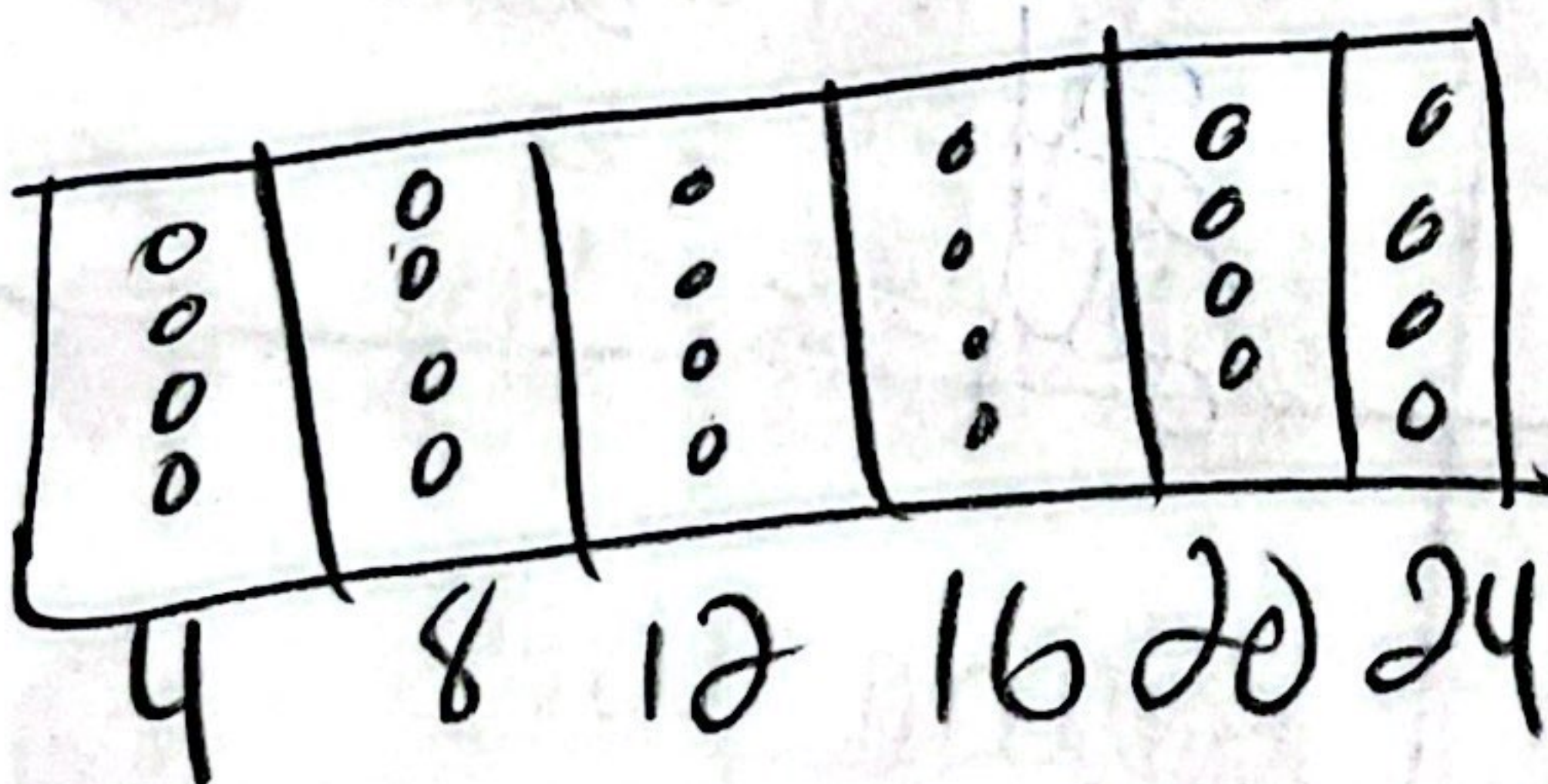
G	E	T
4	6	?
boxes	choc	

$$6 \times 4 = \square$$

$$4 \times 6 = \square$$

$$\square \div 6 = 4$$

$$\square \div 4 = 6$$



Arthur has

24 chocolates

If extra problems are needed
use pages in Succeed book.

Date: _____

Student Name/ID#: _____

Total Score: _____

/

M1L14 ET

QUESTION 1

/1

A. Leo has 8 boxes of soccer balls. Each box has 4 soccer balls inside. How many soccer balls does Leo have altogether? Show a picture and multiplication sentence in your work. Redraw your picture and multiplication sentence on a scrap piece of paper to answer the following questions.

6	E	T
8	4	?

boxes soccer balls

Picture (array, strip diagram, number line etc.)	Multiplication sentence
<p>4 8 12 16 20 24 28 32</p>	$8 \times 4 = 32$

$$8 \times 4 = 32$$

$$4 \times 8 = 32$$

$$32 \div 4 = 8$$

$$32 \div 8 = 4$$

QUESTION 2

/1

B. What does the product in your multiplication sentence represent?

The product represents the total number of soccer balls.

C. Fill in the blanks below to complete the related division sentence.

32 \div 4 = 8

QUESTION 3

/1

D. Which expression would NOT help you find the number of soccer balls Leo has in each box?

NO A ☐ $32 \times 8 = 256$

B ☐ $32 \div 8 = 4$ yes ✓

C ☐ $8 \times 4 = 32$ yes ✓

D ☐ $32 \div 4 = 8$ yes ✓