Eureka Math

3rd Grade
Module 3
Lesson 16

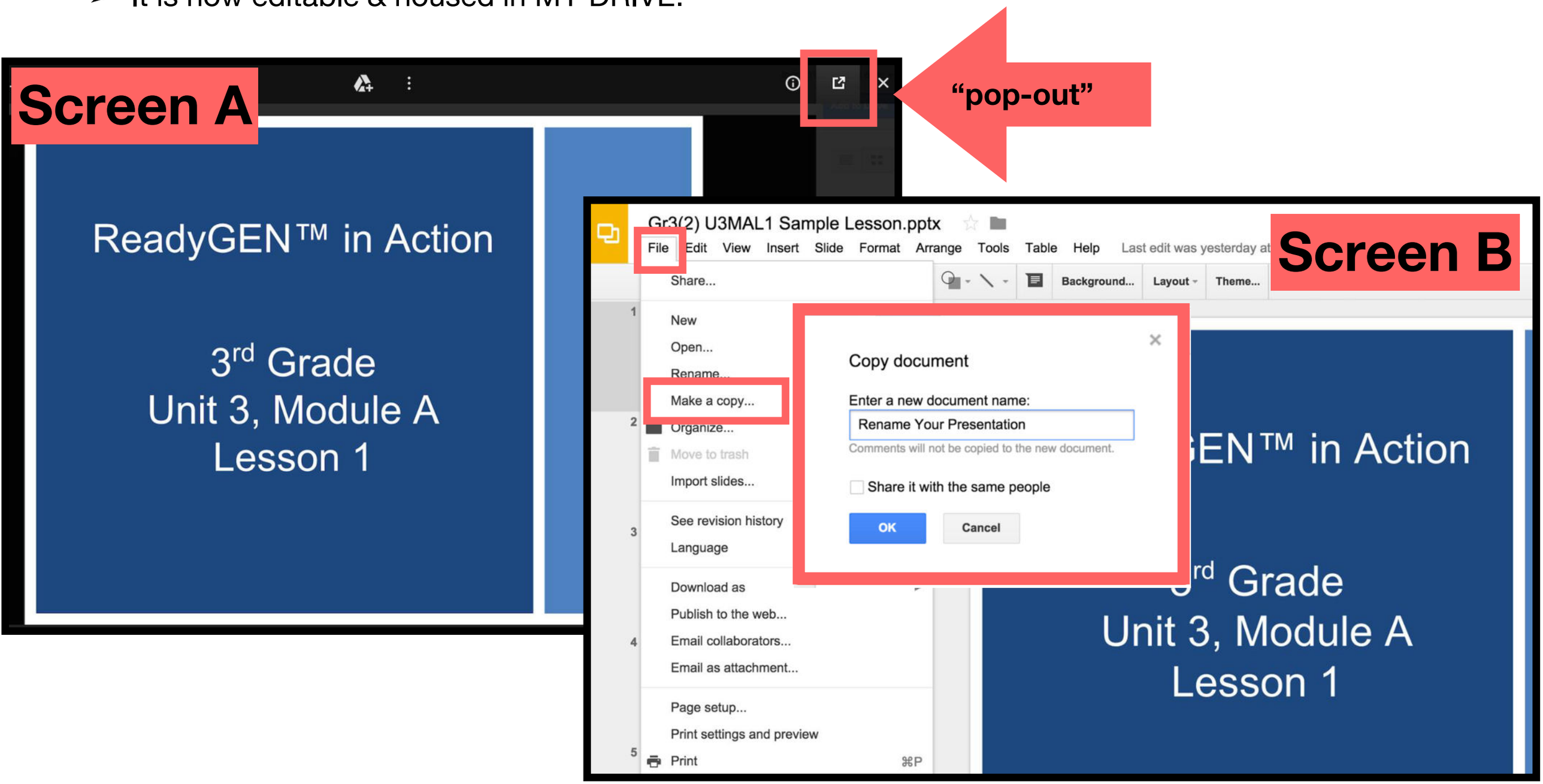
At the request of elementary teachers, a team of Bethel & Sumner educators met as a committee to create Eureka slideshow presentations. These presentations are not meant as a script, nor are they required to be used. Please customize as needed. Thank you to the many educators who contributed to this project!

Directions for customizing presentations are available on the next slide.

Customize this Slideshow

Reflecting your Teaching Style and Learning Needs of Your Students

- ➢ When the Google Slides presentation is opened, it will look like Screen A.
- ➢ Click on the “pop-out” button in the upper right hand corner to change the view.
- ➢ The view now looks like Screen B.
- ➢ Within Google Slides (not Chrome), choose FILE.
- ➢ Choose MAKE A COPY and rename your presentation.
- ➢ Google Slides will open your renamed presentation.
- ➢ It is now editable & housed in MY DRIVE.

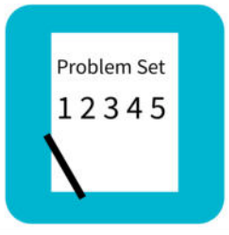


Icons

Read, Draw, Write

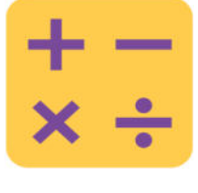
Learning Target

Personal White Board



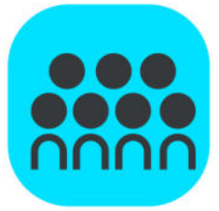
Problem Set

Manipulatives Needed



Fluency

Think Pair Share



Whole Class

Individual

Partner

Small Group

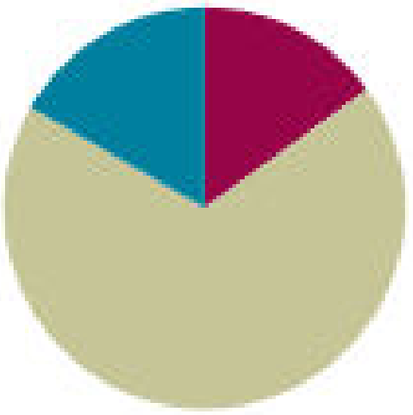
Small Group Time

Lesson 16

Objective: Reason about and explain arithmetic patterns using units of 0 and 1 as they relate to multiplication and division.

Suggested Lesson Structure

Fluency Practice	(9 minutes)
Concept Development	(41 minutes)
Student Debrief	(10 minutes)
Total Time	**(60 minutes)**



I can reason and explain arithmetic patterns using units of 0 and 1 as they relate to multiplication and division.

Fluency Practice

Sprint

Number Correct: _____

A

Multiply or divide by 9

1.	2 × 9 =	
2.	3 × 9 =	
3.	4 × 9 =	
4.	5 × 9 =	
5.	1 × 9 =	
6.	18 ÷ 9 =	
7.	27 ÷ 9 =	

23.	_____ × 9 = 90	
24.	_____ × 9 = 18	
25.	_____ × 9 = 27	
26.	90 ÷ 9 =	
27.	45 ÷ 9 =	
28.	9 ÷ 9 =	
29.	18 ÷ 9 =	

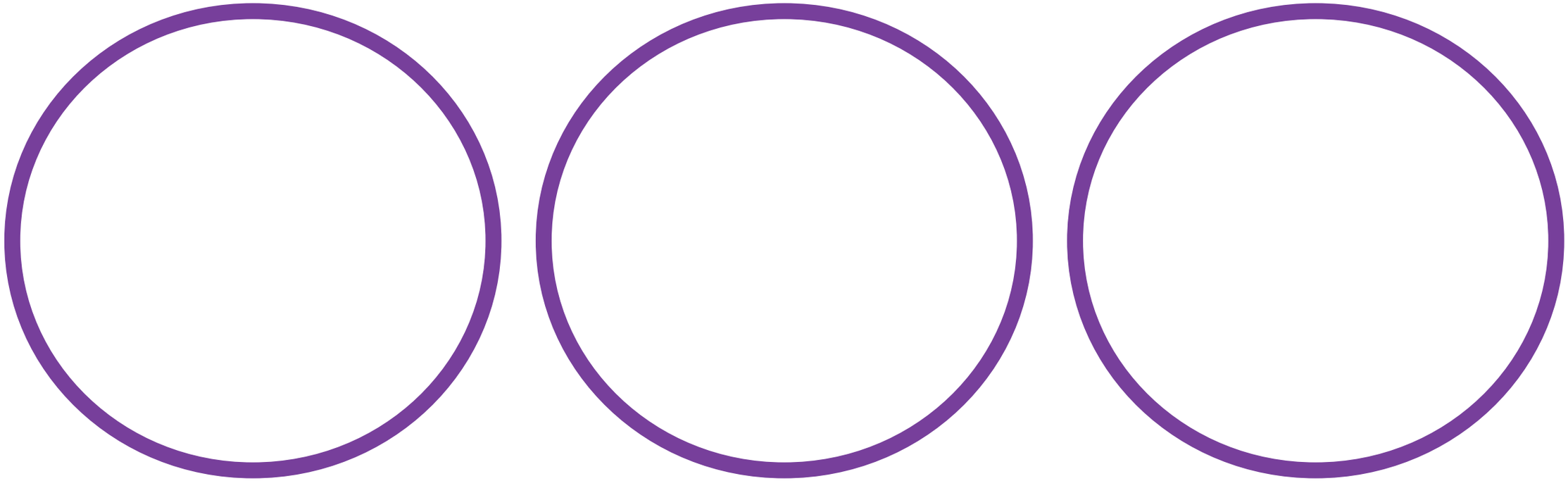
Concept Development

Materials

Personal Write Board

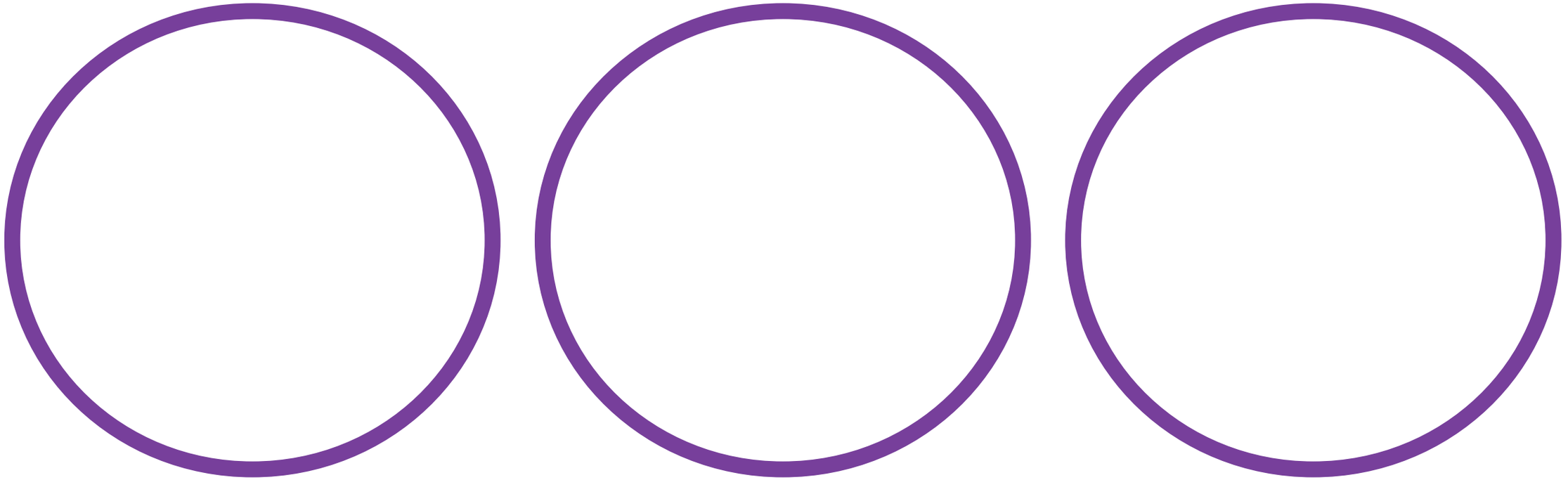
Concept Development

Draw three large circles on your write board.



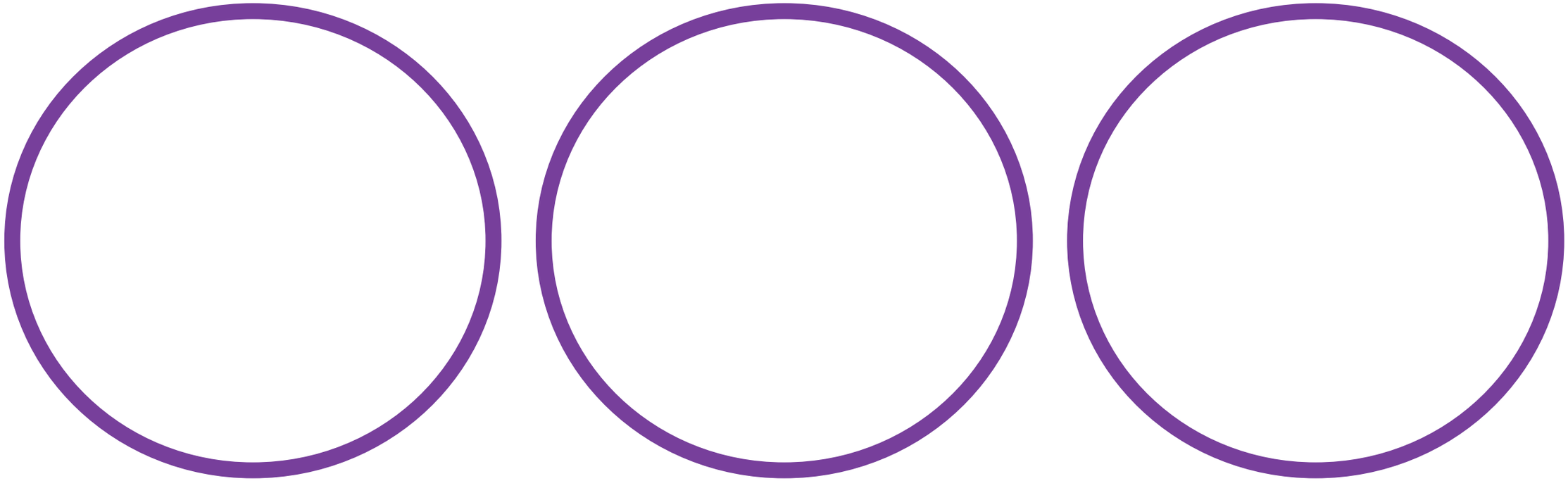
Concept Development

Draw an equal number of dots in each circle. You can draw between 2 and 10 dots in each circle.



Concept Development

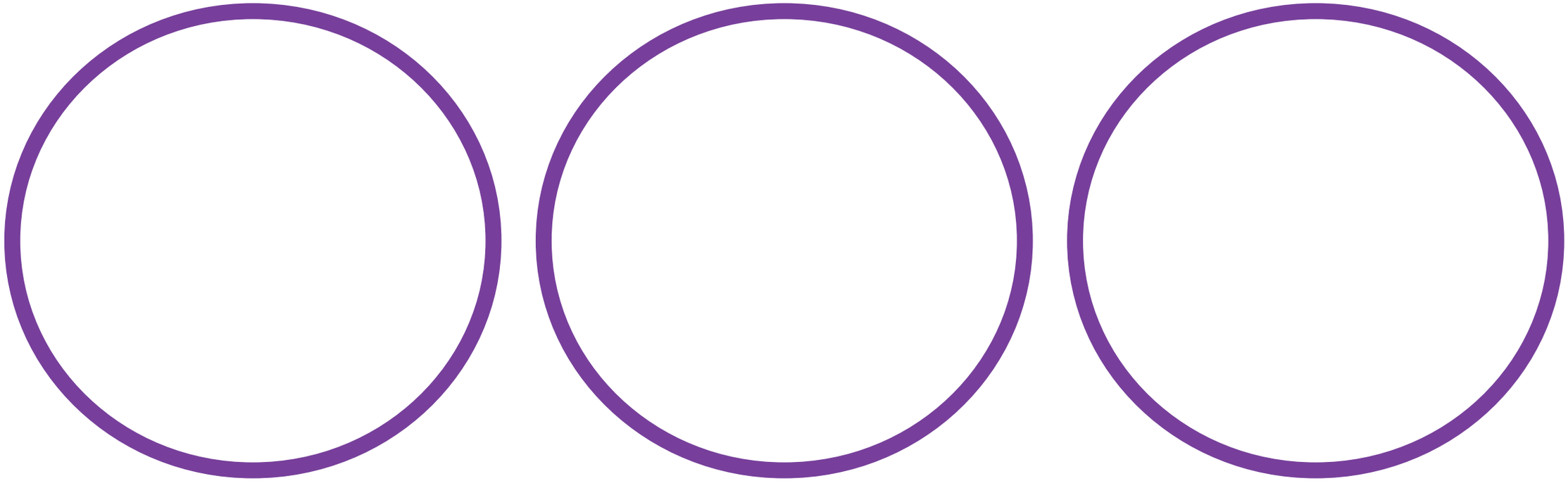
How many circles are there?



Concept Development

How many circles are there?

How many dots are in ONE circle?

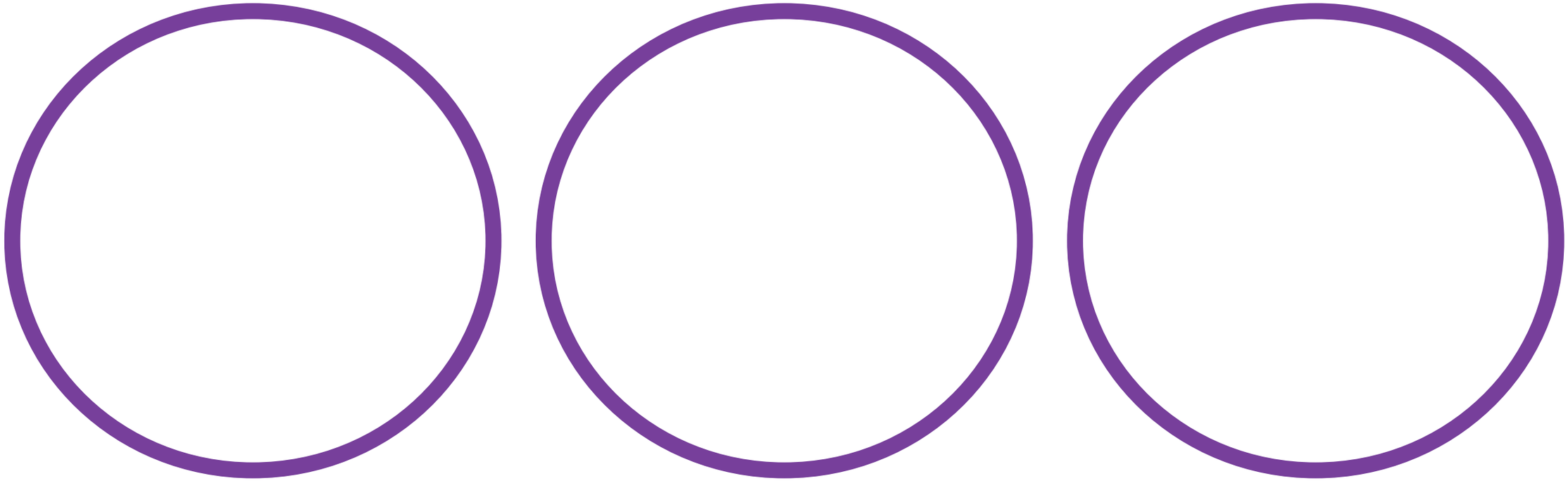


Concept Development

How many circles are there?

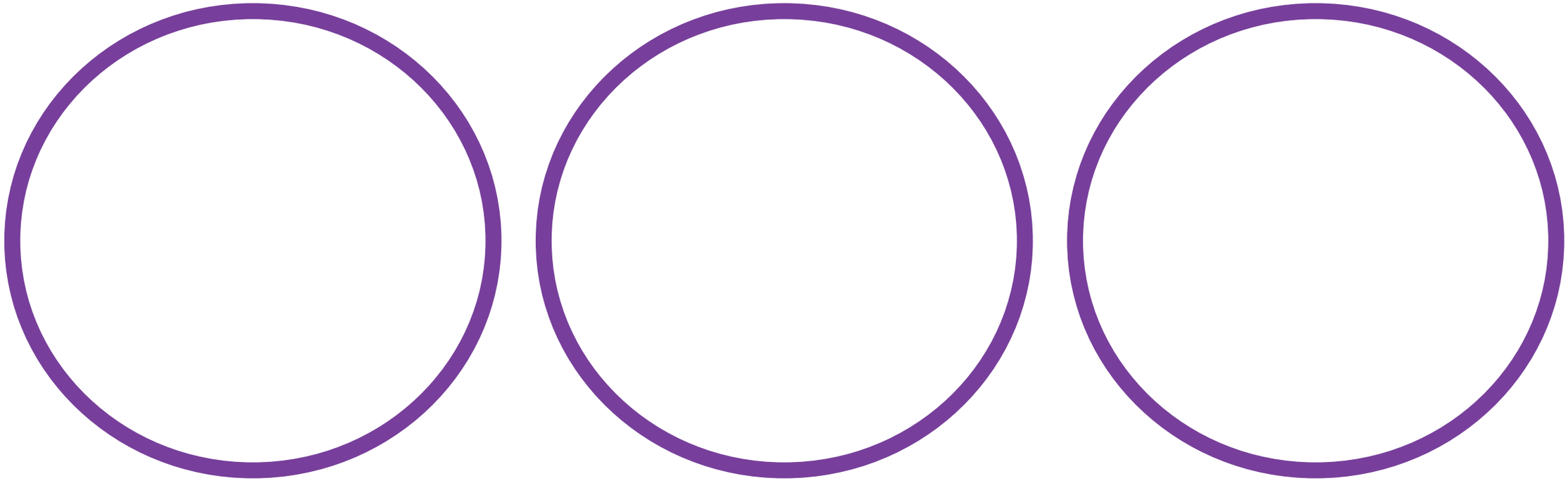
How many dots are in ONE circle?

How many dots are there altogether?



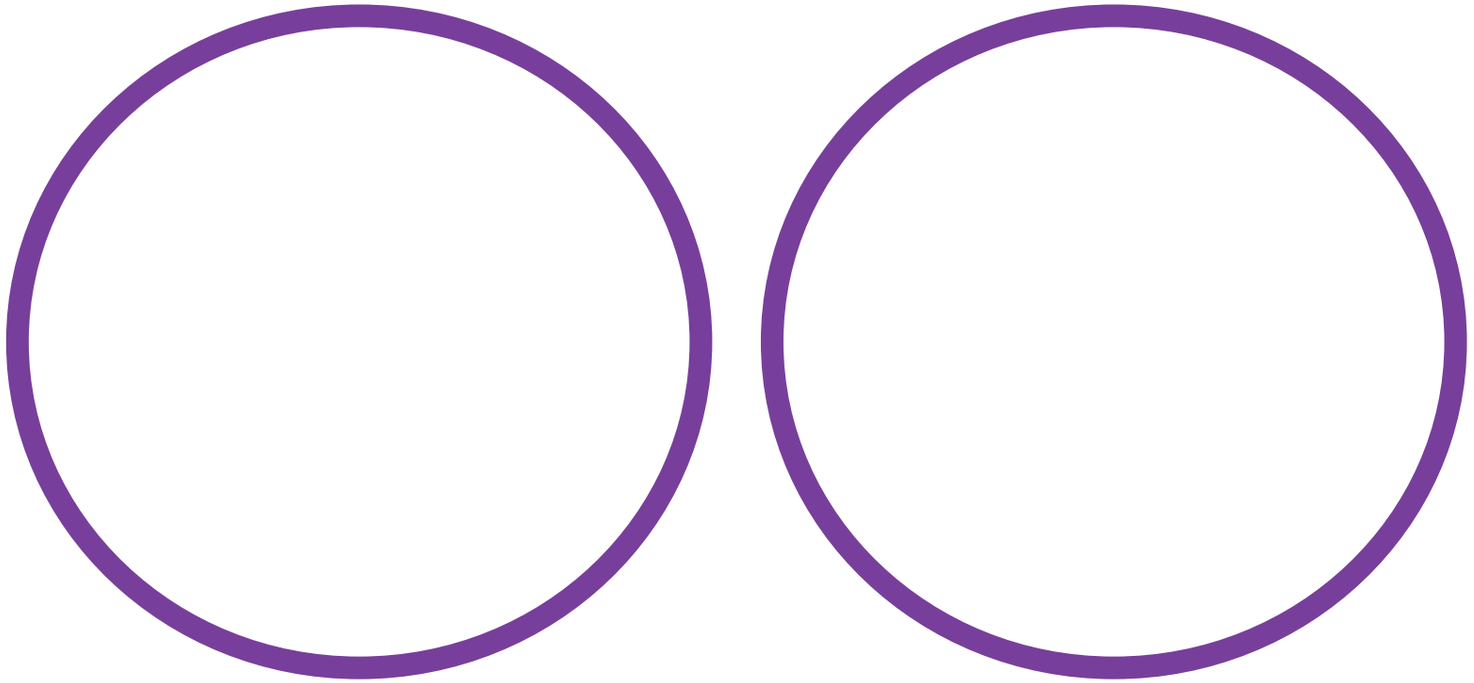
Concept Development

Write the multiplication equation to represent your picture.
Read it to your partner.



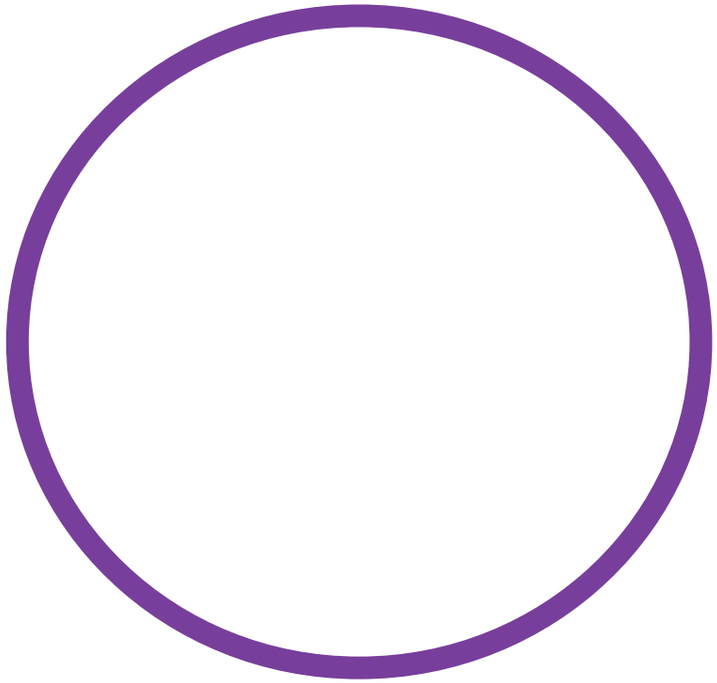
Concept Development

Erase one circle, leaving two.
Write the new multiplication equation.
Read it to your partner.



Concept Development

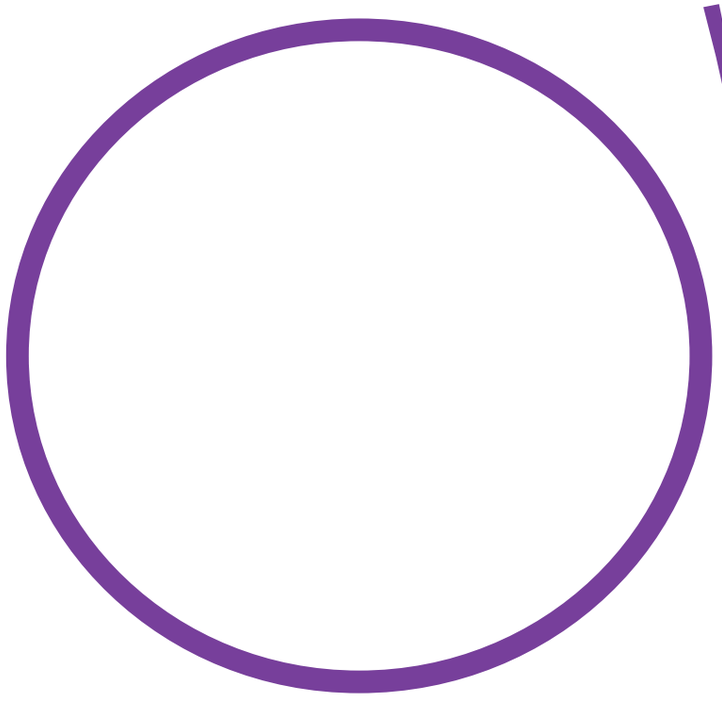
Erase another circle, leaving one.
Write the new multiplication equation.
Read it to your partner.



Concept Development

Rewrite your equation. Let *n* equal the number of dots in each group.

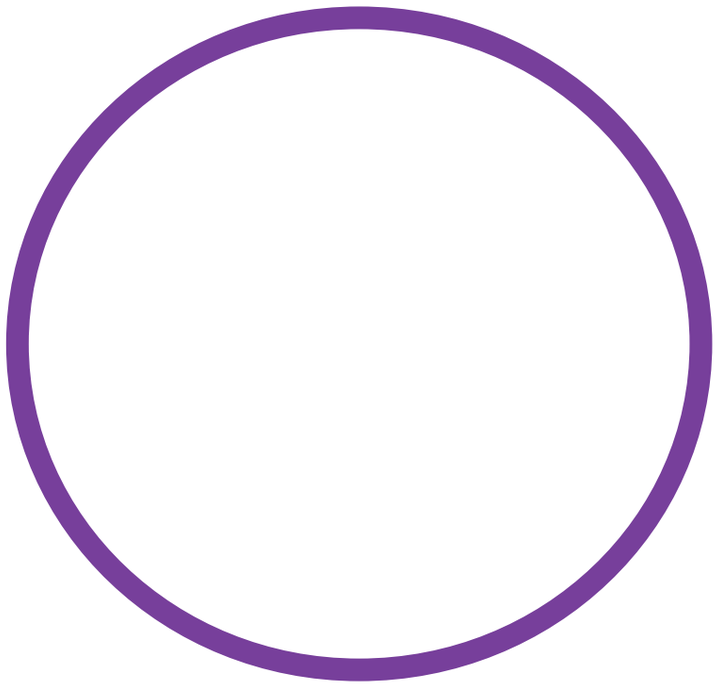
What is 1 x *n* dots?



Concept Development

Write the related division fact for your multiplication equation.

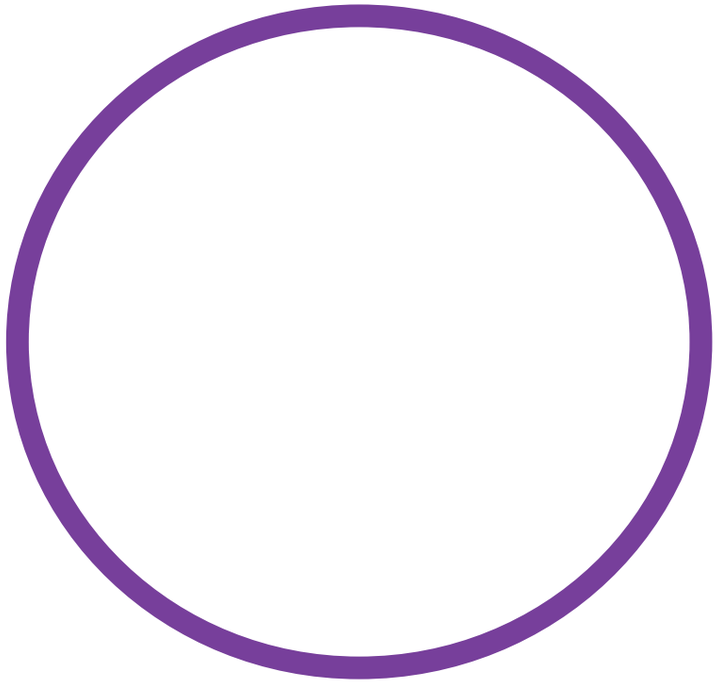
Use the picture to discuss this with your partner.



Concept Development

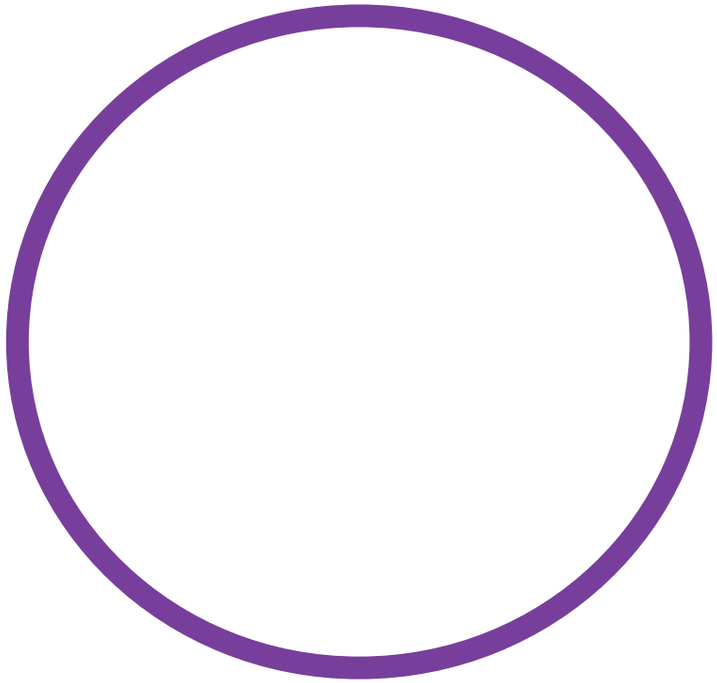
Write the related division fact for your multiplication equation.

$n \div 1 = n$



Concept Development

What is any number divided by 1?



Concept Development

Now, draw *n* circles.

Concept Development

Now, draw *n* circles.

Put 3 dots in each circle.

Concept Development

Now, draw *n* circles.
Put 3 dots in each circle.

Write the multiplication and division equation to represent your picture.

Concept Development

Now, erase one dot from each circle.

Write the *new* multiplication and division equation to represent your picture.

Concept Development

Now, erase one dot from each circle.

Write the *new* multiplication and division equation to represent your picture.

Continue this process until you are left with

$n \times 1 = n$ **and** $n \div n = 1$

Concept Development

4 x 0 = b

What does this equation represent?

Concept Development

4 x 0 = b

Draw a picture of the equation
using circles to show the groups
and dots to show
the number in each group.

Concept Development

$$4 \times 0 = b$$

What is the value of b in the equation?

Concept Development

4 x 0 = b

What is the value of b in the equation?

ZERO!

Concept Development

4 x 0 = b

What is the value of b in the equation?

Write the related division equation on your board.

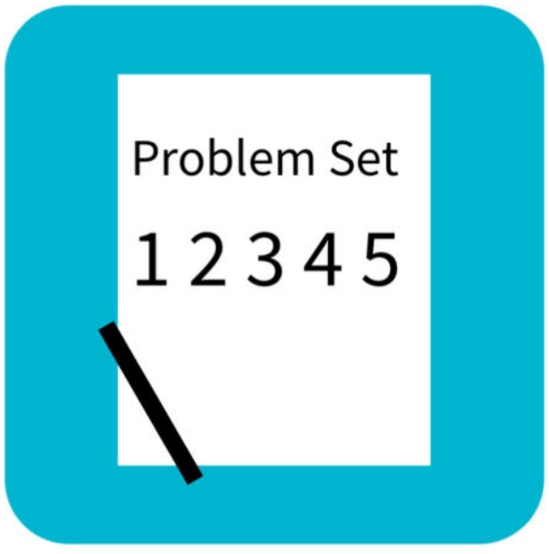
Concept Development

Continue the same process with the following:

7×0

0×6

0×0



Problem Set

Name _____ Date _____

1. Complete.

a. _____ × 1 = 6

b. _____ ÷ 7 = 0

c. 8 × _____ = 8

d. 9 ÷ _____ = 9

e. 0 ÷ 5 = _____

f. _____ × 0 = 0

g. 4 ÷ _____ = 1

h. _____ × 1 = 3

Debrief

Discuss with a partner, what patterns for multiplying and dividing by 0 and 1 helped you solve Problem 1?

What pattern for multiplying by 1 does Problem 3 represent?

Which problems show that we can't define a single specific value when we divide by 0? Explain your answer to a partner.

How are multiplying by 1 and multiplying units of 1 similar to adding 0 to a number?

How can the patterns for multiplying and dividing by 1 or multiplying and dividing 0 by a number help you solve equations with larger factors (e.g., $346 \times 1 = b$)?

Exit Ticket

Name _____ Date _____

1. Complete.

a. _____ × 1 = 5

b. 6 × _____ = 6

c. _____ ÷ 7 = 0

d. 5 × _____ = 0

e. 1 = 9 ÷ _____

f. 8 = 1 × _____