Eureka Math

4th Grade
Module 3
Lesson 21

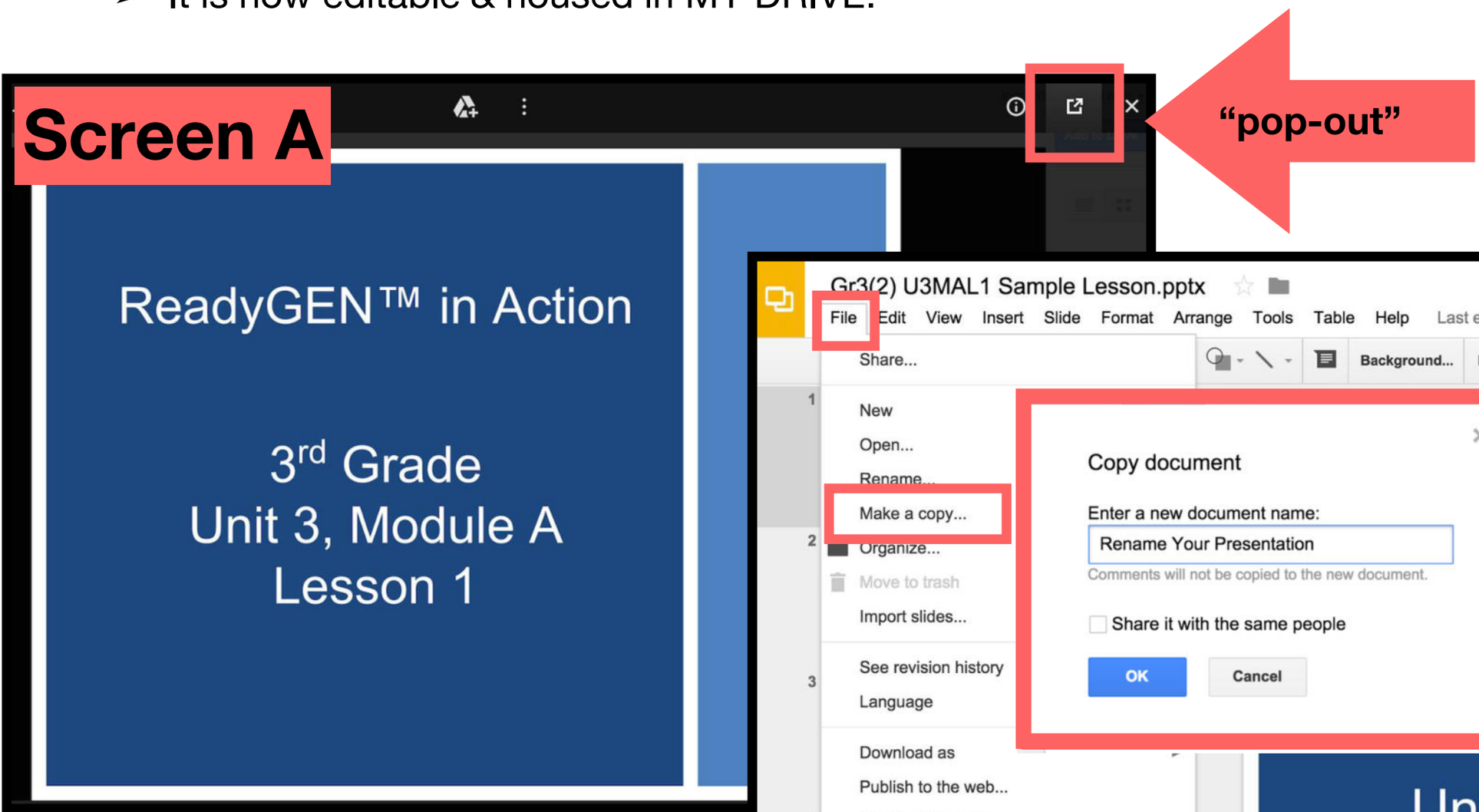
At the request of elementary teachers, a team of Bethel & Sumner educators met as a committee to create Eureka slideshow presentations. These presentations are not meant as a script, nor are they required to be used. Please customize as needed. Thank you to the many educators who contributed to this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

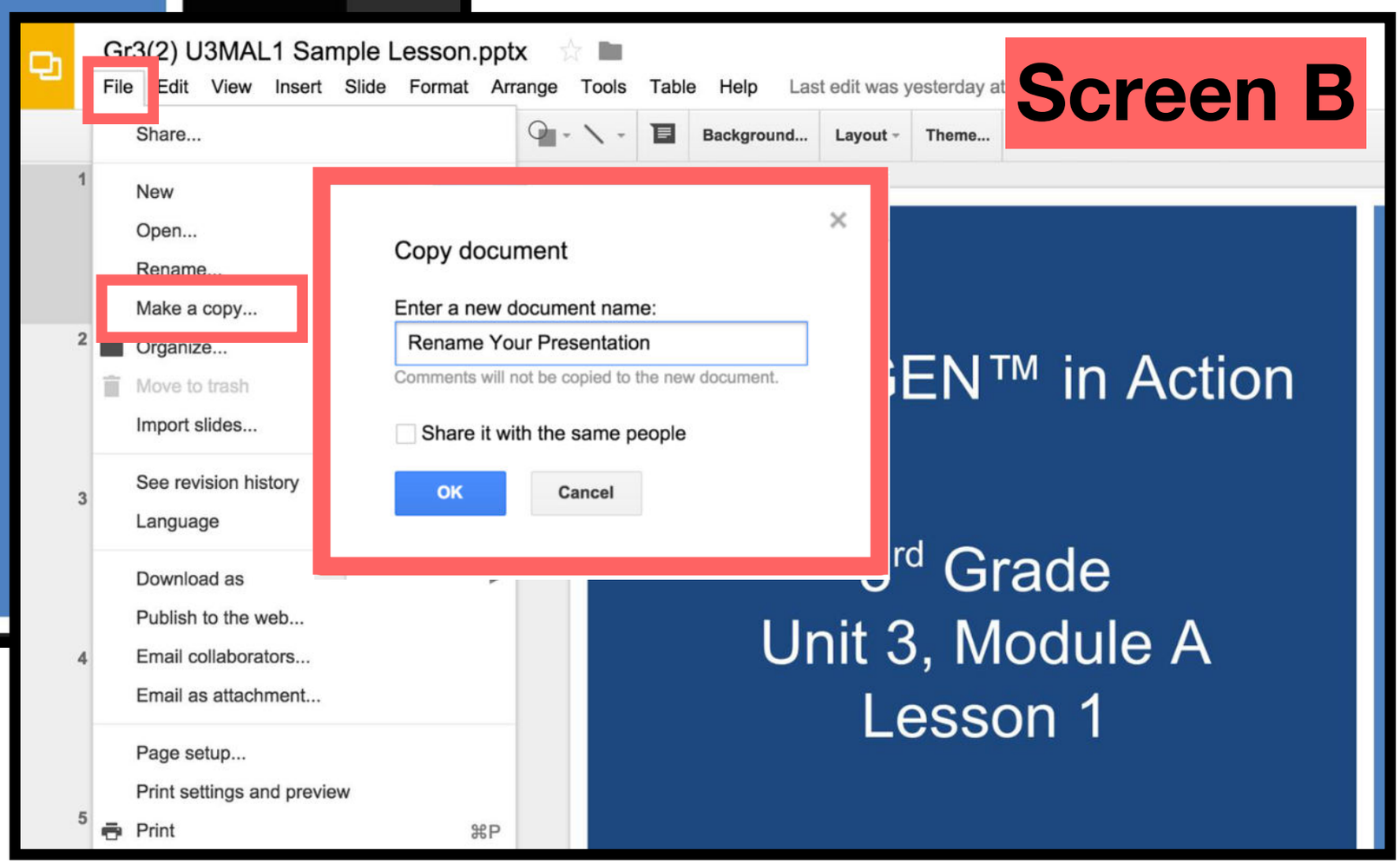
Directions for customizing presentations are available on the next slide.

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.



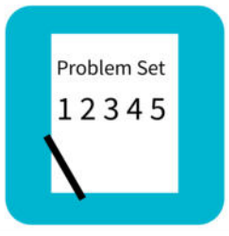


Icons

Read, Draw, Write

Learning Target

Personal White Board

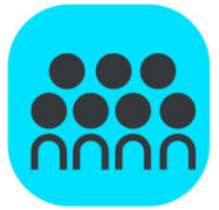


Problem Set

Manipulatives Needed

Fluency

Think Pair Share



Whole Class

Individual

Partner

Small Group

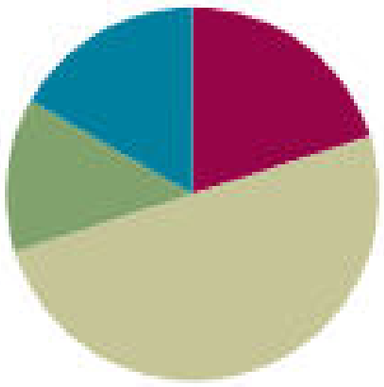
Small Group Time

Lesson 21

Objective: Solve division problems with remainders using the area model.

Suggested Lesson Structure

Fluency Practice	(12 minutes)
Application Problem	(8 minutes)
Concept Development	(30 minutes)
Student Debrief	(10 minutes)
Total Time	**(60 minutes)**



I can solve division problems with remainders using the area model.

Fluency Practice

SPRINT!!!

A

Number Correct: _____

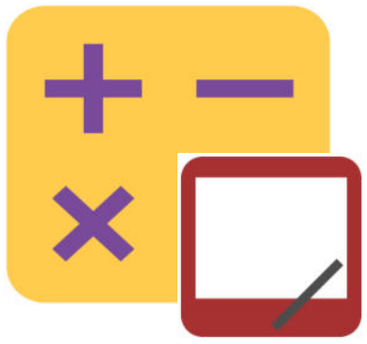
Division with Remainders

1.	8 ÷ 2	Q = _____	R = _____	23.	6 ÷ 2	Q = _____	R = _____
2.	9 ÷ 2	Q = _____	R = _____	24.	7 ÷ 2	Q = _____	R = _____
3.	4 ÷ 4	Q = _____	R = _____	25.	3 ÷ 3	Q = _____	R = _____
4.	5 ÷ 4	Q = _____	R = _____	26.	4 ÷ 3	Q = _____	R = _____
5.	7 ÷ 5	Q = _____	R = _____	27.	6 ÷ 4	Q = _____	R = _____
6.	8 ÷ 5	Q = _____	R = _____	28.	7 ÷ 4	Q = _____	R = _____
7.	5 ÷ 3	Q =	R =	29.	6 ÷ 6	Q =	R =

Fluency Practice

Find the Unknown Factor

6 x ____ = 18

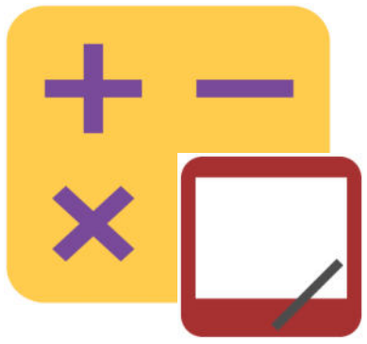


Fluency Practice

Find the Unknown Factor

$6 \times \_\_3\_\_ = 18$

On your personal white board, write the division problem.



Fluency Practice

Find the Unknown Factor

6 x __3__ = 18

On your personal white board, write the division problem.

18 ÷ 6 = 3

Fluency Practice

Find the Unknown Factor

Continue with the following:

$3 \times \_\_\_\_ = 21$

Fluency Practice

Find the Unknown Factor

Continue with the following:

$$3 \times \underline{\quad 7 \quad} = 21$$

$$21 \div 3 = 7$$

Fluency Practice

Find the Unknown Factor

Continue with the following:

$$4 \times \_\_\_\_ = 20$$

Fluency Practice

Find the Unknown Factor

Continue with the following:

$$4 \times \underline{\quad 5 \quad} = 20$$

$$20 \div 4 = 5$$

Fluency Practice

Find the Unknown Factor

Continue with the following:

$5 \times \_\_\_\_ = 25$

$6 \times \_\_\_\_ = 42$

$7 \times \_\_\_\_ = 56$

$9 \times \_\_\_\_ = 72$

Fluency Practice

Find the Unknown Factor

Continue with the following:

$6 \times \_\_\_\_ = 54$

$7 \times \_\_\_\_ = 63$

$9 \times \_\_\_\_ = 63$

Application Problem

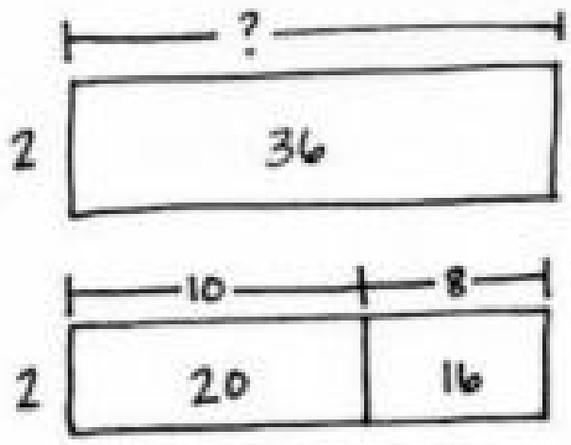
A rectangle has an area of 36 square units and a width of 2 units.

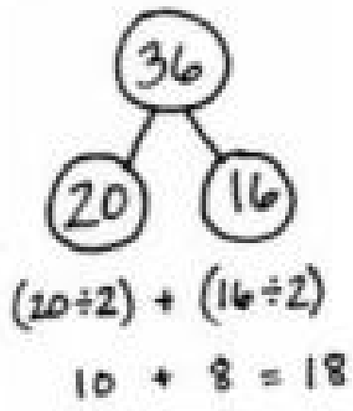
What is the unknown side length?

Application Problem

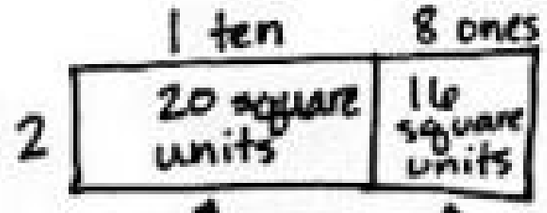
A rectangle has an area of 36 square units and a width of 2 units.

Method 1:

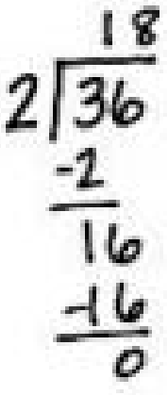




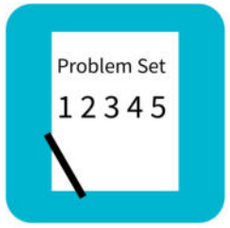
Method 2:



(20÷2) + (16÷2)
= 10 + 8
= 18



The unknown side length is 18 units.



Concept Development

Materials

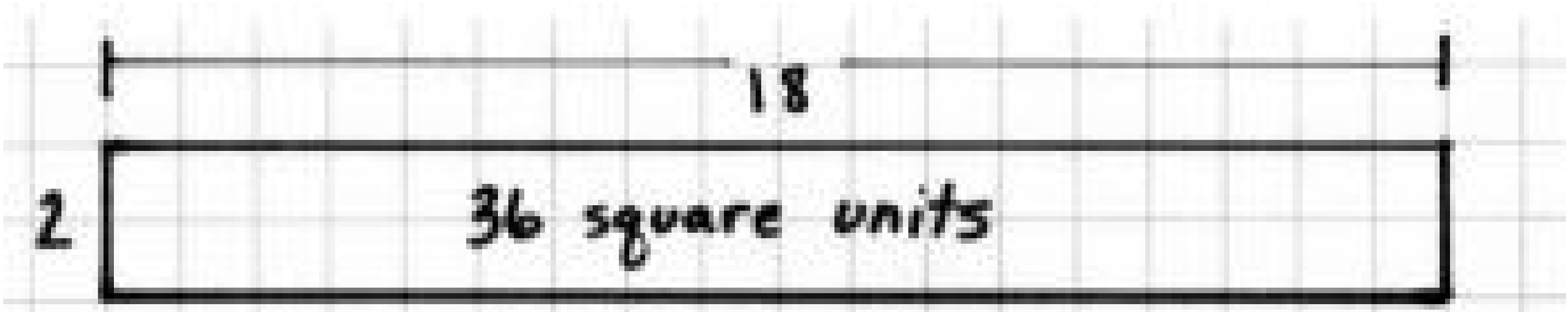
(T) Square grid paper

(S) Problem Set

Concept Development

Solve division, with remainders using area model

This rectangle has a side length of 18.

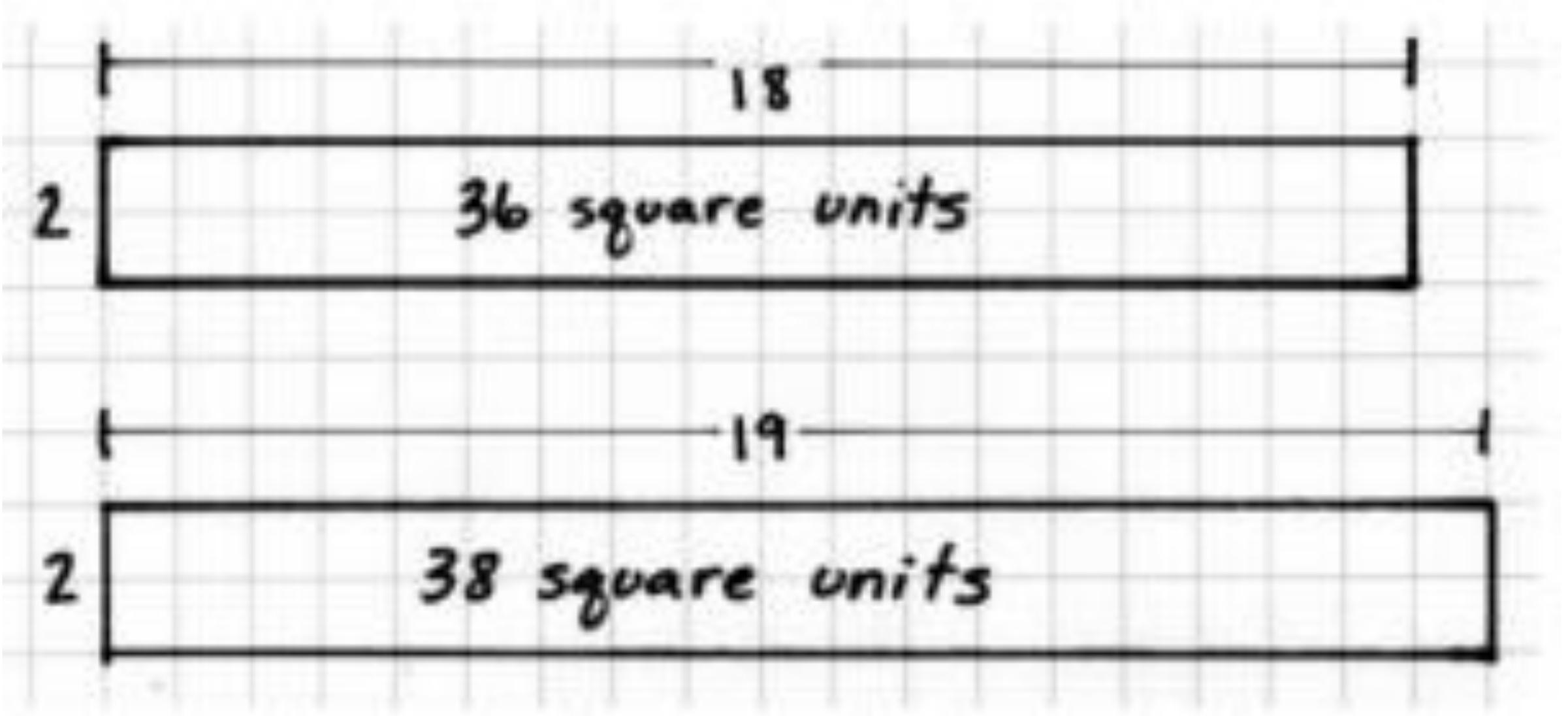


Problem Set
1 2 3 4 5

Concept Development

Solve division, with remainders using area model

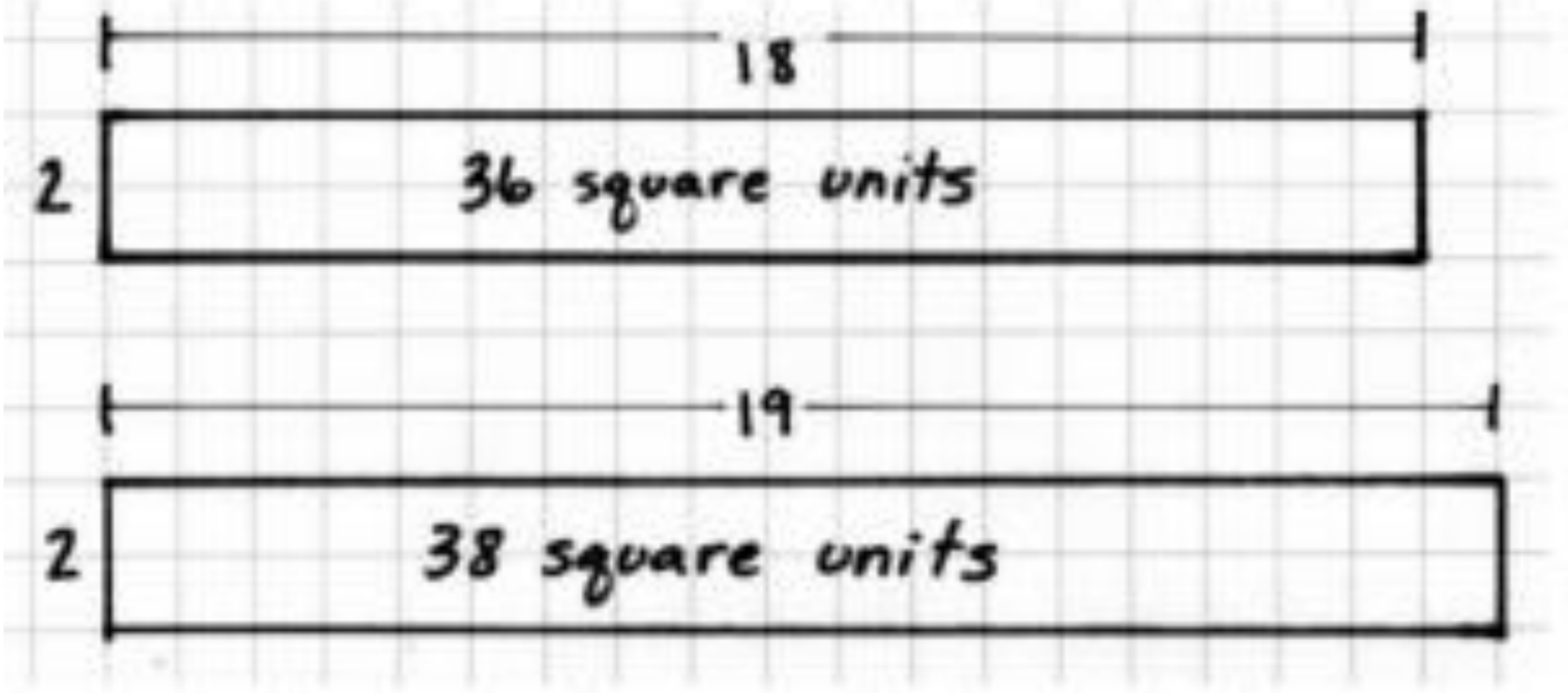
What would be the area of a rectangle with a width of 2 and a length of 19 units?



Concept Development

Solve division, with remainders using area model

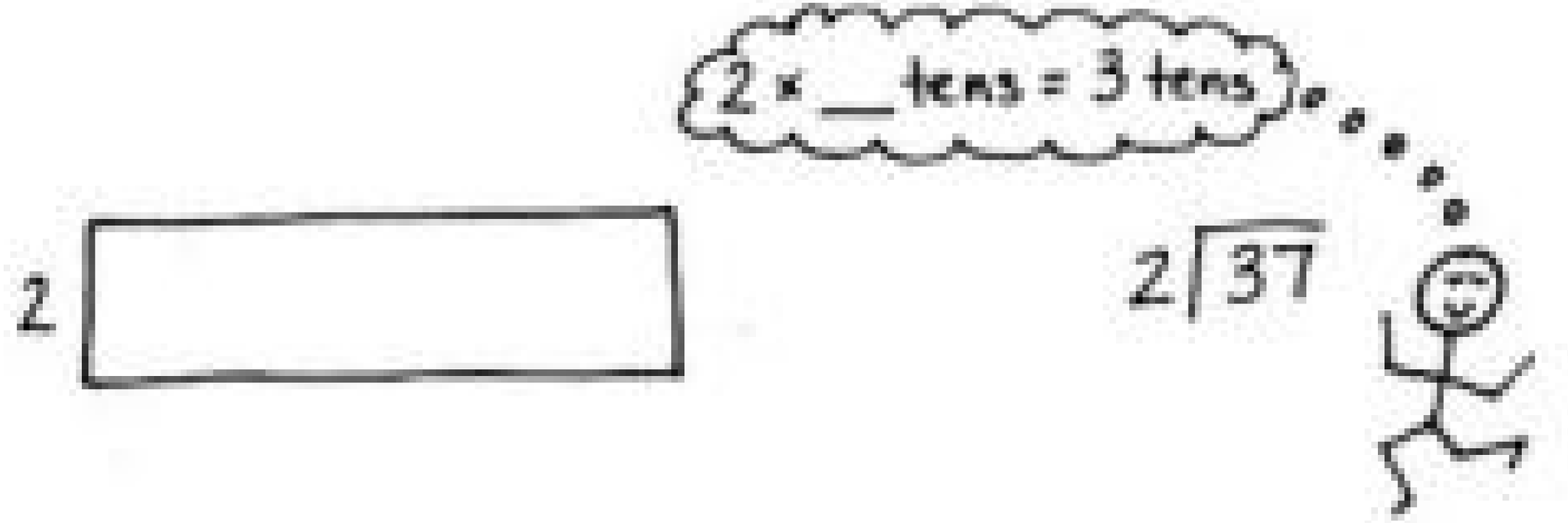
So, we cannot represent a rectangle with a width of 2 and an area of 37 square units.



Concept Development

Solve division, with remainders using area model

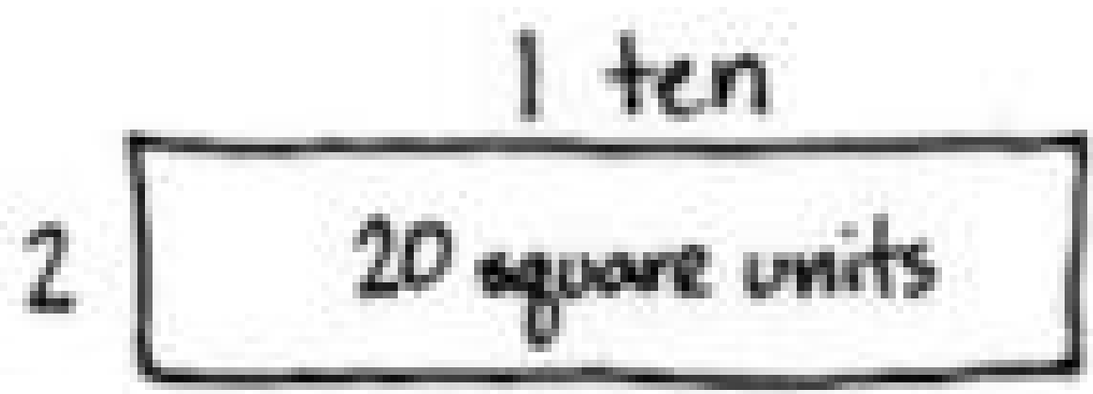
Draw a rectangle. Label the width as 2 units.

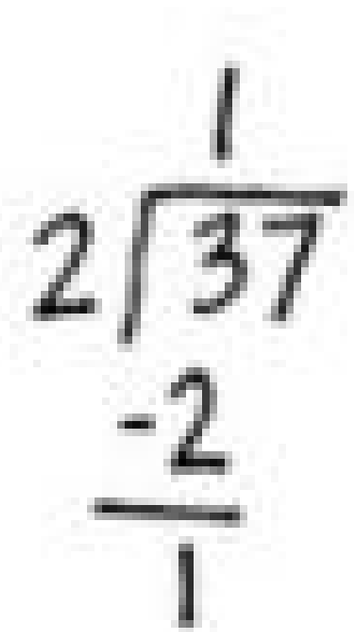


Concept Development

Solve division, with remainders using area model

Label this rectangle with a length of 1 ten.

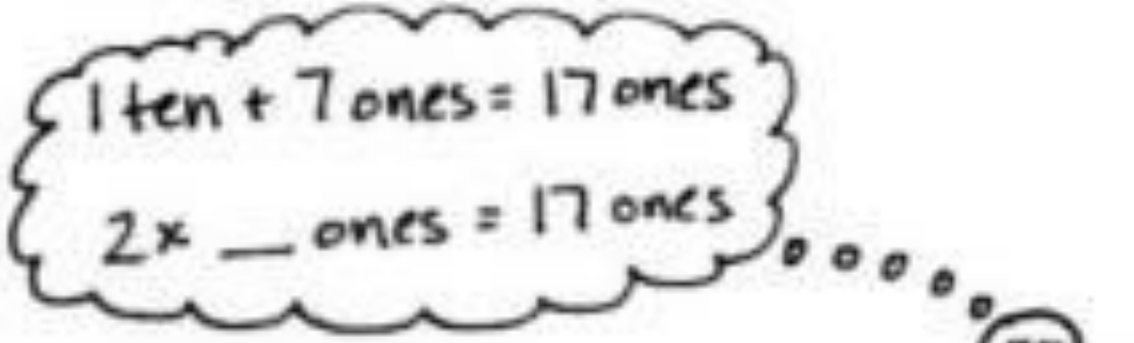


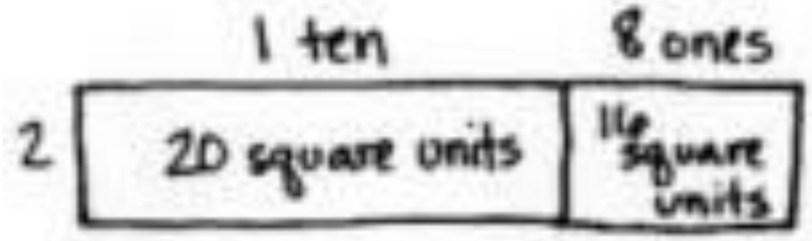


Concept Development

Solve division, with remainders using area model

17 ones remain. Two times ho many ones give us an area CLOSE to 17 square units?



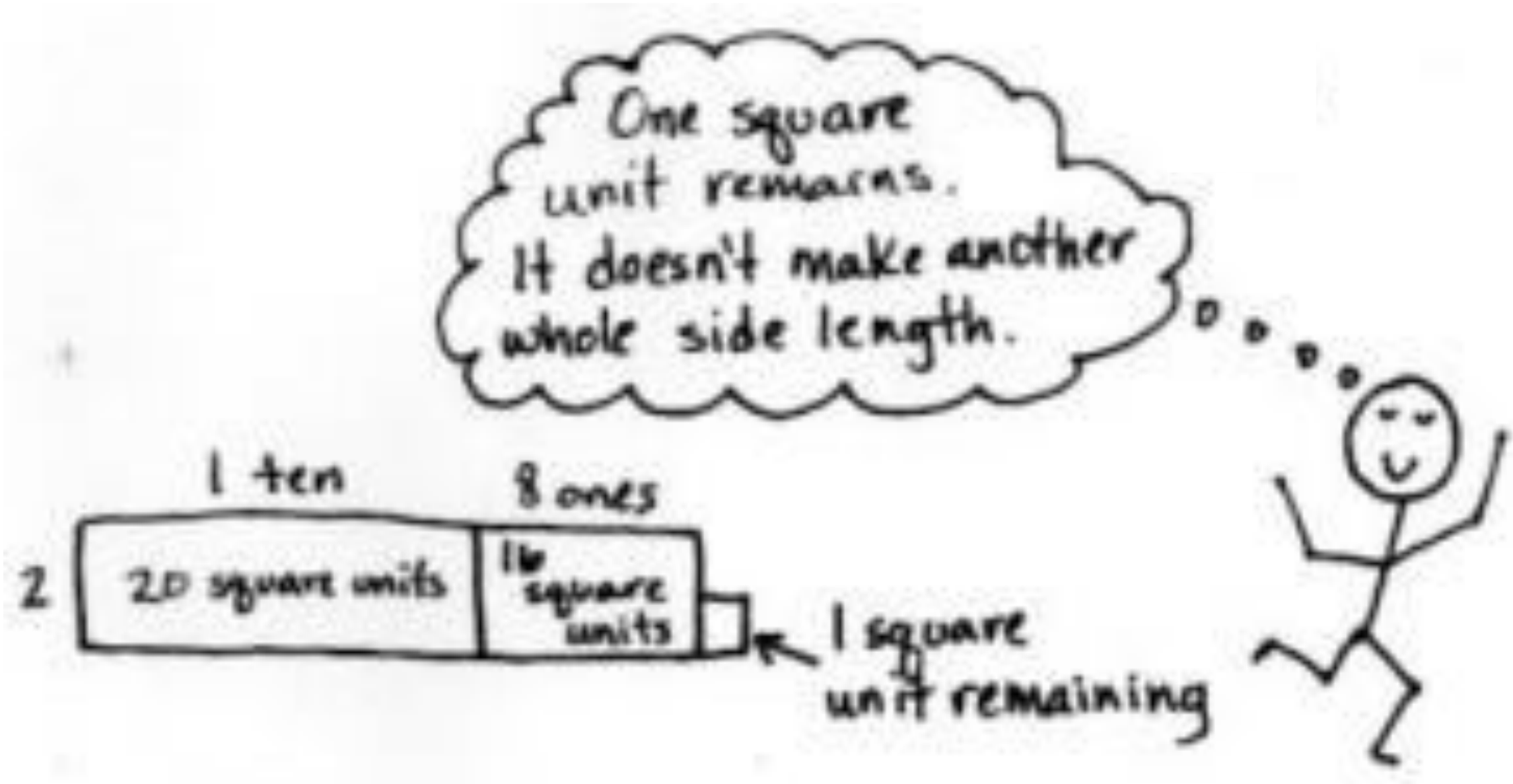


$$
\begin{array}{r}
18 \\
2\overline{)37} \\
-2 \\
\hline
17 \\
-16 \\
\hline
1
\end{array}
$$

Concept Development

Solve division, with remainders using area model

How many ones remain?



Concept Development

Solve division, with remainders using area model

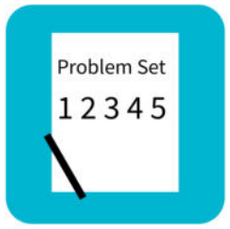
Let's validate our drawing and algorithm using the distributive property.

$(20 \div 2) + (16 \div 2)$

$= 10 + 8$

$= 18$

$(18 \times 2) + 1 = 37$

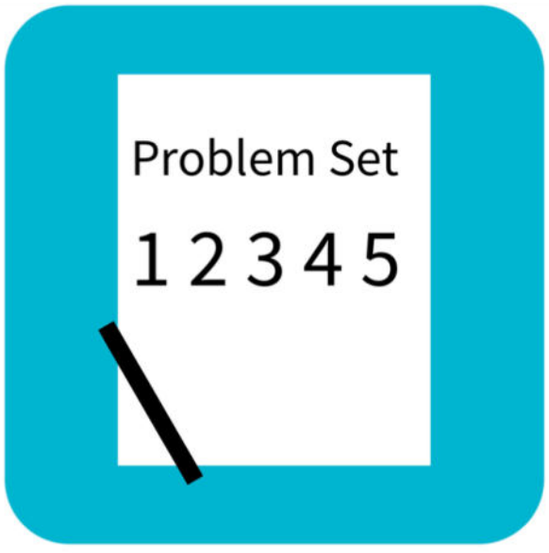


Concept Development

Solve division, with remainders using area model

Repeat the process using 76 ÷ 3

See page 296 of teacher manual if needed.



Problem Set

Name _____ Date _____

1. Solve 37 ÷ 2 using an area model. Use long division and the distributive property to record your work.

Debrief

Explain to your partner the connection between the distributive property and the area model in Problem 3.

Because we often have remainders when we divide, we have to use the area model by building up from part to whole. What did the first rectangle you drew in Problem 1 represent? The next chunk of the rectangle?

Each time we divide, what happens to the amount of area we still have left to divide?

Why don't we have this complication of leftovers or remainders with multiplication?

Debrief

In Problem 4, we didn't know if we were going to have a remainder in the ones place, so instead we built up to the area working with one place value unit at a time. How might the problems with remainders have been challenging if you started with the whole area, like in Lesson 20?

(Optional.) Let's look back at Problem 2, 76 ÷ 3. What if we cut this remaining square unit into 3 equal parts with vertical lines? What is the length of one of these units? What if we stack them to add more area? What is the total length of the new rectangle, including this tiny piece?

Exit Ticket

Name _____ Date _____

1. Kyle drew the following area model to find an unknown length. What division equation did he model?