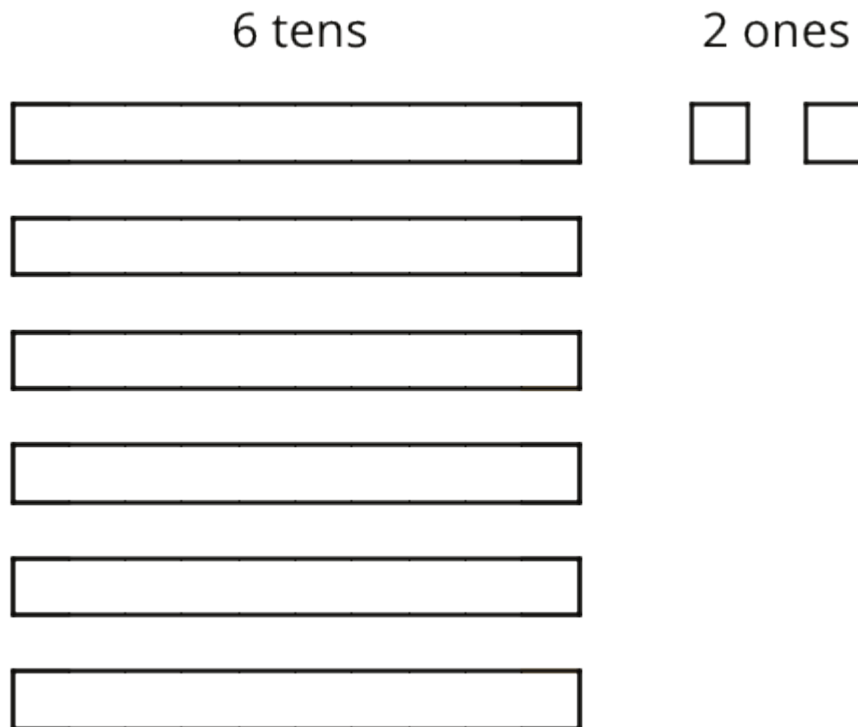


# Unit 3 Lesson 19: Dividing Numbers that Result in Decimals

## 1 Keep Dividing (Warm up)

### Student Task Statement

Mai used base-ten diagrams to calculate  $62 \div 5$ . She started by representing 62.



She then made 5 groups, each with 1 ten. There was 1 ten left. She unbundled it into 10 ones and distributed the ones across the 5 groups.

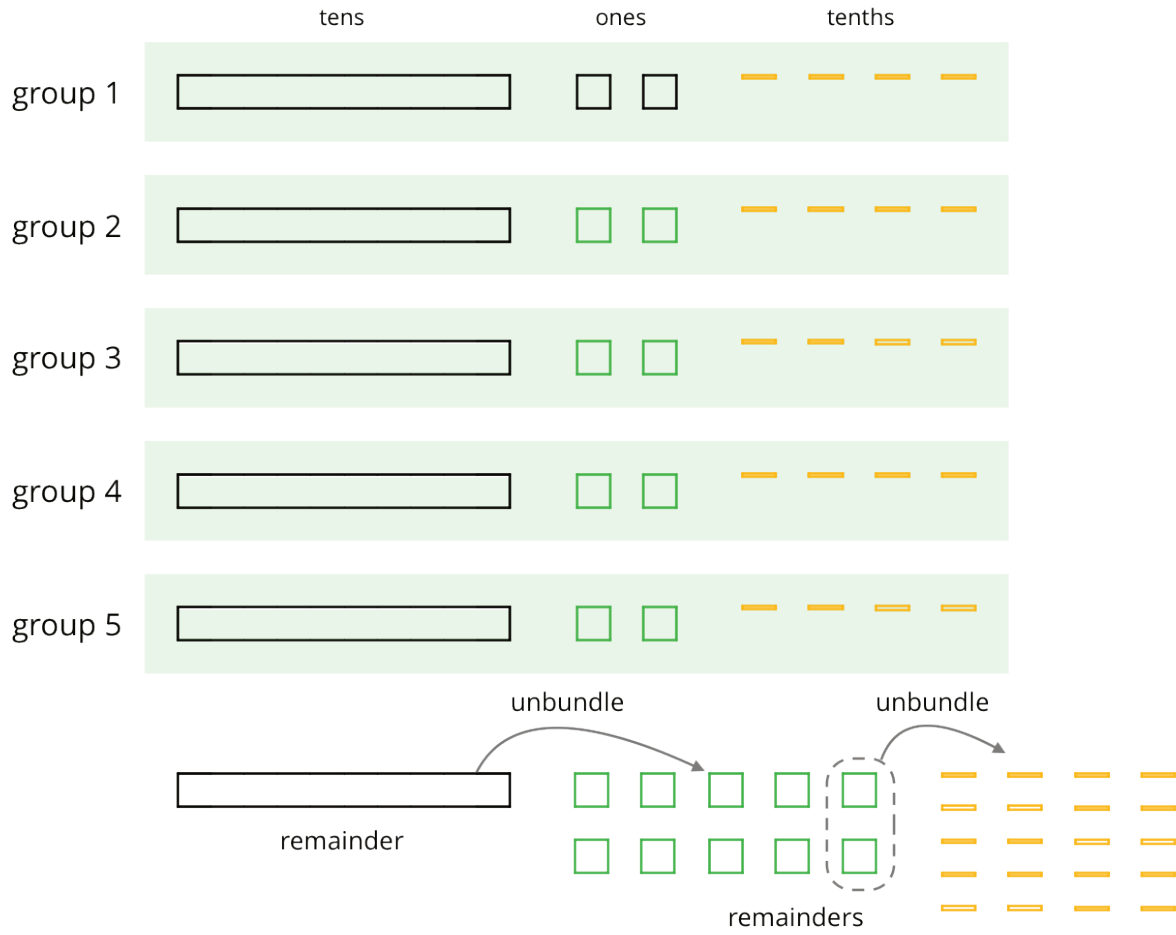
Here is Mai's diagram for  $62 \div 5$ .



Discuss these questions with a partner and write down your answers:

1. Mai should have a total of 12 ones, but her diagram shows only 10. Why?
2. She did not originally have tenths, but in her diagram each group has 4 tenths. Why?
3. What value has Mai found for  $62 \div 5$ ? Explain your reasoning.

# Activity Synthesis



## 2 Using Long Division to Calculate Quotients

### Student Task Statement

Here is how Lin calculated  $62 \div 5$ .

Lin set up the numbers for long division.

$$5 \overline{) 62}$$

She subtracted 5 times 1 from the 6, which leaves a remainder of 1.

She wrote the 2 from 62 next to the 1, which made 12, and subtracted 5 times 2 from 12.

$$\begin{array}{r} 1 \\ 5 \overline{) 62} \\ - 5 \\ \hline 12 \\ - 10 \\ \hline 2 \end{array}$$

Lin drew a vertical line and a decimal point, separating the ones and tenths place.

$12 - 10$  is 2. She wrote 0 to the right of the 2, which made 20.

$$\begin{array}{r} 12. \\ 5 \overline{) 62} \\ - 5 \\ \hline 12 \\ - 10 \\ \hline 20 \end{array}$$

Lastly, she subtracted 5 times 4 from 20, which left no remainder.

At the top, she wrote 4 next to the decimal point.

$$\begin{array}{r} 12.4 \\ 5 \overline{) 62} \\ - 5 \\ \hline 12 \\ - 10 \\ \hline 20 \\ - 20 \\ \hline 0 \end{array}$$

1. Discuss with your partner:

- Lin put a 0 after the remainder of 2. Why? Why does this 0 not change the value of the quotient?
- Lin subtracted 5 groups of 4 from 20. What value does the 4 in the quotient represent?
- What value did Lin find for  $62 \div 5$ ?

2. Use long division to find the value of each expression. Then pause so your teacher can review your work.

a.  $126 \div 8$

b.  $90 \div 12$

3. Use long division to show that:

a.  $5 \div 4$ , or  $\frac{5}{4}$ , is 1.25.

b.  $4 \div 5$ , or  $\frac{4}{5}$ , is 0.8.

c.  $1 \div 8$ , or  $\frac{1}{8}$ , is 0.125.

d.  $1 \div 25$ , or  $\frac{1}{25}$ , is 0.04.

4. Noah said we cannot use long division to calculate  $10 \div 3$  because there will always be a remainder.

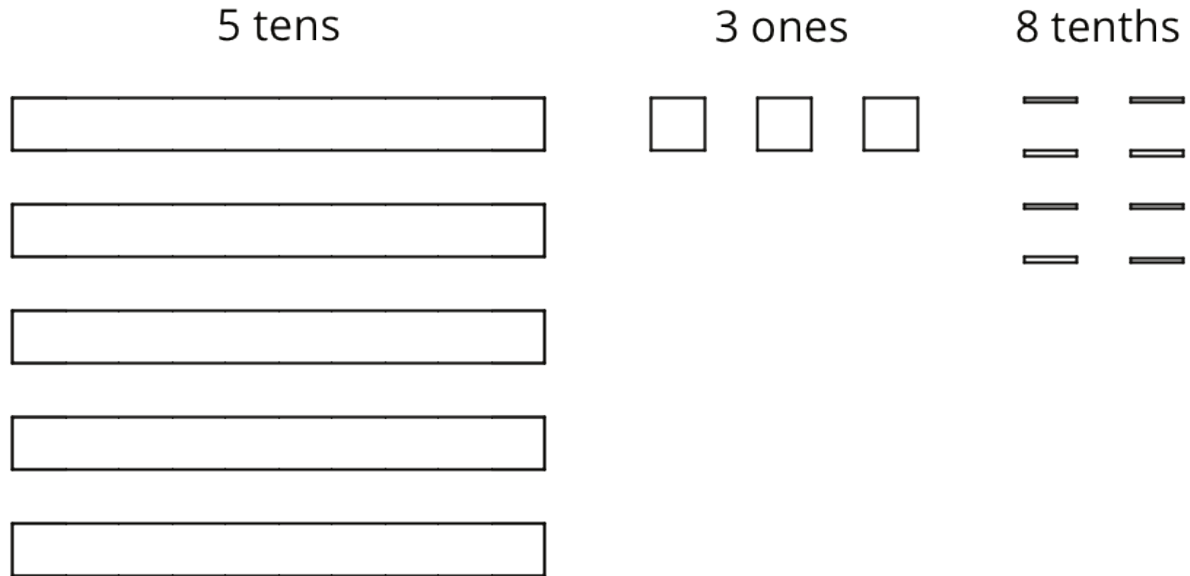
a. What do you think Noah meant by "there will always be a remainder"?

b. Do you agree with him? Explain your reasoning.

### 3 Using Diagrams to Represent Division

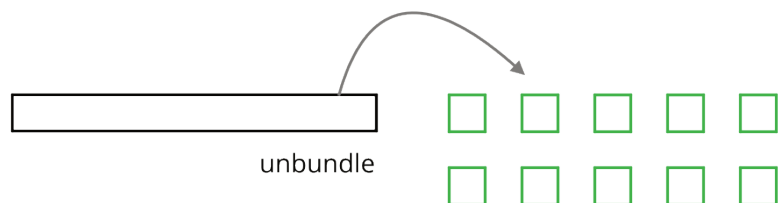
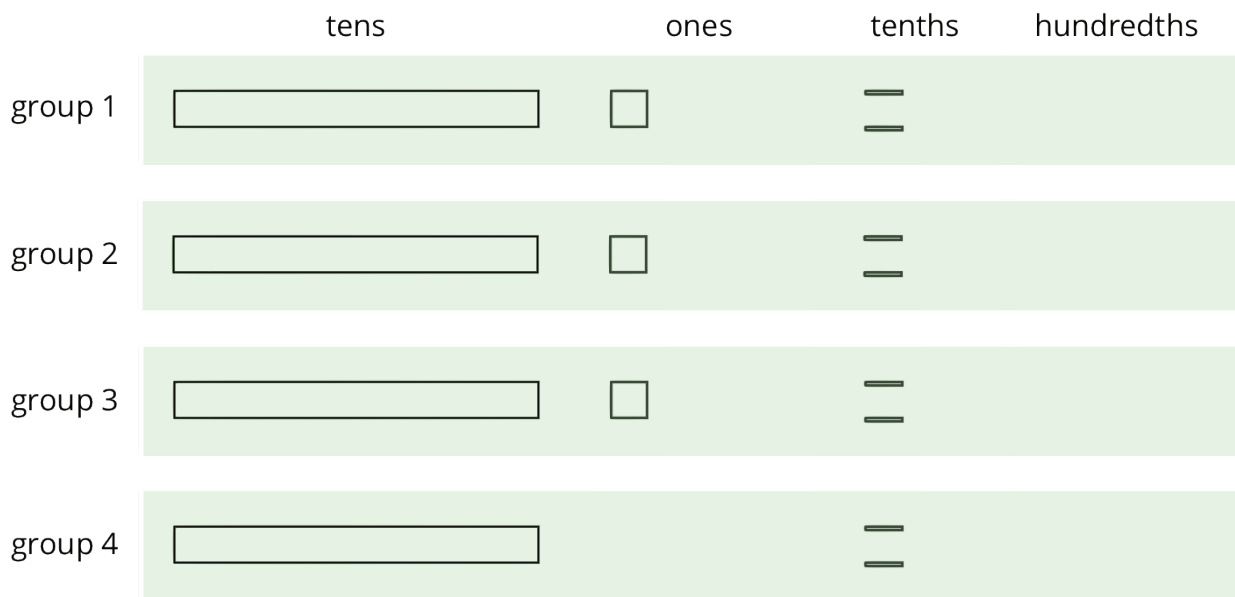
#### Student Task Statement

To find  $53.8 \div 4$  using diagrams, Elena began by representing 53.8.



She placed 1 ten into each group, unbundled the remaining 1 ten into 10 ones, and went on distributing the units.

This diagram shows Elena's initial placement of the units and the unbundling of 1 ten.



1. Complete the diagram by continuing the division process. How would you use the available units to make 4 equal groups?

As the units get placed into groups, show them accordingly and cross out those pieces from the bottom. If you unbundle a unit, draw the resulting pieces.

2. What value did you find for  $53.8 \div 4$ ? Be prepared to explain your reasoning.

3. Use long division to find  $53.8 \div 4$ . Check your answer by multiplying it by the divisor 4.

4. Use long division to find  $77.4 \div 5$ . If you get stuck, you can draw diagrams or use another method.