Unit 5 Lesson 11: Dividing Numbers that Result in Decimals

1 Number Talk: Evaluating Quotients (Warm up)

Student Task Statement

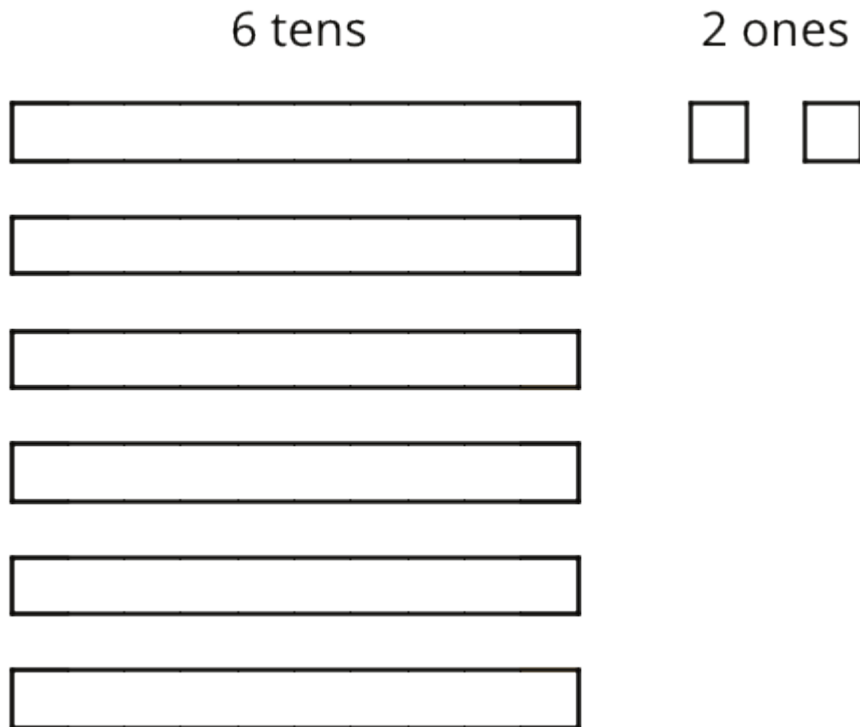Find the quotients mentally.

$400 \div 8$

$80 \div 8$

$16 \div 8$

$496 \div 8$

2 Keep Dividing (Optional)

Student Task Statement

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

6 tens   2 ones

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 $62 \div 5$.

tens	ones	tenths

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

    a. Mai should have a total of 12 ones, but her diagram shows only 10. Why?

    b. She did not originally have tenths, but in her diagram each group has 4 tenths. Why?

    c. What value has Mai found for $62 \div 5$? Explain your reasoning.

2. Find the quotient of $511 \div 5$ by drawing base-ten diagrams or by using the partial quotients method. Show your reasoning. If you get stuck, work with your partner to find a solution.

3. Four students share a $271 prize from a science competition. How much does each student get if the prize is shared equally? Show your reasoning.

Activity Synthesis

	tens	ones	tenths
group 1			
group 2			
group 3			
group 4			
group 5			

unbundle   unbundle

remainder
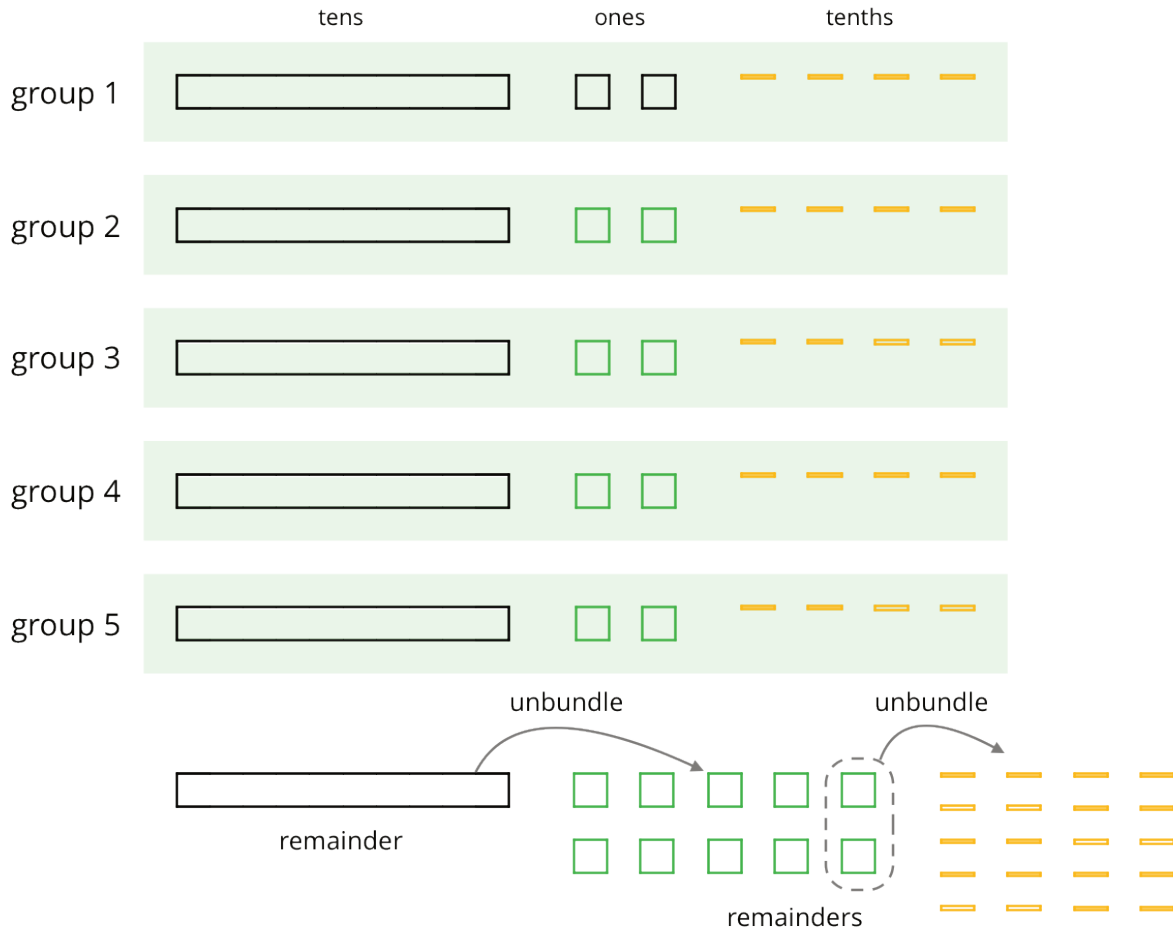
remainders

3 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.	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.	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.	Lastly, she subtracted 5 times 4 from 20, which left no remainder. At the top, she wrote 4 next to the decimal point.

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                    1                    1 2.                 1 2. 4
  5 / 6 2          5 / 6 2              5 / 6 2              5 / 6 2
                    - 5                  - 5                  - 5
                    ────                 ────                 ────
                    1 2                  1 2                  1 2
                   - 1 0                - 1 0                - 1 0
                   ─────                ─────                ─────
                      2                    2  0                 2  0
                                                             -  2  0
                                                             ───────
                                                                  0
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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.