



# An Algorithm with Partial Quotients

Let's make sense of and use an algorithm that uses partial quotients.

Warm-up

## Number Talk: Divide by 3

Find the value of each expression mentally.

- $90 \div 3$
- $96 \div 3$
- $960 \div 3$
- $954 \div 3$



## Activity 1

### Decompose Dividends

1. Find the value of  $465 \div 5$ . Explain or show your reasoning. You may use base-blocks if you find them helpful.

2. Here is how Priya finds the value of  $465 \div 5$ .

$$\begin{array}{r} 400 \div 5 = 80 \\ 60 \div 5 = 12 \\ 5 \div 5 = 1 \\ \hline 465 \div 5 = 93 \end{array}$$

- a. Describe the steps in Priya's method.

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- b. How is Priya's method similar to your method?

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- c. Use Priya's method to find the value of  $428 \div 4$ .



## Activity 2

### Tyler's Method

Tyler uses a different method to find the value of  $465 \div 5$ . Let's compare Priya's and Tyler's work.

Priya's method

$$\begin{array}{r} 400 \div 5 = 80 \\ 60 \div 5 = 12 \\ 5 \div 5 = 1 \\ \hline 465 \div 5 = 93 \end{array}$$

Tyler's method

$$\begin{array}{r} \boxed{93} \\ 1 \\ 12 \\ 80 \\ 5 \overline{)465} \\ - 400 \quad 5 \times 80 \\ \hline 65 \\ - 60 \quad 5 \times 12 \\ \hline 5 \\ - 5 \quad 5 \times 1 \\ \hline 0 \end{array}$$

1. How are these methods alike? How are they different? List as many similarities and differences as you can find.

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2. Why do you think Tyler uses subtraction in his method?

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3. Show how Tyler might record the process of finding the value of  $428 \div 4$ .

