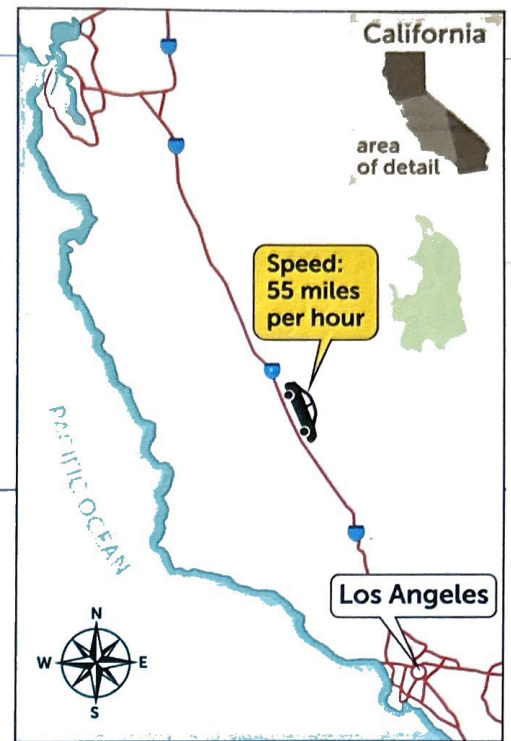


# Explore Unit Rates

Previously, you learned about rates. In this lesson, you will learn how to use rates and unit rates to solve problems.

➤ Use what you know to try to solve the problem below.

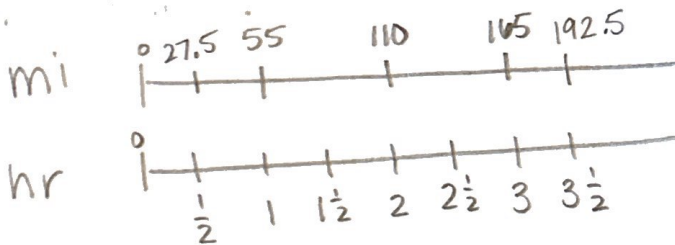
Chloe is driving on the freeway. She is 200 miles from Los Angeles. Suppose she drives at a constant speed of 55 miles per hour. Can Chloe get to Los Angeles in less than  $3\frac{1}{2}$  hours?



**TRY IT**



**Math Toolkit** double number lines, grid paper



$$\begin{array}{r} 165.0 \\ 27.5 \\ \hline 192.5 \end{array}$$

No. She will only go 192.5 miles in  $3\frac{1}{2}$  hours of travel

**DISCUSS IT**

**Ask:** How is your strategy similar to mine? How is it different?

**Share:** My strategy is similar to yours because ... It is different because ...



**Learning Targets** SMP 1, SMP 2, SMP 3, SMP 4, SMP 5, SMP 6, SMP 7, SMP 8

- Use division to find unit rates.
- Use unit rates to find equivalent ratios and compare ratios.
- Use unit rates to convert measurement units.

# CONNECT IT

- 1 Look Back** Can Chloe get to Los Angeles in less than  $3\frac{1}{2}$  hours? Explain.

No. In  $3\frac{1}{2}$  hours Chloe will go only 192.5 miles. if she travels at a rate of 55 mph

- 2 Look Ahead** Chloe's constant speed of 55 miles per hour is a rate. The numerical part of the rate, 55, is called the **unit rate**.

- a. What does the unit rate 55 tell you in this situation?

How far chloe drives in one hour

- b. On another trip, suppose Chloe drives at a constant speed of 60 miles per hour. What is Chloe's unit rate? What does the unit rate tell you?

60 , How far Chloe drives in one hour

- c. The table shows that Chloe travels 240 miles in 4 hours. Complete the equivalent ratios in the first two columns. Where do you see Chloe's unit rate?

The unit Rate is the first row in miles when the hours is equal to 1

- d. The third column of the table shows the quotient of the numbers in each equivalent ratio. Complete the third column. What do you notice?

All the problems simplify to 60 which is the consistent rate chloe drives

Miles, $a$	Hours, $b$	$\frac{a}{b} = a \div b$
60	1	$\frac{60}{1} = 60 \div 1 = 60$
120	2	$\frac{120}{2} = 120 \div 2 = 60$
180	3	$\frac{180}{3} = 180 \div 3 = 60$
240	4	$\frac{240}{4} = 240 \div 4 = 60$
300	5	$\frac{300}{5} = 300 \div 5 = 60$

- 3 Reflect** How could you use unit rates to help you identify equivalent ratios?

Find the unit rate for each rate by dividing. If all the rates simplify to the same value they are equivalent