Scale Drawings and Maps

Let's use scale drawings to solve problems.

8.1 A Train and a Car

Two cities are 243 miles apart.

- It takes a train 4 hours to travel between the two cities at a constant speed.
- A car travels between the two cities at a constant speed of 65 miles per hour.

Which is traveling faster, the car or the train? Be prepared to explain your reasoning.

8.2 Biking through Kansas

A cyclist rides at a constant speed of 15 miles per hour. At this speed, about how long would it take the cyclist to ride from Garden City to Dodge City, Kansas?





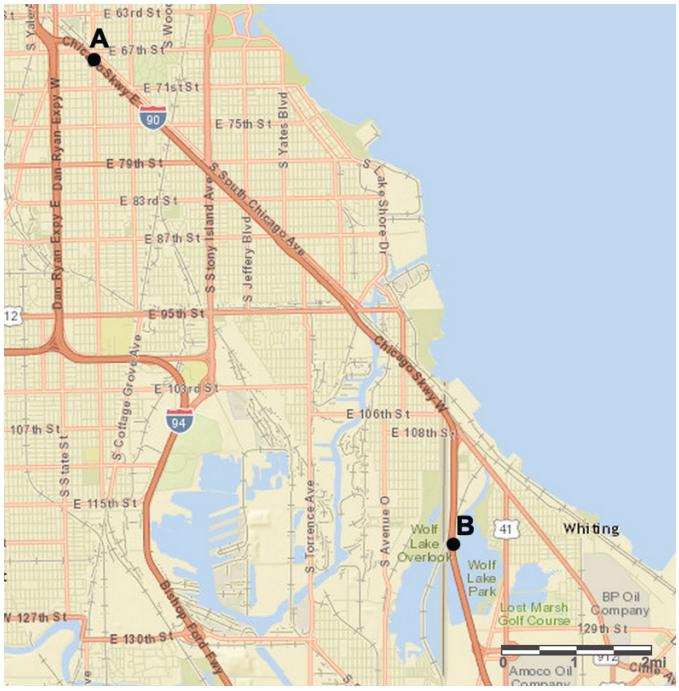
Are you ready for more?

Jada finds a map that says, “Note: This map is not to scale.” What do you think this means? Why is this information important?

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8.3 Driving on I-90

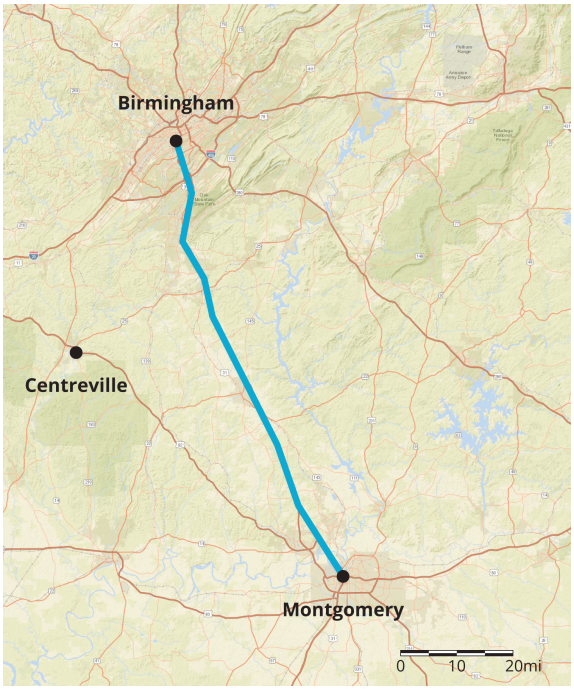
1. A driver is traveling at a constant speed on Interstate 90 outside Chicago. If she traveled from Point A to Point B in 10 minutes, at what speed was she driving? Explain your reasoning.



2. A helicopter flew directly from Point A to Point B in 9 minutes. Did the helicopter travel faster or slower than the driver? Explain or show your reasoning.

Lesson 8 Summary

Maps with scales are useful for making calculations involving speed, time, and distance. Here is a map of part of Alabama.



Suppose it takes a car 1 hour and 30 minutes to travel at constant speed from Birmingham to Montgomery. How fast is the car traveling?

To make an estimate, we need to know about how far it is from Birmingham to Montgomery. The scale of the map represents 20 mi, so we can estimate that the distance between these cities is about 90 mi.

time (hours)	distance (miles)
1.5	90
3	180
1	60

$\cdot 2$, $\cdot \frac{1}{3}$ (between rows 1.5 and 3); $\cdot 2$, $\cdot \frac{1}{3}$ (between rows 3 and 1)

Since 90 miles in 1.5 hours is the same speed as 180 mi in 3 hours, the car is traveling about 60 mi per hour.

Suppose a car is traveling at a constant speed of 60 miles per hour from Montgomery to Centreville. How long will it take the car to make the trip? Using the scale, we can estimate that it is about 70 mi. Since 60 miles per hour is the same as 1 mile per minute, it will take the car about 70 minutes (or 1 hour and 10 minutes) to make this trip.

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