Student Guide

Using a Coordinate Map (SG pp. 272–273)
Questions 1–5

1. *Answers will vary. See Figure 2 in the lesson for a sample table.
2. *Answers will vary. See Figure 3 in the lesson for a sample map.
3. *Answers will vary.
4. **A.** *Answers will vary.
   B. *Answers will vary.
   C. *Answers will vary.
5. **A.** 5 cm; 5 × 300 = 1500 cm
   B. 1 cm; 1 × 300 = 300 cm
   C. 3 cm; 3 × 300 = 900 cm

Instead of using directions like left and right, mathematicians and scientists use positive and negative numbers. When Shannon translated her work into scientific language, she said that the *x*-coordinate of the teacher's desk was –200 centimeters and the *y*-coordinate was –150 centimeters. This is because mathematicians and scientists have agreed that on the *x*-axis, right is positive and left is negative. On the *y*-axis front (or forward) is positive and back is negative. By using positive and negative numbers we know the distance and the direction.

Use Coordinates to Make a Map

- You and your classmates will use Mr. Origin to help make a map of your classroom or your playground. First, place Mr. Origin somewhere in the area to be mapped. Your teacher may have placed Mr. Origin for you.
- The class or your teacher will choose some objects in the classroom to be mapped. Each object should be labeled with a letter of the alphabet.

1. Work with your class to find the coordinates of the objects. Measure to the center of each object you are assigned. Record the distances on the *Objects in Room* _____ page from the *Student Activity Book*. Measure to the nearest centimeter.
2. Make a coordinate grid to map the location of each object. Use *Centimeter Grid Paper*.
   - Look at your data points. Decide where you need to draw and how to scale the coordinate axes so that all the points will fit.
   - Label the *x*-axis and *y*-axis.
   - Plot and label a point on the map for each object.

Object in Room _____

Object	*x*-coordinate in cm	*y*-coordinate in cm
A.		
B.		
C.		
D.		
E.		
F.		

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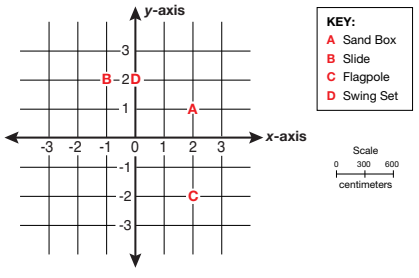
Explore

3. **A.** Use the map, a ruler, and the scale to estimate the distance between object A and object B. Show or tell how you found your estimate.
   B. Measure the actual distance between object A and object B.
   C. Find the difference between the estimated distance and the actual distance. This is called error.
   D. Was your estimate close?
4. **A.** Estimate the distance between two objects on the map of the classroom. Show how you found your estimate.
   B. Measure the actual distance between the two objects.
   C. Find the difference between the estimated distance and the actual distance.
   D. Was your estimate close?
5. Here is a map of a playground:



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A. Measure to estimate the distance between the flagpole and the slide.
B. Measure to estimate the distance between the slide and the swingset.
C. Measure to estimate the distance between the sandbox and the slide.

Use the *Professor Peabody's Trip to the Country* pages in the *Student Activity Book* to practice finding distances on a coordinate map using a scale.

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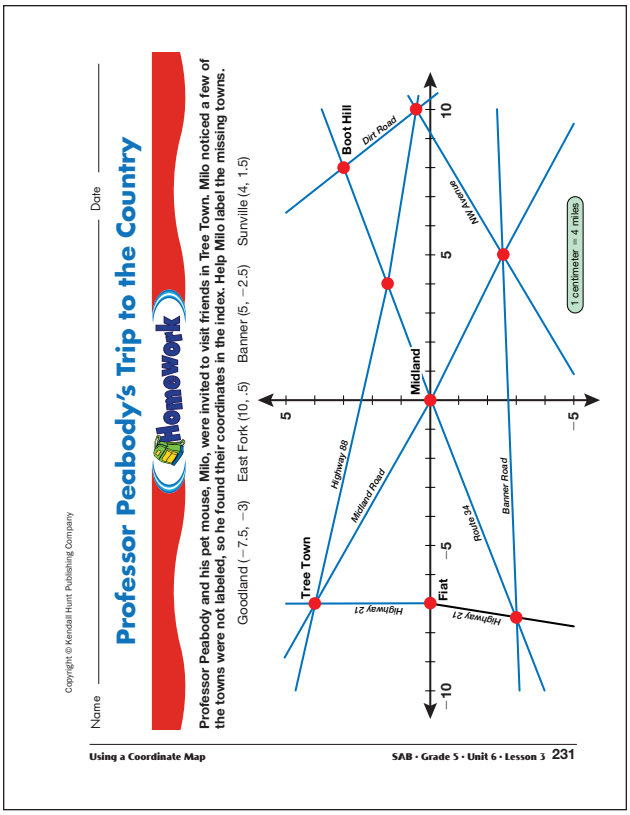
***Answers and/or discussion are included in the lesson.**



Name _____ Date _____

Professor Peabody's Trip to the Country

Homework

Professor Peabody and his pet mouse, Milo, were invited to visit friends in Tree Town. Milo noticed a few of the towns were not labeled, so he found their coordinates in the index. Help Milo label the missing towns.

Goodland (−7.5, −3) East Fork (10, .5) Banner (5, −2.5) Sunville (4, 1.5)

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Student Activity Book

Professor Peabody's Trip to the Country (SAB pp. 231–234)

Homework

Questions 1–4

1. About 32 miles; 8 cm × 4 cm/mile = 32 cm
2. **A.** Professor Peabody could go from Midland to East Fork through Sunville: About 42 miles;
   10.5 cm × 4 cm/mile = 42 miles
   or he could go through Banner:
   11 cm × 4 cm/mile = 44 cm/mile.
   It is shorter to go through Sunville.

   B. It is 2 miles shorter to go through Sunville.
3. About 152 miles;
   From Goodland to Banner: About 12.5 cm;
   from Banner to East Fork: About 6 cm;
   from East Fork to Tree Town: 17.5 cm;
   17.5 + 6 cm + 12.5 cm = 36 cm;
   36 cm × 4 cm/mile = 144 miles
4. The distance from Banner to Treetown is longer. I measured each distance on the map. Banner to Tree Town is about 13.5 cm and from Goodland to Sunville is about 12.5 cm.

Name _____ Date _____

Use the map scale and a ruler to solve each problem. Show how you solve each problem.

1. Professor Peabody drove from Midland to Goodland. How far did he drive?

2. **A.** Professor Peabody decided to go from Midland to East Fork. Milo noticed there were two possible routes. Which route is shorter?

   B. How many miles shorter?

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Name _____ Date _____

3. Professor Peabody started in Goodland. He decided to pick up some homemade butter in Banner, then some vegetables in East Fork, and finally had dinner in Tree Town with friends. How many miles did he travel?

4. Which drive is longer: Banner to Tree Town or Goodland to Sunville?

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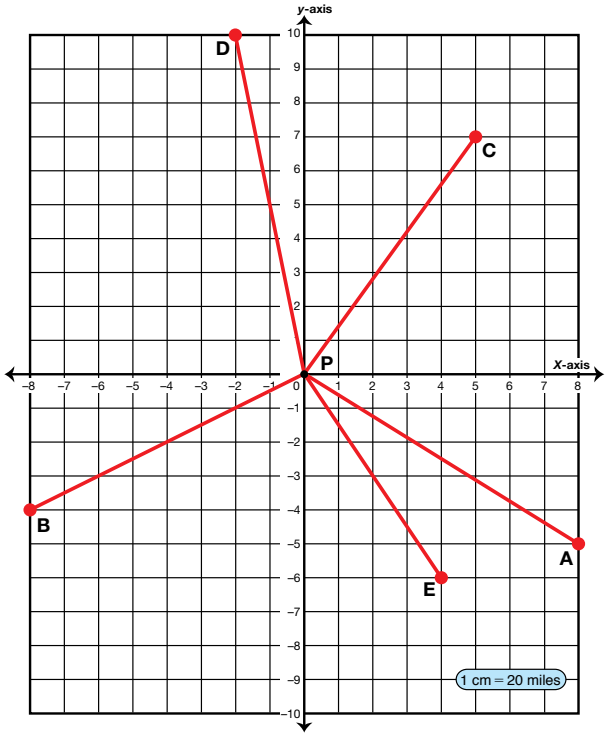
Teacher Guide

Kingdom of Nuggles (TG p. 1)
Questions 1–4

1–2.



3. **A.** About 190 miles;
   9.5 cm × 20 cm/mile = 190 miles

   B. About 180 miles;
   9 cm × 20 cm/mile = 180 miles

   C. About 170 miles;
   8.5 cm × 20 cm/mile = 170 miles

   D. About 200 miles;
   10 cm × 20 cm/mile = 200 miles

   E. About 140 miles;
   7 cm × 20 cm/ mile = 140 miles

   F. About 7 cm × 20 cm/mile = 140 miles

4. 17 hours; 170 miles per hour
   divided by 10 miles per hour = 17 hours

Name _____ Date _____

Kingdom of Nuggles

King Bradyskins lives in the King's Palace at (0, 0). He wants to build roads from his palace to each town in the Kingdom.

1. Draw a map of the cities in the Land of Nuggles on Four-Quadrant Grid Paper on the Map of the Kingdom of Nuggles section.

Towns in the Kingdom of Nuggles

	City	Coordinates
A.	Adamville	(8, −5)
B.	Bradytown	(−8, −4)
C.	Candyville	(5, 7)
D.	Dodge City	(−2, 10)
E.	Evermore	(4, −6)

2. King Bradyskins wants each road to be a straight line. Draw the roads from the King's Palace to each city.
3. The scale of the map is 1 cm = 20 miles. Estimate the distance between the King's Palace and each town. Include units.
   - **A.** Adamville
   - **B.** Bradytown
   - **C.** Candyville
   - **D.** Dodge City
   - **E.** Evermore
   - **F.** Show or tell how you solved Questions 3E.
4. King Bradyskin's horse and carriage can travel 10 miles per hour. How long will it take him to travel to Candyville?

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