

Using Maps

Here is a map of Sara's desk.

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Questions 1–12

1. **A.*** Possible response: He is in the lower left corner, at the coordinates (0,0).
B.* Possible response: Since you are looking down on the desk, you see Mr. Origin from above so you see Mr. Origin's base and it is a rectangle.
2. **A.*** 5 cm
B. Possible response: There is a scale at the bottom of the map that shows that each centimeter on the map is 5 centimeters in real life.
C. 14 cm; 70 cm
D. 13 cm; 65 cm
3. **A.** 3 cm; Possible response: I used the grid and counted 3 centimeters.
B. 15 cm; Possible response: I multiplied $3 \times 5 \text{ cm} = 15 \text{ cm}$.
C. Answers will vary. Students should see that 15 cm is a reasonable length for a pencil.
4. Possible response: It is about 10 cm. On the map, the pencil is a little more than 2 cm away from the top of the book. Since each centimeter on the map represents 5 centimeters in the real world, $2 \times 5 \text{ cm} = 10 \text{ cm}$.
- 5.* 6 cm; Possible response: I used my ruler to measure the ruler on the map.

Discuss

Use the scale map of Sara's desk and your ruler to answer the following questions.

1. **A.** Where is Mr. Origin on the map?
B. Why does Mr. Origin look like a rectangle on the map?
2. **A.** What distance on the map does each centimeter represent in the real world?
B. Explain how you know.
C. How many centimeters from left to right is Sara's desk on the map? How long is this in the real world?
D. How many centimeters from back to front is Sara's desk on the map? How long is this in the real world?
3. **A.** How long is Sara's pencil on the map? Explain how you found your answer.
B. How long is Sara's pencil in the real world? Show or tell how you know.
C. Measure one of your own pencils. How can this measurement help you decide if your answer is reasonable?
4. About how far is it from the pencil to the top edge of the book on Sara's real desk? Explain how you found your answer.
5. Look at the ruler on the map of Sara's desk. How long is the ruler on the map? Show or tell how you solved this problem.


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

6. A. 3 cm.
 B.* 15 cm; Possible response: I skip counted by 5s (5, 10, 15).
 C. Answers will vary. Students should see that 15 centimeters is a reasonable length for a calculator.
7. The ruler is longer. Possible response: I used the grid lines and counted that the book is between 5 and 6 centimeters long. The ruler is 6 centimeters long so it is longer.
8. A. It is about $1\frac{1}{2}$ centimeters long.
 B. Possible response: The eraser is about 8 centimeters long. I used a piece of paper to mark the ends of the eraser and then I held the paper against the scale on the map. It showed about 8 centimeters.
9. A. Answers will vary, but should be between 40 and 50 centimeters.
 B. 45 centimeters
 C. Answers will vary depending on the original estimate.
10. Answers will vary but 7 or 8 centimeters are reasonable estimates. Possible response: One centimeter on the map is 5 centimeters in real life. Half of a centimeter on the map would be between 2 and 3 centimeters the total width of the calculator would be 7 or 8 centimeters.
- 11.* The grid helps you to find the length and width of objects by counting the centimeters. You can also find the distance between objects using the grid lines to count the centimeters.
- 12.* Answers will vary. Student desk tops should look similar to Sara's desk.



Discuss these questions with your group. Write answers to these questions on a sheet of paper.

6. A. How long is Sara's calculator on the map?
 B. How long is her calculator in the real world? Show or tell how you found your answer.
 C. Measure your calculator. Use this measurement to explain whether your answer for Question 6B is reasonable or not.

7. Which one is longer, the ruler or the book? Show or tell how you know.

8. A. Estimate the length of Sara's eraser on the map.
 B. Use your estimation to decide how long Sara's eraser is in the real world. Show or tell how you found your answer.

9. A. Estimate the distance in the real world from the middle of the bottom of the calculator to the bottom left corner of the book.
 B. Use the map and your ruler to find the exact distance.
 C. Compare the actual distance to your estimated distance. Was your estimate reasonable? Why or why not?

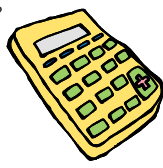
10. Estimate the width of the calculator in the real world. Show or tell how you solved the problem.

11. Explain how the grid is helpful in mapping Sara's desk.

✓ **Check-In: Question 12**

12. Use a book, calculator, pencil, eraser, and ruler. Try to make your desk look like Sara's desk.

Use the *Captain Jack's Island* pages in the *Student Activity Book* for more practice solving problems using scale maps.



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