Name _____

Booth Space

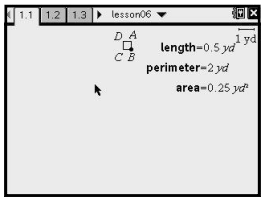
Directions: Follow the steps below. The page numbers refer to the TI-Nspire document *lesson06.*

1. The sketch on page 1.1 shows square ABCD along with the measurements of its length, perimeter, and area. Explain how the area and perimeter of a square are determined.

_____

_____

Step 1



2. If x = side length of a square, what is the perimeter of a square when $x = 2$? Show your work.

_____

If x = side length of a square, what is the area of a square when $x = 2$? Show your work.

_____

In general, what is the formula used to find the area of a square? What is the formula used to find the perimeter of a square?

$A =$ _____

$P =$ _____

3. Without dragging the sketch, observe the initial length of square ABCD. What is the initial length of one side of the square?

side length = _____

4. Grab point B, drag it straight down to the bottom of the screen and let it go. What is the new length?

new side length = _____

Booth Space *(cont.)*

Directions: Follow the steps below. The page numbers refer to the TI-Nspire document *lesson06.*

5. The spreadsheet on page 1.2 automatically collected the length, perimeter, and area of the square in Columns A, B, and C respectively. Initially, the perimeter was larger than the area. At approximately what length does this change? Why?

side length = _____ perimeter = _____ area = _____

_____

_____

_____

6. Page 1.3 shows two scatterplots.

a. What relationship is shown by the scatterplot with white dots?

_____

_____

b. What relationship is shown by the scatterplot with dark dots?

_____

_____

c. Describe the shape of each scatterplot.

_____

_____

7. The function entry line is visible at the bottom of the graph on page 1.3. For f1(x), enter the function for perimeter as a function of length (x). For f2(x), enter the function for area as a function of length. What functions did you enter? Where do these two functions intersect?

_____

_____

Booth Space *(cont.)*

Directions: Follow the steps below. The page numbers refer to the TI-Nspire document *lesson06.*

8. Prove algebraically where the two functions from question 7 intersect.

9. Hide functions f1(x) and f2(x). For f3(x), enter a piecewise function that graphs the larger number (perimeter or area) for each length. What function did you graph? Why?

_____

_____

10. Complete this statement in three different ways:

If the length of a square is _____, then the magnitude of its area _____ the magnitude of its perimeter.

If the length of a square is _____, then the magnitude of its area _____ the magnitude of its perimeter.

If the length of a square is _____, then the magnitude of its area _____ the magnitude of its perimeter.

11. The graph on page 1.4 is set with an appropriate window to examine the price of a vendor area. For f4(x), enter the function that defines the cost of a vendor space based on the results of f3(x). What function did you graph?

_____

12. Use the trace feature to determine the cost of a vendor space that has a length of 3 yards, 4 yards, 5 yards, and 8 yards.

_____

_____

Name _____

Designing Your Bedroom

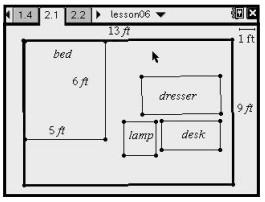
Directions: Follow the steps below. The page numbers refer to the TI-Nspire document *lesson06.*

You and your family have just moved into a new house. Your parents have decided that they will let you design your new room. Your bedroom is 9 ft. x 13 ft. You already have a bed that is 5 ft. by 6 ft. Read the steps below to find the dimensions of the other furniture pieces in your room. Page 2.2 can be used to test your calculations.

1. On page 2.1, you see the layout of your new bedroom. Your bed is placed in the corner of the room. What is the area of your bed? What is the perimeter?

A = _____ P = _____

Step 1



2. Your dresser has the same perimeter as your bed, but a different area. What is the perimeter of your dresser? What is the area?

A = _____ P = _____

Change the dimensions of the dresser on page 2.1 to match the information above.

3. Your desk has the same area as your bed, but a different perimeter. What is the area of your desk? What is the perimeter?

A = _____ P = _____

Change the dimensions of the desk on page 2.1 to match the information above.

4. You have a floor lamp that has a perimeter that is four times its area. What is the perimeter of your floor lamp? What is the area?

A = _____ P = _____

Change the dimensions of the lamp on page 2.1 to match the information above.

5. Place the furniture pieces on page 2.1 to design your room in the way that you want it to look. On a separate sheet of paper, draw the layout that you have chosen, and label the dimensions.

