

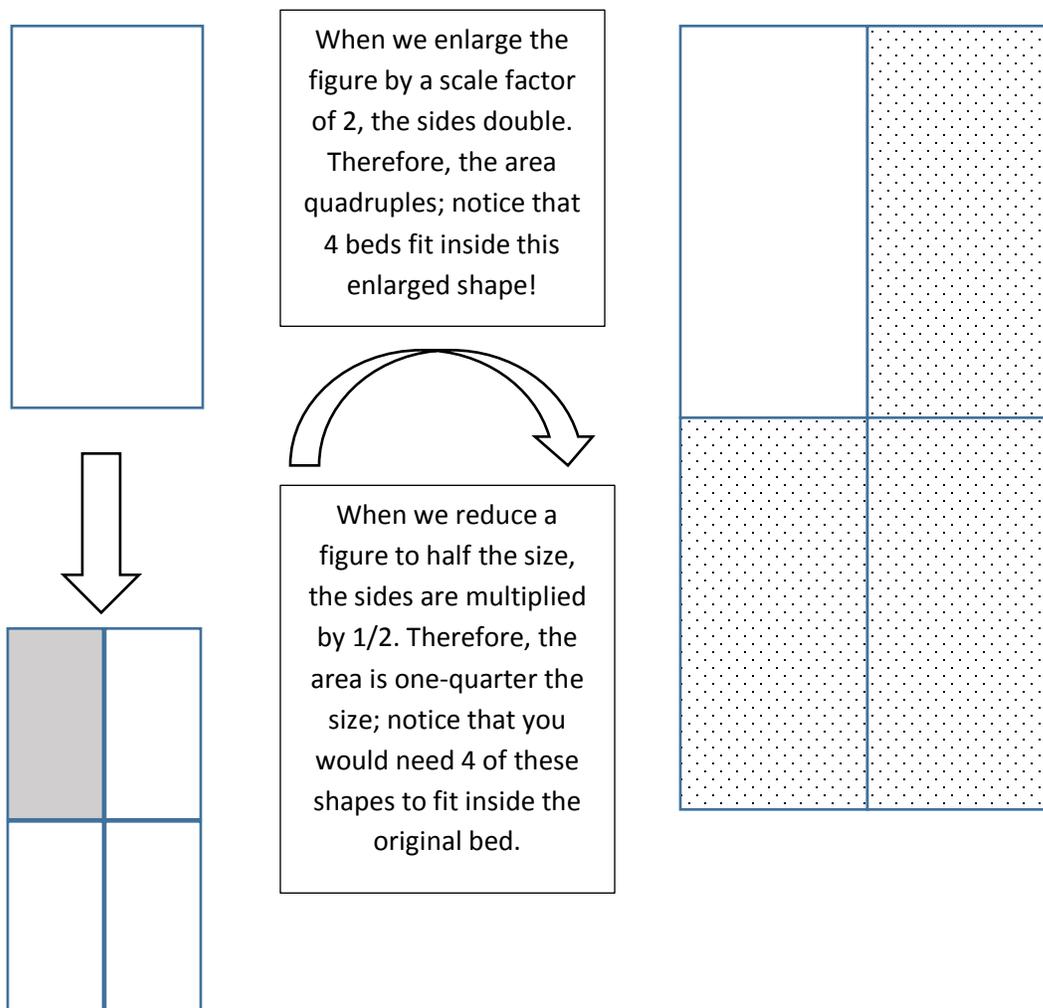
Scaling a Figure Wrap-Up **Answer Key**

During the scaling-a-figure investigation, you figured (get, it?) out how the characteristics of a design change when it is enlarged or reduced. You discovered that when a shape is enlarged or reduced...

- The perimeter changes by the scale factor,
- The area changes by the square of the scale factor, and
- The angles do not change.

Learning goal: *Why does a figure change when we enlarge or reduce it?*

Below is the bed from our investigation:



Question: *Why does the area change by the square of the scale factor?*

When a shape is scaled, each side length is multiplied by the scale factor. When you determine the shape's area, each side is used in the calculation. Therefore, the area is multiplied by the square of the scale factor.

For example, if the original rectangle has side lengths a and b , when it is scaled, the new sides are ax and bx , where x is the scale factor. The new area is $ax(bx) = abx^2$.

As another example, with a triangle, if the original has a base length l and a height h , and the original area is $0.5lh$, the new triangle area will be $0.5(xl)(xh) = 0.5lhx^2$.