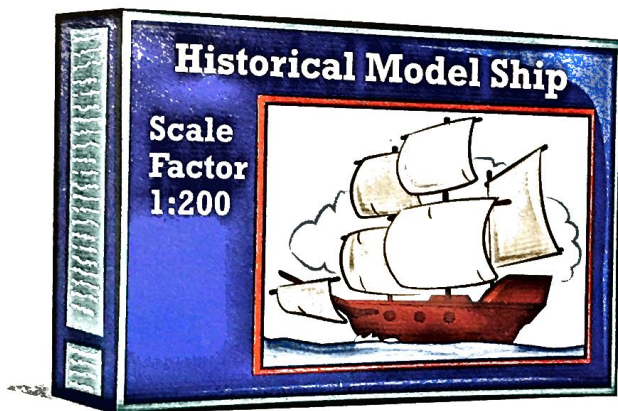


$$39 \times 26 \times 12.25$$

- 8.** Suppose that a company sells laundry soap in boxes that measure 4 inches by 8 inches by 12 inches. The company wants to offer larger economy size boxes.
- a.** What changes in dimensions would give a box with double the volume?
  - b.** What changes in dimensions would give a box with triple the volume?
  - c.** What changes in dimensions would give a box with half the volume?
  - d.** Given each scale factor below, find the volume of the box similar to the basic box.
    - i.** scale factor of 2
    - ii.** scale factor of 1.5
    - iii.** scale factor of 0.5

Explain how you can find these answers without calculating the separate dimensions of each new box design.

9. You want to make a compost box bigger than the basic 1-2-3 foot size. Your friend says, 'If you double each dimension, you'll be able to double the capacity at only double the cost of the materials to build it.'
- Is your friend correct about doubling the capacity? Why or why not?
  - Is your friend correct about doubling the cost? Why or why not?
10. The city of Centerville plans to dig a landfill in the shape of a rectangular prism. The landfill is 85 feet deep, 200 feet wide, and 700 feet long.
- How many cubic feet of garbage will the landfill hold?
  - What information do you need to determine how long the landfill can be used until it is full?
  - The city manager says that an increase of only 10% in each dimension would increase the capacity of the landfill by 33%. Is she correct? Explain.
11. Shaun's hobby is building model airplanes and ships from kits. One of his projects is an historic sailing ship. The actual ship is related to the model by a scale factor of 200.



- If the length of the model is 25 centimeters, what is the length of the actual ship?
- If the length of one mast on the actual ship is 30 meters, what is the length of the mast on the model?
- If the area of the deck on the model is 20 square centimeters, what is the area of the deck on the actual ship?
- If the model ship's interior has volume 100 cubic centimeters, what is the volume of the interior of the actual ship?