

Lesson 9.1.4

9-41. See below.

- It is a rectangular prism with dimensions $3 \times 4 \times 2$.
- Students build their solids.
- See answers in bold in the table below.

Linear Scale Factor	Original Volume	New Volume	Ratio of Volumes
1	24 units³	24 units³	1:1
2	24 units³	192 units³	8:1
3	24 units³	648 units³	27:1
4	24 units³	1536 units³	64:1
r	24 units³	$24r^3$ units	$r^3:1$

- 1000; The volume is multiplied by a factor of r^3 .

9-42. See below.

- The enlargement will be 2 blocks wide, 2 blocks tall, and 6 blocks deep.
- It takes eight $1 \times 1 \times 3$ solids to build the $2 \times 2 \times 6$ enlargement.
- The volume of a $3 \times 3 \times 9$ solid would be 27 times larger than the $1 \times 1 \times 3$ solid.

9-43. $320(1.5)^3 = 1080$ kernels



9-45. If she needs the balloon to double in width, then the volume will increase by a factor of 8. That means the balloon requires 24 breaths to blow it up. Since she has already used 3 breaths, she needs 21 more to fill the balloon.

9-46. See below.

- $SA = 180\pi \approx 565.5 \text{ in.}^2$; $V = 324\pi \approx 1017.9 \text{ in.}^3$
- $324\pi \cdot 27 = 27,482.65 \text{ in.}^3$

9-47. Circumference of each circle = 10π ; total distance = $20\pi \approx 62.8$ feet

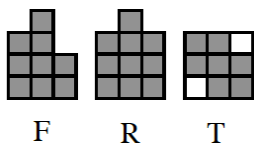
9-48. See below.

- $x \approx 10.3$
- No solution because the hypotenuse must be the longest side of a right triangle.

c. The length of the base of the composite triangle must be $6\sqrt{3}$. The smaller right triangle has a base length $6\sqrt{3} - 5 \approx 5.39$; $x \approx 8.07$.

9-49. See below.

a. See diagram below.



b. $V = 16$ cubic units; $SA = 52$ square units

9-50. The line should be solid and the shading should be below the line.

9-51. See the area model below. A tree diagram would have worked as well. $\frac{3}{45} + \frac{4}{45} = \frac{7}{45} \approx 15.6\%$

	red oak $\frac{3}{9}$	white oak $\frac{4}{9}$	maple $\frac{2}{9}$
granite $\frac{1}{5}$	$\frac{3}{45}$	$\frac{4}{45}$	
tile $\frac{4}{5}$			

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