**It’s Not New, It’s Recycled**

Composition of Functions

Sophia is using an electric air pump to inflate a spherical balloon that has a maximum volume of 2250 cubic inches. The pump increases the volume of the balloon by 7.5 cubic inches per second.

26. Write the function *V*(*t*) to represent the volume of the balloon as a function of time.

27. The equation $V=\frac{4}{3}πr^{3}$ is the formula for the volume of a sphere with a radius, *r*, in inches. Use this equation to write the function *r*(*V*) which represents the radius of the spherical balloon as a function of the volume, *V*.

28. Graph the functions *V*(*t*) and *r*(*V*) on the grids provided. 

29. Use the graphs in part c to determine (*r* o *V*)(100). Explain your reasoning.

30. Write the composition (*r* o *V*)(*t*).

31. Determine the domain of the composite function (*r* o *V*)(*t*) in terms of the problem situation.

32. Determine (*r* o *V*)(60). Explain what this value means in terms of the problem situation.

33. Determine the radius of the balloon after Sophia has inflated it for 3 minutes.

34. Determine the maximum radius of the balloon. Explain your reasoning.