Concept Properties Discovery Lessons

Compare Surface Area to Volume Ratio of Cubes and Spheres.

Edge of Cube s	Area of Face A = s x s	Surface Area of Cube SA = 6 x A	Volume V = s x s x s	Ratio of Surface to Volume SA : V
1 cm				
2 cm				
3 cm				
4 cm				
5 cm				
6 cm				
7 cm				
8 cm				

Radius of Sphere	Surface Area of Sphere $SA = 4\pi r^2$	Volume $V = 4/3\pi r^3$	Ratio of Surface to Volume SA : V
1 cm			
2 cm			
3 cm			
4 cm			
5 cm			
6 cm			
7 cm			
8 cm			

Answer the following questions:

a) For each shape, which size has the largest ratio of surface to volume?
b) For each shape, which size has the smallest ratio of surface to volume?
c) As the size increases, what happens to the ratio of surface to volume?
d) Considering each size, which shape has the largest ratio of surface to volume?
e) Most heat loss is through the skin so the ratio of skin surface area to volume of the body determines the speed with which heat is loss. Hypothermia is when a warm blooded animal loses too much heat. How would experience hypothermia quicker: an adult or a child? Why?