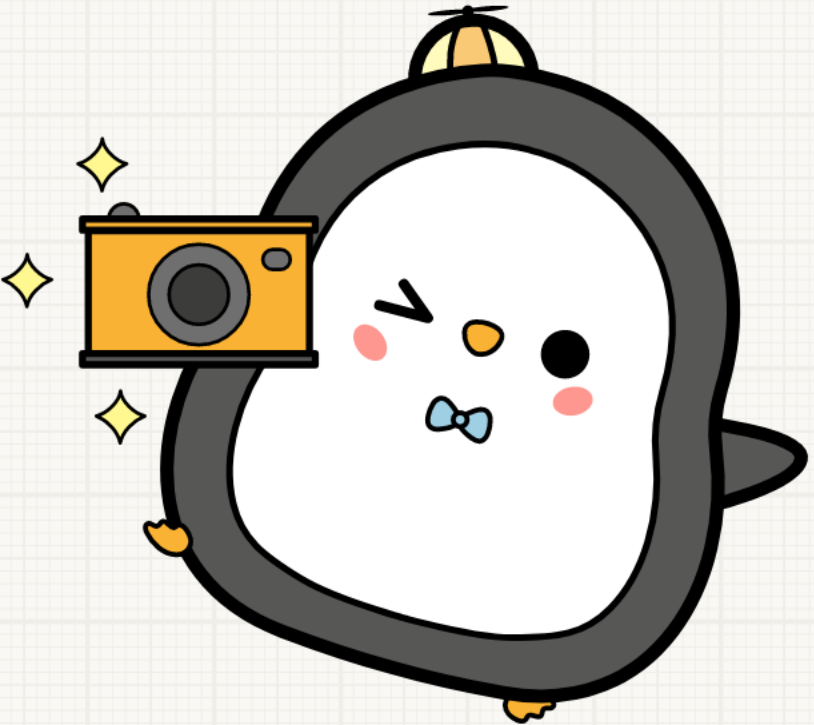
# AP Bio Math Mondays

## Surface Area: Volume Sphere

# Surface Area and Volume

$$SA = 4\pi r^2$$

$$V = \frac{4}{3}\pi r^3$$



Sphere

# Identification of Variables

## Surface Area and Volume

$$SA = 4\pi r^2$$

$$V = \frac{4}{3}\pi r^3$$

Sphere

r = radius

# Math Monday #5

# SA/V: Sphere

Determine the surface area-to-volume ratio for a sphere with radius 2cm.

$r = 2$ cm

**Surface Area and Volume**

$$SA = 4\pi r^2$$

$$V = \frac{4}{3}\pi r^3$$

Sphere

$$SA = 4\pi 2^2$$

$$SA = 4\pi 4$$

$$SA = 16\pi$$

$$V = \frac{4}{3}\pi 2^3$$

$$V = \frac{4}{3}\pi 8$$

$$V = \frac{32}{3}\pi$$

$$\frac{SA}{V} = \frac{16\pi}{\frac{32}{3}\pi} = \frac{16\pi}{1} \times \frac{3}{32\pi} = \frac{3}{2}$$

1

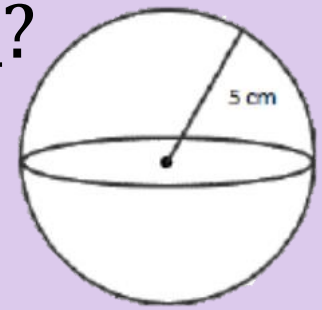
2

# Example Problem

# SA/V: Sphere

What is the SA/V for this cell? Round your answer to the nearest hundredth?

$r = 5$ cm




$SA = 4\pi 5^2$

$SA = 4\pi 25$

$SA = 100\pi$

$V = \frac{4}{3}\pi 5^3$

$V = \frac{4}{3}\pi 125$

$V = \frac{500}{3}\pi$

## Surface Area and Volume

$SA = 4\pi r^2$

$V = \frac{4}{3}\pi r^3$

Sphere

$$\frac{SA}{V} = \frac{100\pi}{\frac{500}{3}\pi} = \frac{100\pi}{1} \times \frac{3}{500\pi} = \frac{3}{5} = 0.60$$

1

5

# Which cell is more efficient?

SA/V = 3/2

SA/V = 3/5