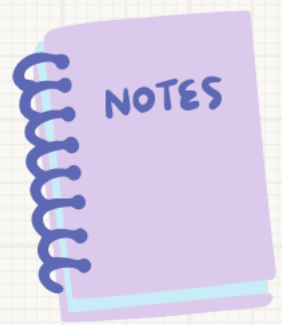


AP Bio

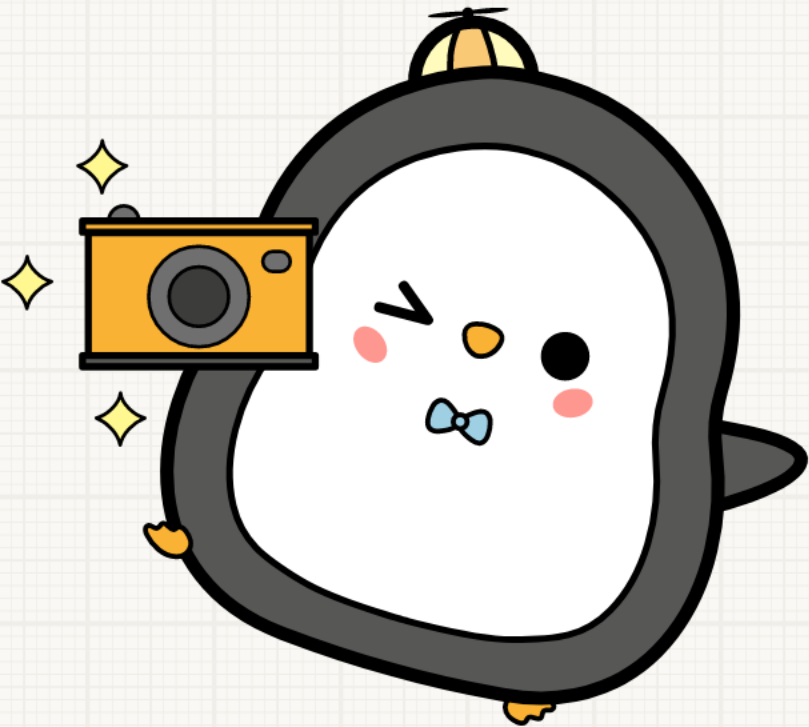
Math Mondays

Surface Area: Volume
Cylinder



Surface Area and Volume

$$SA = 2\pi rh + 2\pi r^2$$



$$V = \pi r^2 h$$

Cylinder

Identification of Variables

Surface Area and Volume

$$SA = 2\pi rh + 2\pi r^2$$



$$V = \pi r^2 h$$

Cylinder

r = radius

h = height

Math Monday #5

SA/V: Cylinder

Determine the surface area-to-volume ratio for a cylinder with radius of 2 cm and height of 3 cm

$$r = 2 \text{ cm}$$

$$h = 3 \text{ cm}$$

$$SA = 2\pi(2)(3) + 2\pi 2^2$$

$$SA = 2\pi 6 + 2\pi 4$$

$$SA = 12\pi + 8\pi = 20\pi$$

$$V = \pi 2^2 3$$

$$V = \pi(4)3$$

$$V = 12\pi$$

Surface Area and Volume

$$SA = 2\pi rh + 2\pi r^2$$



$$V = \pi r^2 h$$

Cylinder

$$\frac{SA}{V} = \frac{20\cancel{\pi}}{12\cancel{\pi}} = \frac{5}{3}$$

Example Problem

SA/V: Cylinder

Determine the surface area-to-volume ratio for a cylinder with radius of 3 cm and height of 2 cm

$$r = 3 \text{ cm}$$

$$h = 2 \text{ cm}$$

$$SA = 2\pi(3)(2) + 2\pi 3^2$$

$$SA = 2\pi 6 + 2\pi 9$$

$$SA = 12\pi + 18\pi = 30\pi$$

$$V = \pi 3^2 2$$

$$V = \pi(9)2$$

$$V = 18\pi$$

Surface Area and Volume

$$SA = 2\pi rh + 2\pi r^2$$



$$V = \pi r^2 h$$

Cylinder

$$\frac{SA}{V} = \frac{30\cancel{\pi}}{18\cancel{\pi}} = \frac{5}{3}$$

Which cell is more efficient?



$$SA/V = 5/3$$



$$SA/V = 5/3$$