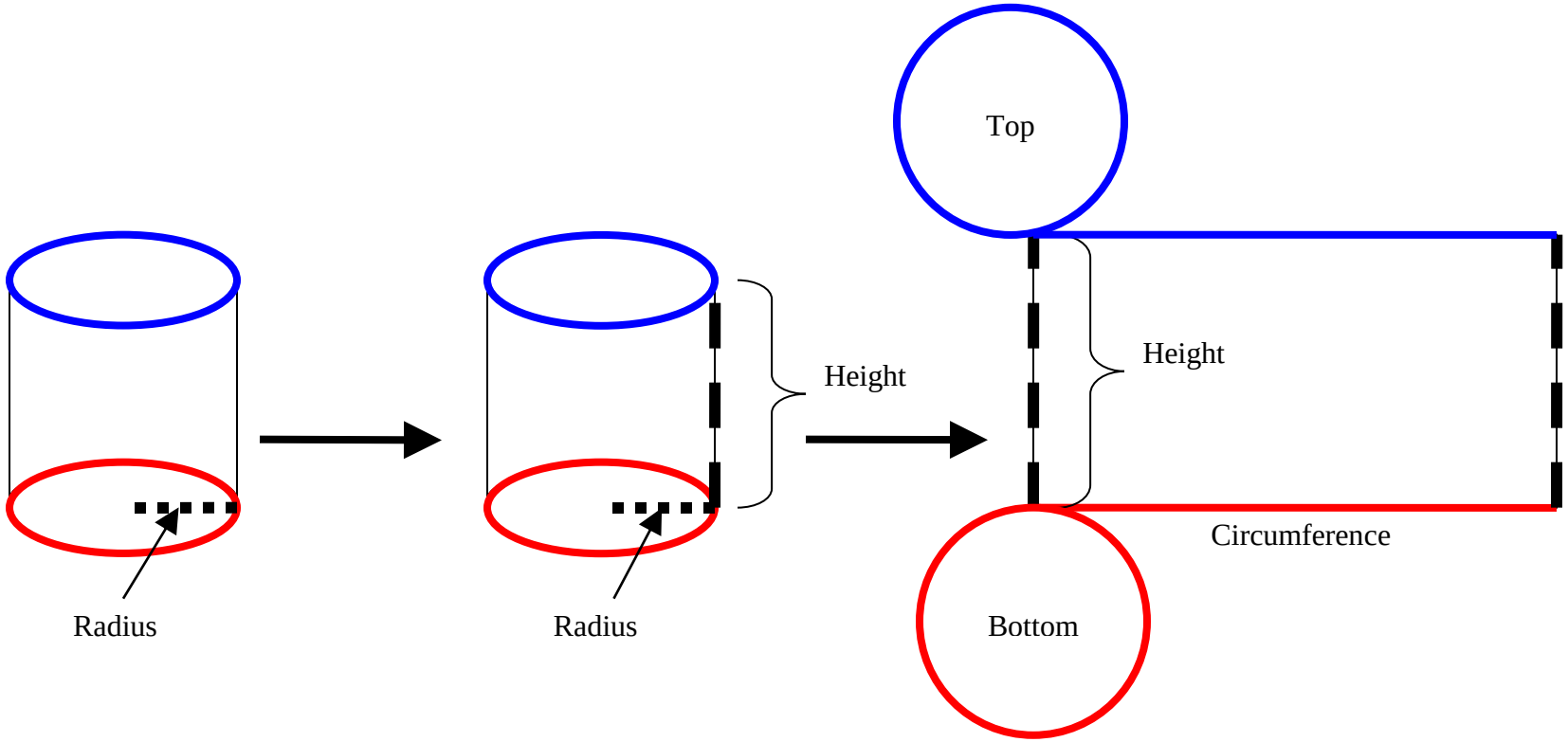
Cylinder – Surface Area

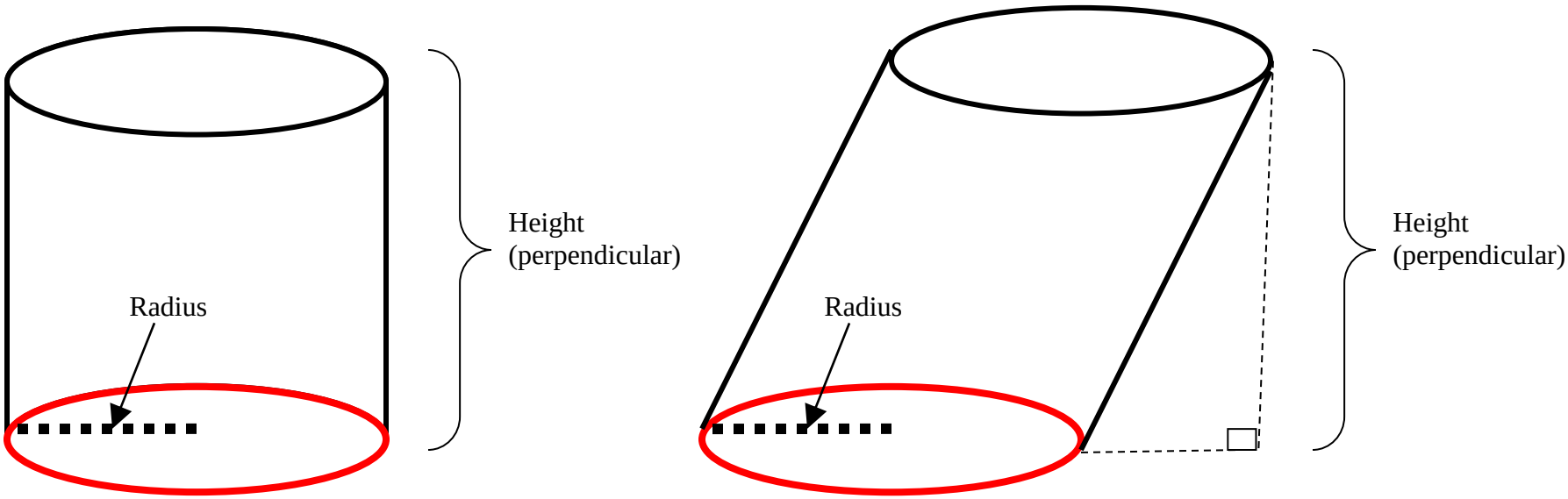


Area = A = area of top + area of bottom + circumference * height

$= \pi r^2 + \pi r^2 + 2 * \pi *$ radius * height

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

Cylinder – Volume

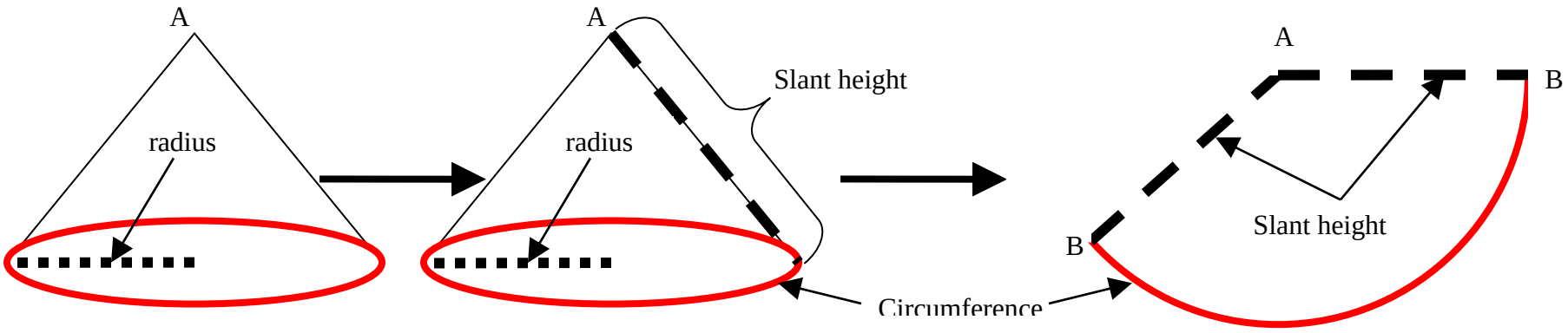


Volume = V = Area of base * height

$= \pi r^2$ * height

$= \pi r^2 h$

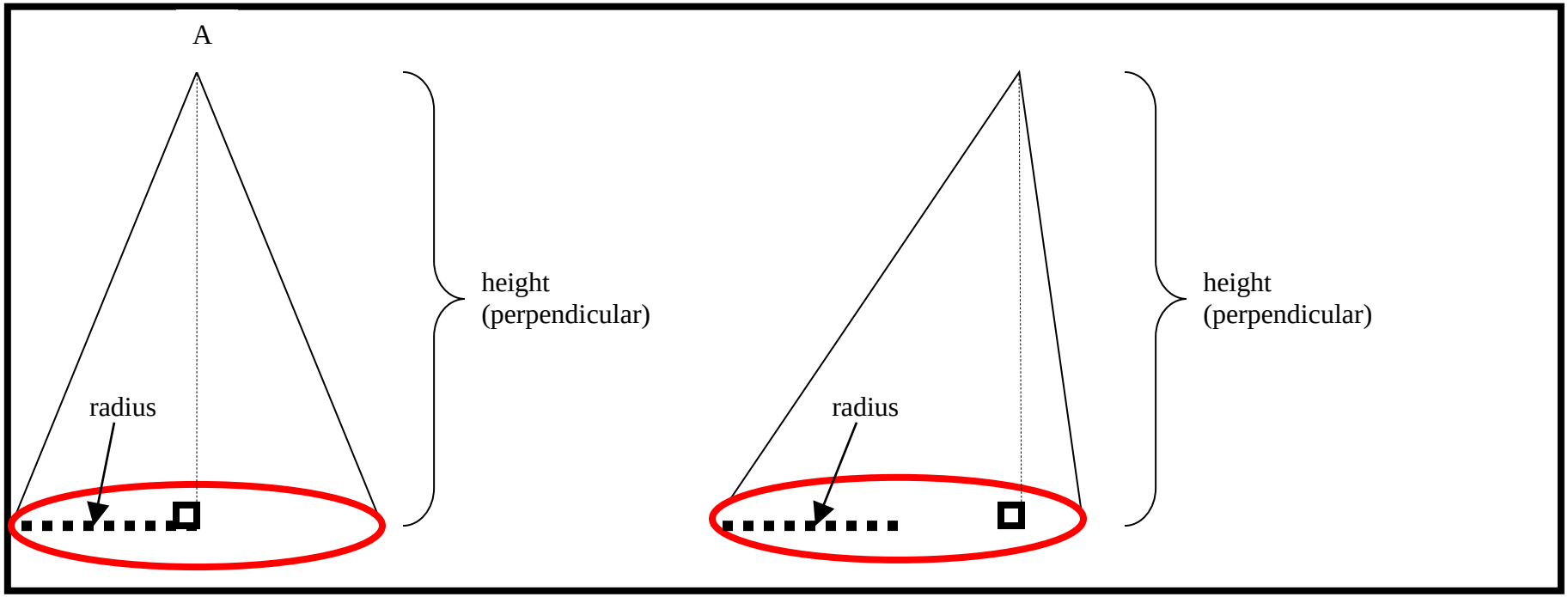
Cone – Surface Area



Area = A = area of base + ½ * slant height * perimeter
= πr^2 + ½ * slant height * circumference
= πr^2 + ½ * slant height * 2 * π * radius
= $\pi r^2 + \pi rl$, where l = slant height

Note: the third picture shows how to create a cone by cutting out a "wedge" from a larger circle, then folding the two radius ends (B) together to form a cone.

Cone – Volume

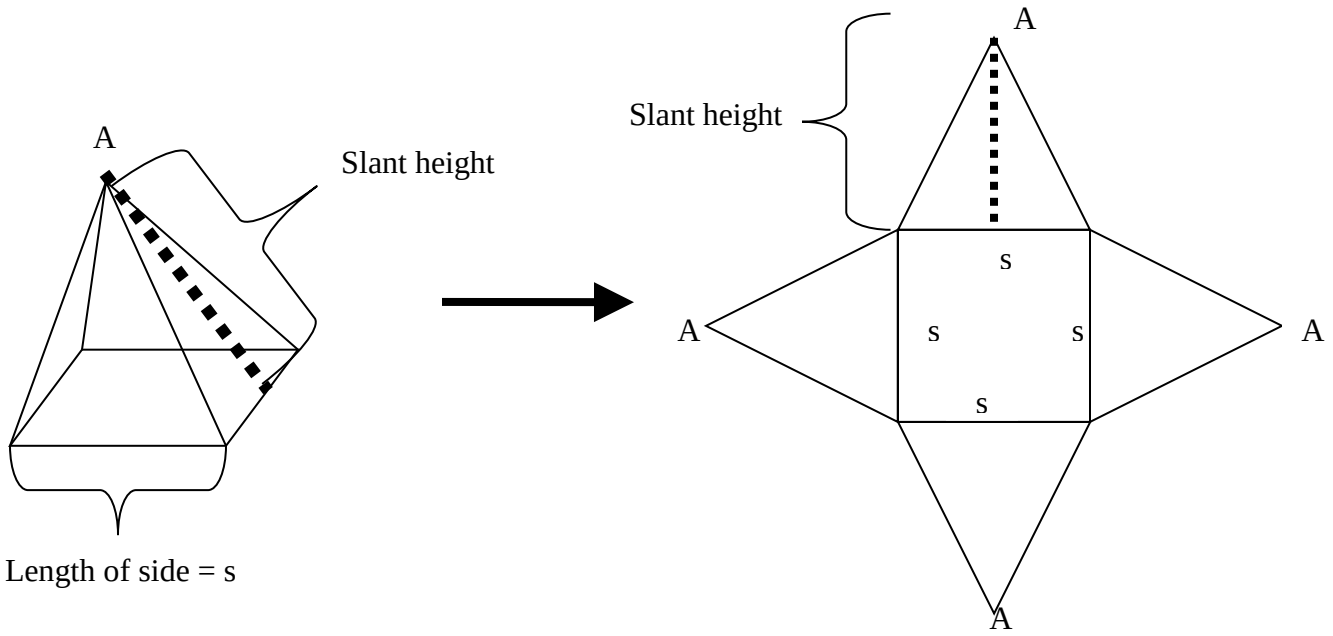


Volume = V = $\frac{1}{3}$ * Area of Base * height ($\frac{1}{3}$ because the shape comes to a point)

= $\frac{1}{3}$ * πr^2 * height

= $\frac{1}{3}$ πr^2 h

Pyramid – Surface Area

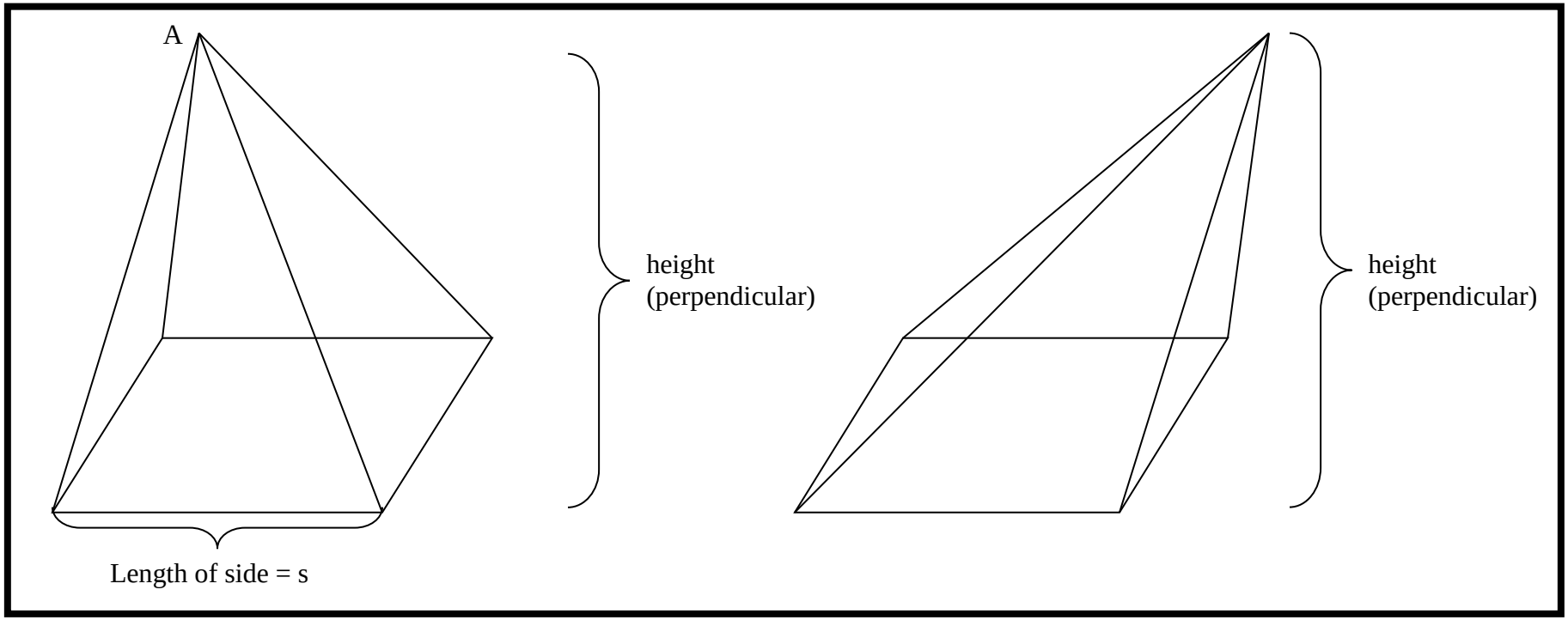


Area = A = area of base + ½ * slant height * perimeter

$= s^2 + ½ * \text{slant height} * 4s$

$= s^2 + 2ls$, where l = slant height

Pyramid – Volume

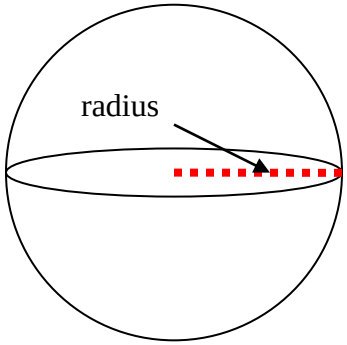


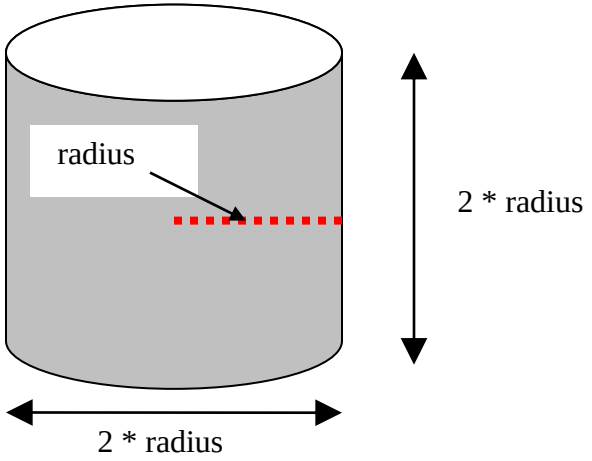
Volume = V = $\frac{1}{3}$ * Area of Base * height ($\frac{1}{3}$ because the shape comes to a point)

= $\frac{1}{3}$ * s^2 * height

= $\frac{1}{3}$ s^2 h

Sphere – Surface Area

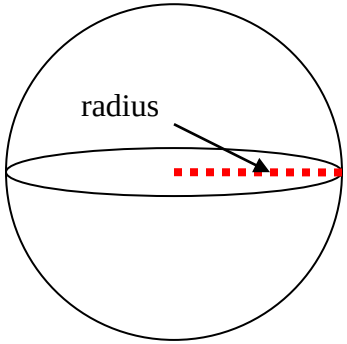




Area = A = $4\pi r^2$

= area of the side (no ends) of a cylinder with height = diameter = 2 * radius

Sphere – Volume



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

Memory Aid: starting with surface area = $4\pi r^2$, increase the exponent to 3 (3 dimensions in a volume) and divide by 3: $4\pi r^2 \rightarrow \frac{4}{3}\pi r^3$