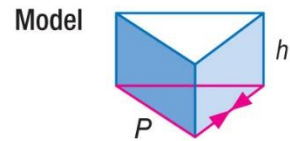**Activity 34 and 35 – Key Concepts**

⚡ **Key**Concept **Lateral Area of a Prism**

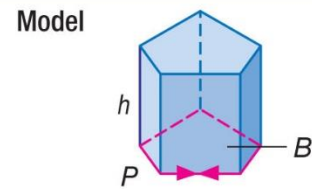| Words	The lateral area L of a right prism is $L = Ph$, where h is the height of the prism and P is the perimeter of a base.	Model
Symbols	$L = Ph$	

⚡ **Key**Concept **Surface Area of a Prism**

| Words	The surface area S of a right prism is $S = L + 2B$, where L is its lateral area and B is the area of a base.	Model
Symbols	$S = L + 2B$ or $S = Ph + 2B$	

⚡ **Key**Concept **Areas of a Cylinder**

| Words	The lateral area L of a right cylinder is $L = 2\pi rh$, where r is the radius of a base and h is the height.	Model
	The surface area S of a right cylinder is $S = 2\pi rh + 2\pi r^2$, where r is the radius of a base and h is the height.	
Symbols	$L = 2\pi rh$ $S = L + 2B$ or $\quad 2\pi rh + 2\pi r^2$	
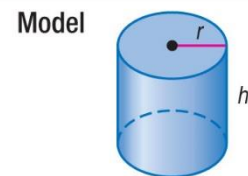
⚡ **Key**Concept **Lateral Area of a Regular Pyramid**

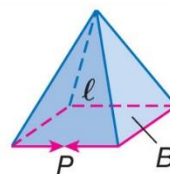| Words	The lateral area L of a regular pyramid is $L = \frac{1}{2}P\ell$, where ℓ is the slant height and P is the perimeter of the base.	Model
Symbols	$L = \frac{1}{2}P\ell$	
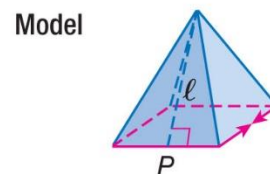
KeyConcept Surface Area of a Regular Pyramid

Words The surface area S of a regular pyramid is $S = \frac{1}{2}P\ell + B$, where P is the perimeter of the base, ℓ is the slant height, and B is the area of the base.
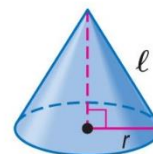
Model

Symbols $S = \frac{1}{2}P\ell + B$

KeyConcept Lateral and Surface Area of a Cone

Words The lateral area L of a right circular cone is $L = \pi r\ell$, where r is the radius of the base and ℓ is the slant height.

The surface area S of a right circular cone is $S = \pi r\ell + \pi r^2$, where r is the radius of the base and ℓ is the slant height.
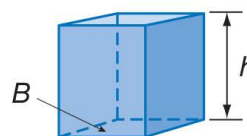
Model

Symbols $L = \pi r\ell \qquad S = \pi r\ell + \pi r^2$

KeyConcept Volume of a Prism

Words The volume V of a prism is $V = Bh$, where B is the area of a base and h is the height of the prism.
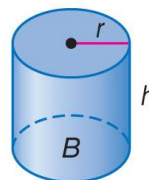
Model

Symbols $V = Bh$

KeyConcept Volume of a Cylinder

Words The volume V of a cylinder is $V = Bh$ or $V = \pi r^2 h$, where B is the area of the base, h is the height of the cylinder, and r is the radius of the base.
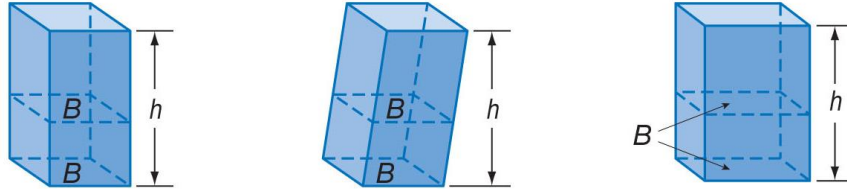
Model

Symbols $V = Bh$ or $V = \pi r^2 h$

KeyConcept Cavalieri's Principle

Words   If two solids have the same height h and the same cross-sectional area B at every level, then they have the same volume.
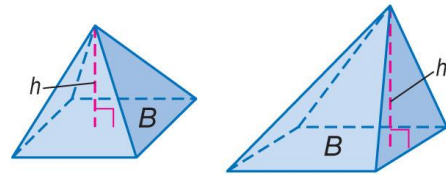
Models

These prisms all have a volume of Bh.

KeyConcept Volume of a Pyramid

Words   The volume of a pyramid is $V = \frac{1}{3}Bh$, where B is the area of the base and h is the height of the pyramid.
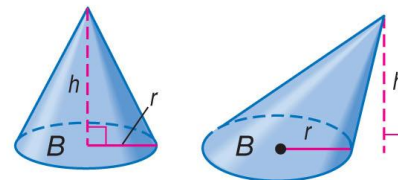
Models

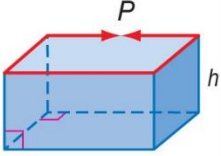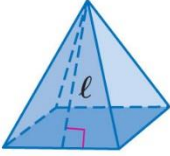**Symbols** $V = \frac{1}{3}Bh$
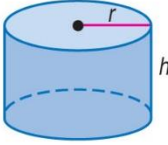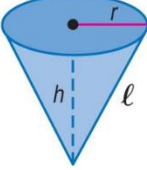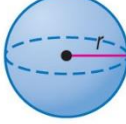
KeyConcept Volume of a Cone

Words   The volume of a circular cone is $V = \frac{1}{3}Bh$, or $V = \frac{1}{3}\pi r^2 h$, where B is the area of the base, h is the height of the cone, and r is the radius of the base.

Models

Symbols $V = \frac{1}{3}Bh$ or $V = \frac{1}{3}\pi r^2 h$

Activity 34 and 35 – Key Concepts

KeyConcept Surface Area and Volume

Prism	Regular Pyramid	Cylinder	Cone	Sphere
$T = Ph + 2B$	$T = \frac{1}{2}P\ell + B$	$T = 2\pi rh + 2\pi r^2$	$T = \pi r\ell + \pi r^2$	$T = 4\pi r^2$
$V = Bh$	$V = \frac{1}{3}Bh$	$V = \pi r^2 h$	$V = \frac{1}{3}\pi r^2 h$	$V = \frac{4}{3}\pi r^3$

$T =$ total surface area $\qquad V =$ volume $\qquad h =$ height of a solid

$P =$ perimeter of the base $\qquad B =$ area of base $\qquad \ell =$ slant height, $r =$ radius