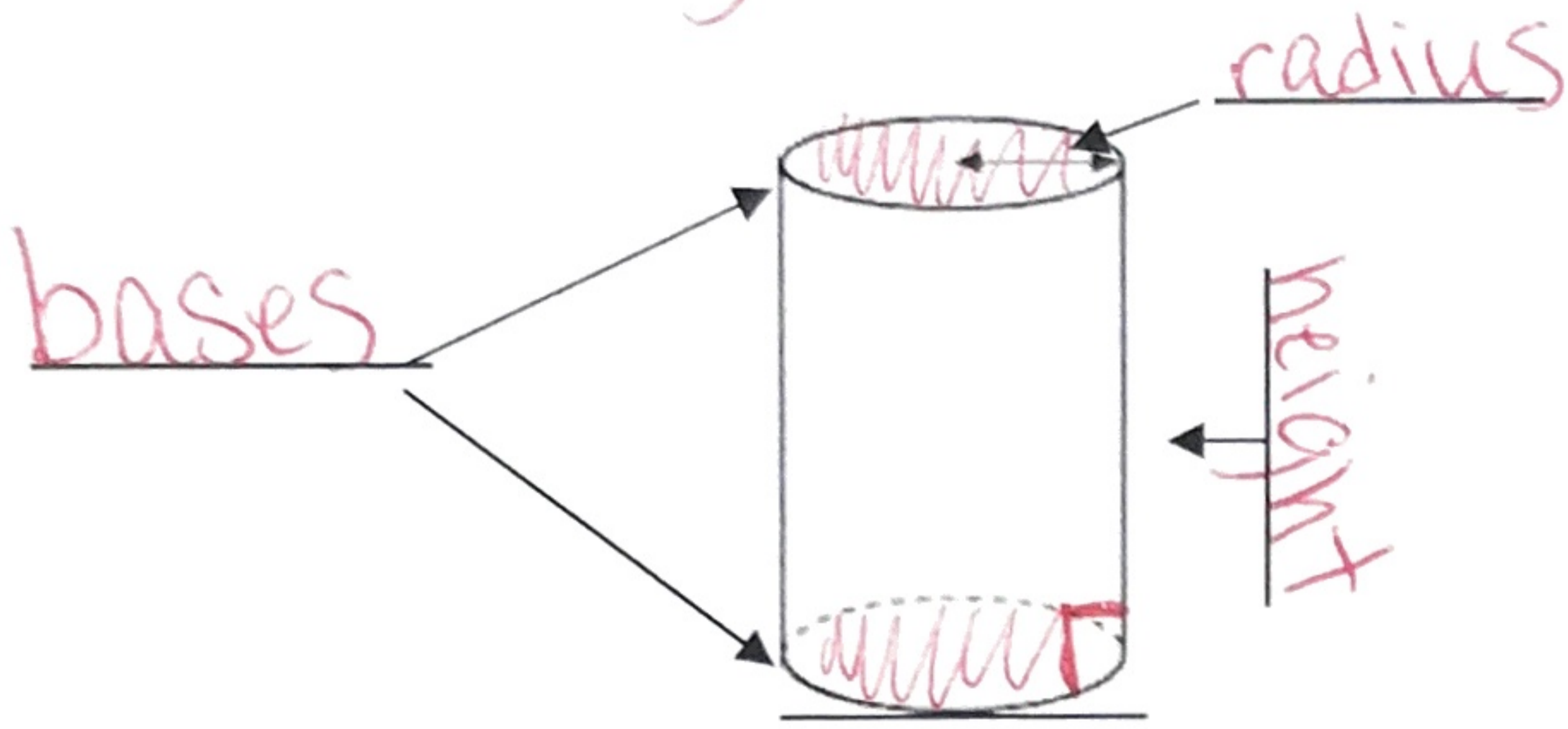


Unit 6 Day 3: Surface Area

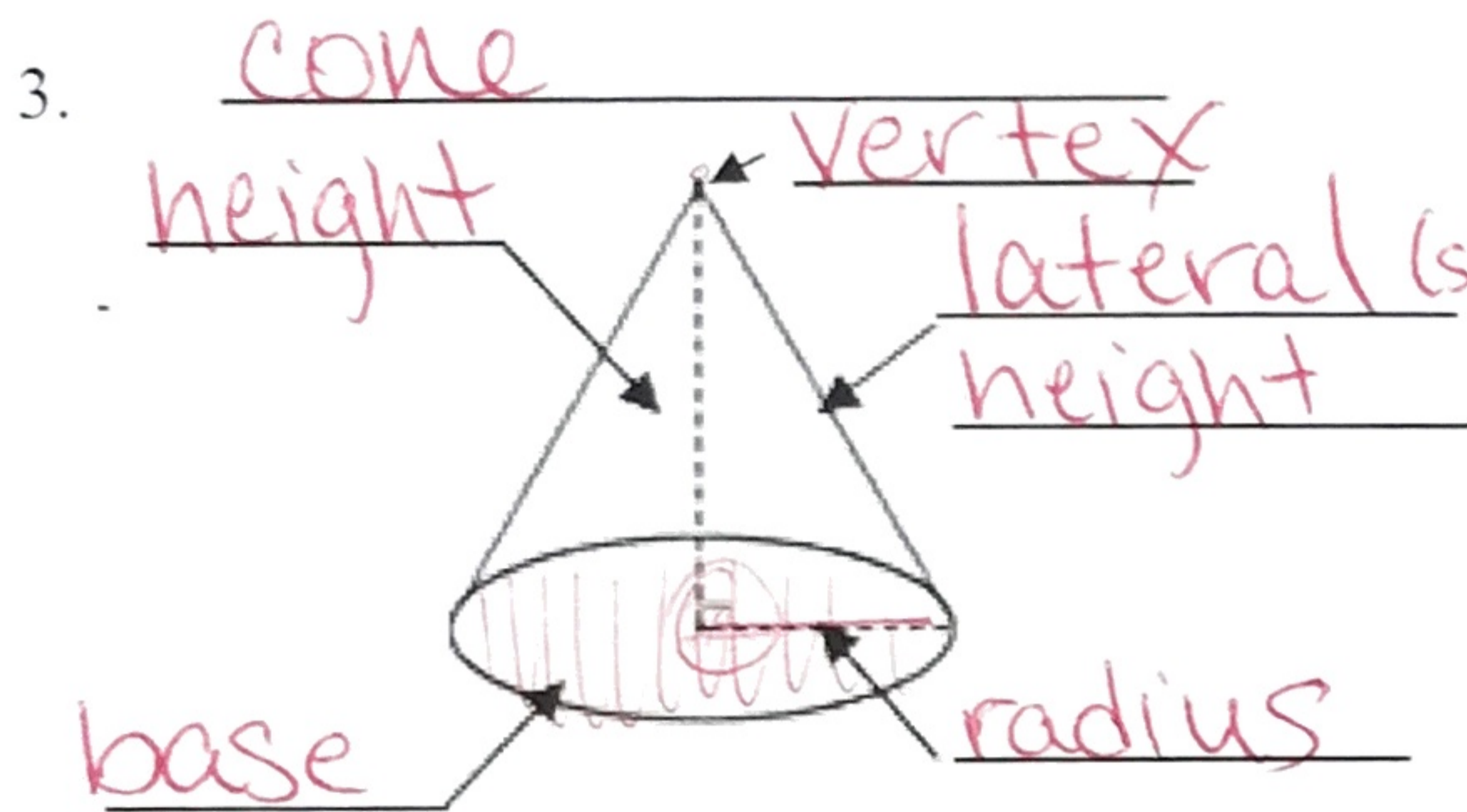
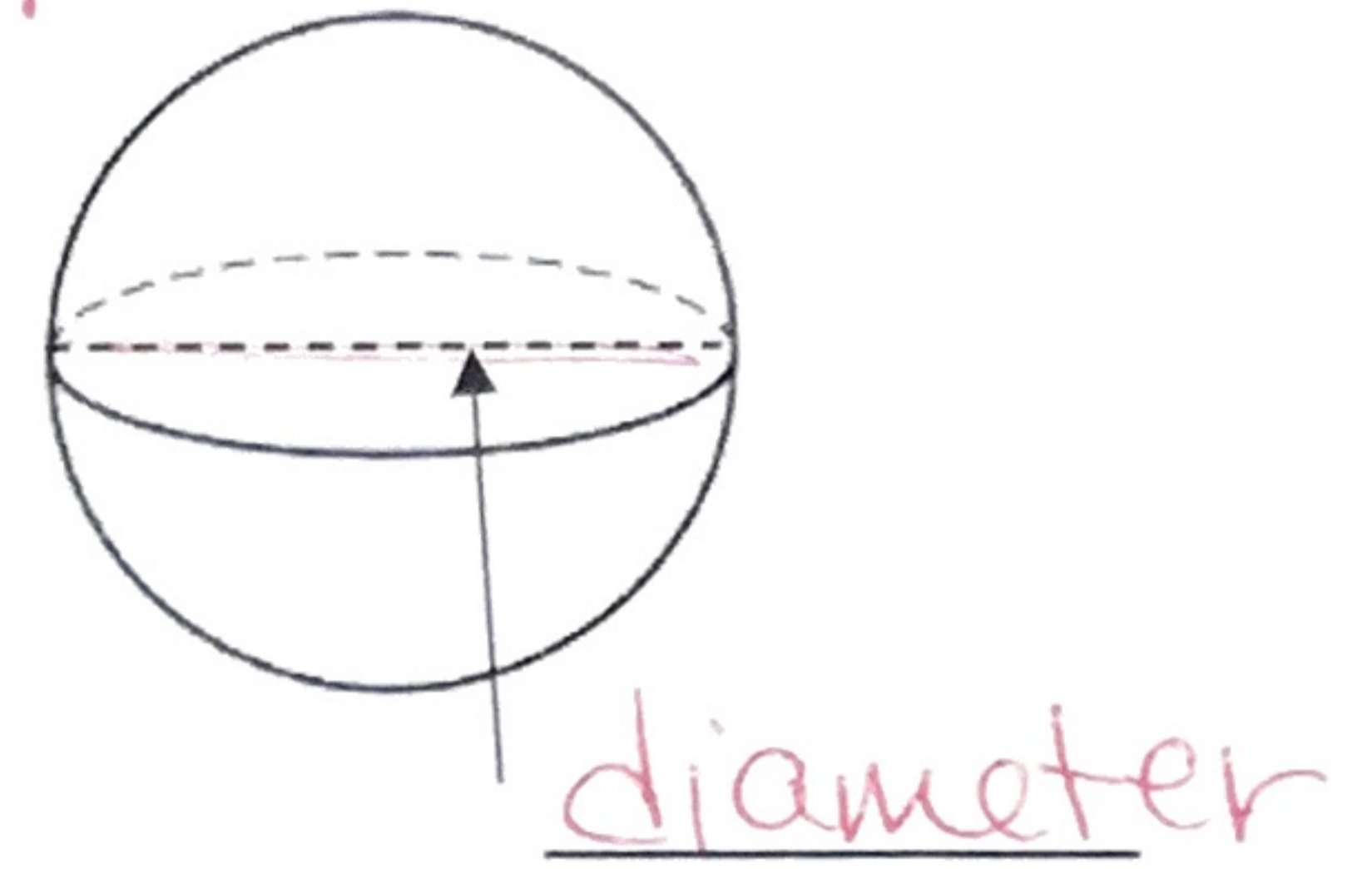
Focus Question: How do I use the formulas for surface area?

- A. Three Dimensional Shapes that use a circle
Label each shape below and indicate its important parts.

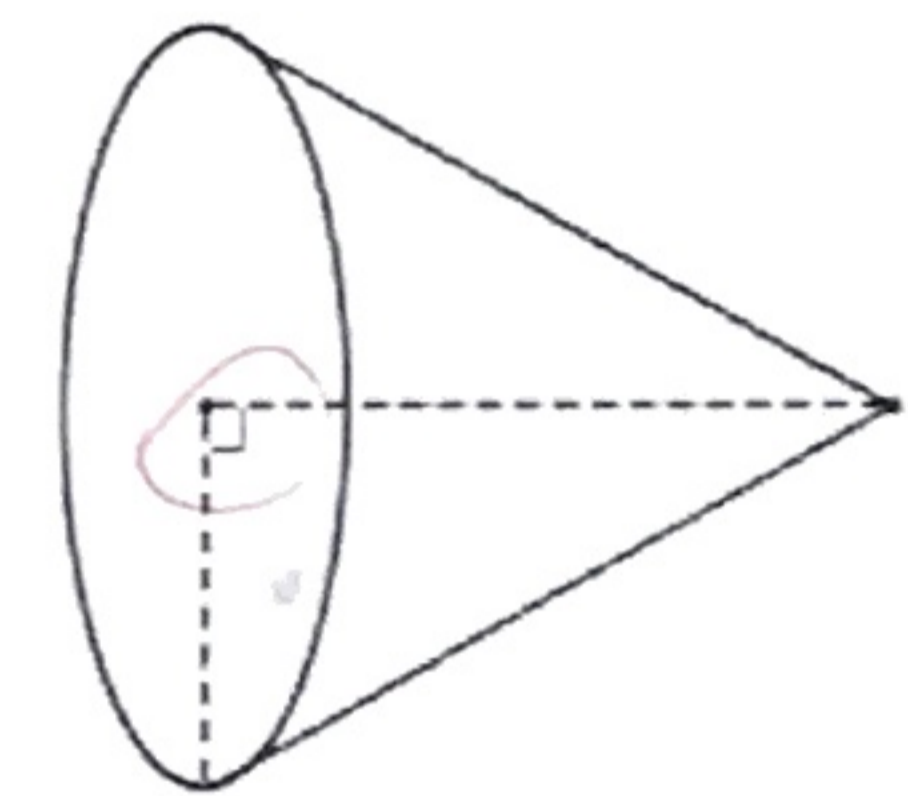
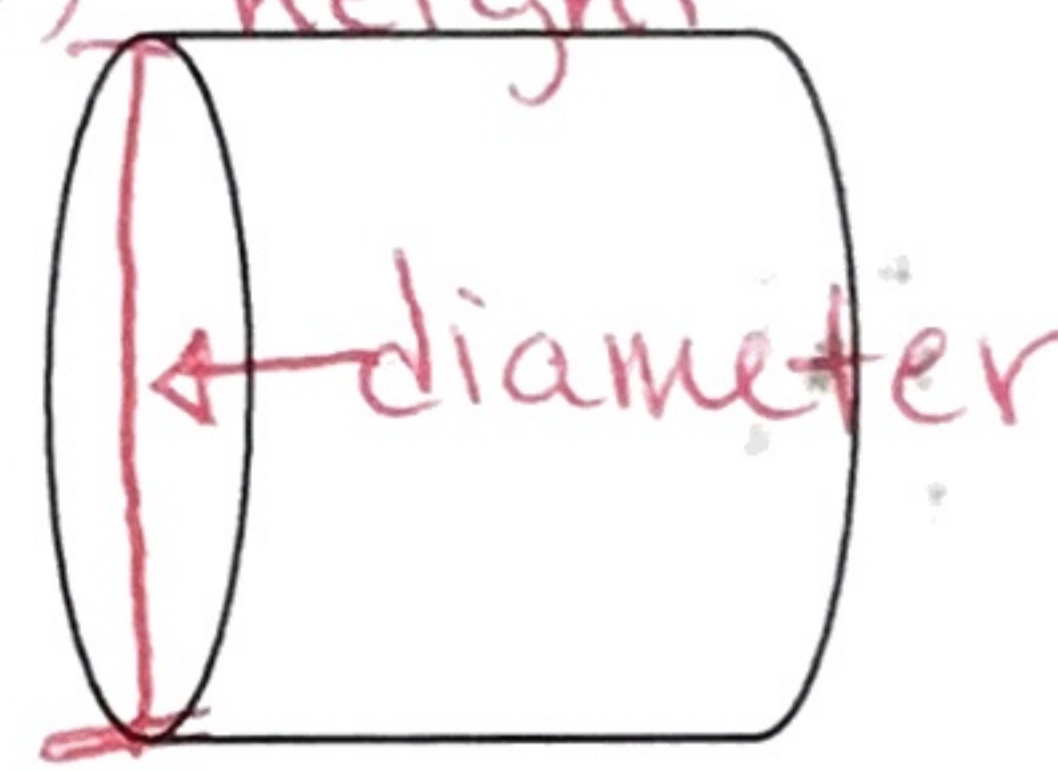
1. Cylinder



2. Sphere



*These parts do NOT change even if the figure is turned sideways or upside down.



*The radius (or diameter) and the height must be ⊥ (perpendicular)

B. Area and Surface Area

1. Define Area:

the # of square units a shape covers

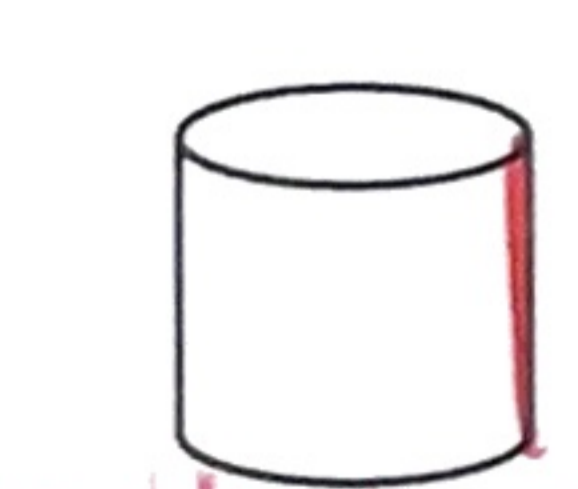
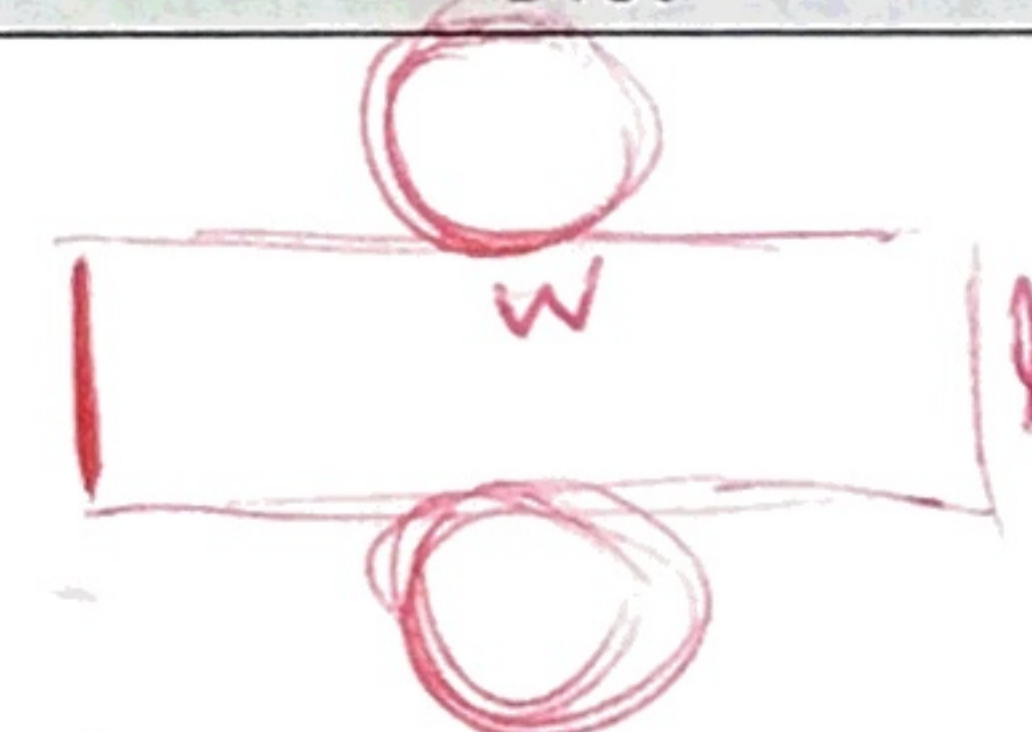
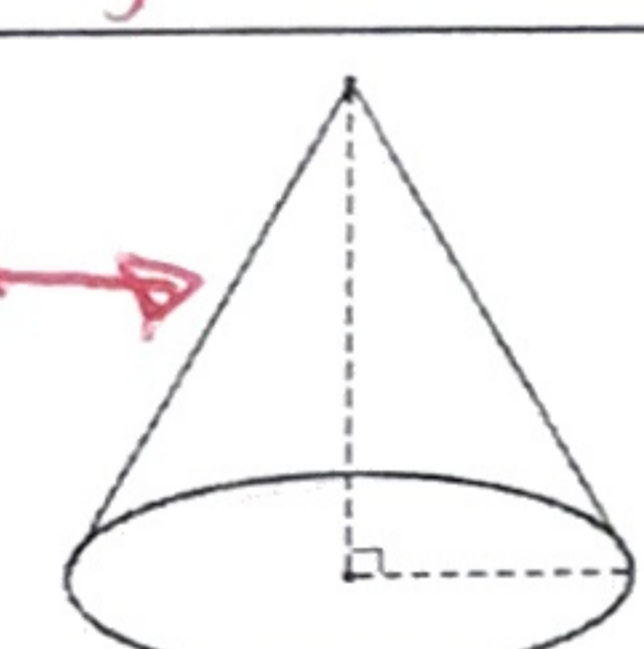
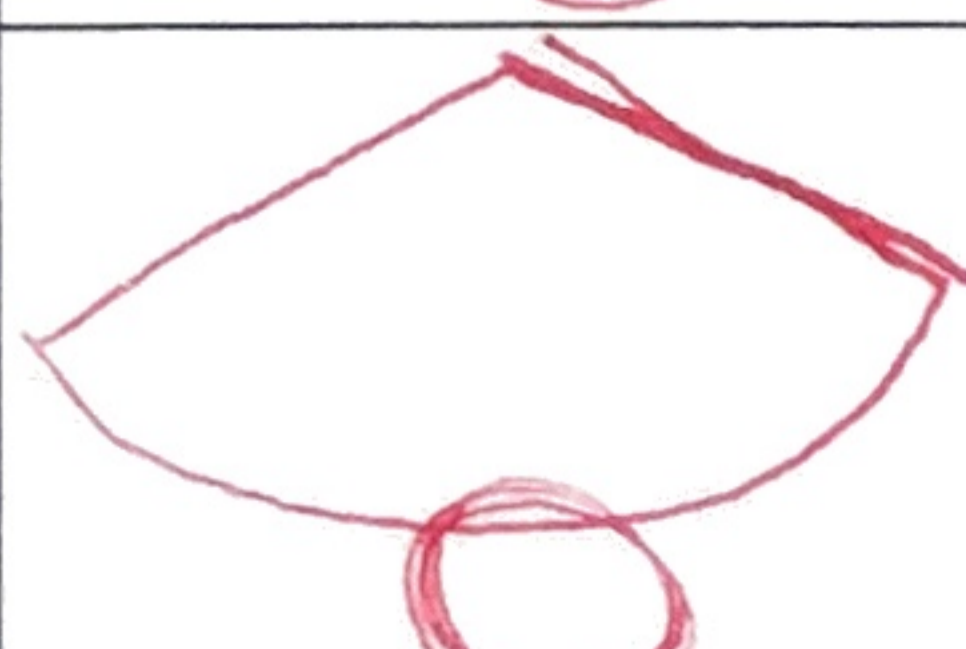
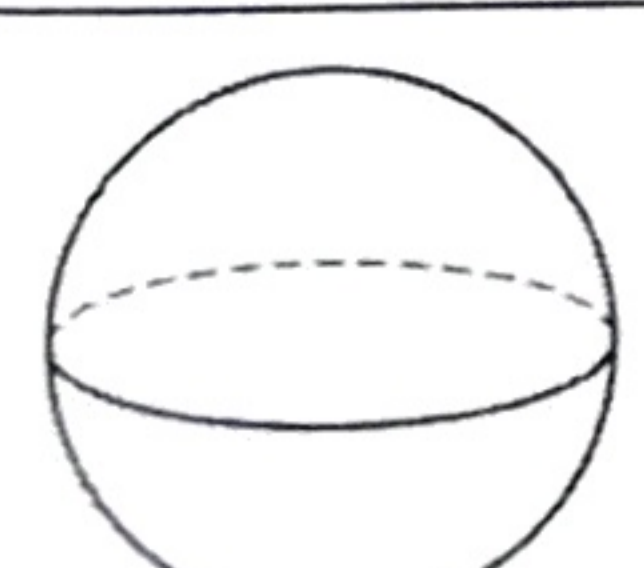

2. Define Net:

a 3-D shape whose faces have been unfolded

3. Define Surface Area:

Area of all the faces of a 3-D [Area of the net]

4. Complete the table to create the formulas for surface area of the three dimensional shapes.

Shape	Net	Shapes in the net	Formula
 Cylinder		2 circles + rectangle height = l width = $2\pi r$ (circum)	$SA_{cyl} = 2\pi r^2 + 2\pi r h$
 Cone lateral height (l)		Circle + Sector (part of a circle)	$S_{co} = \pi r^2 + \pi r l$
	(hint: think about a baseball) 	4 circles	$S_{sp} = 4\pi r^2$

*memorize!

C. Practice: Explain how you know each question below is asking about surface area? Then, give an exact and approximate answer unless indicated otherwise.

Cover the container

1. How much material is needed to make the oatmeal container?

nearest tenth

$$S_{cyl} = 2\pi r^2 + 2\pi rh$$

$$= 2\pi(3)^2 + 2\pi(3)(15)$$

$$= 2\pi(9) + 2\pi(45)$$

$$= 18\pi + 90\pi$$

$$= 108\pi \text{ in}^2$$

or

$$\approx 339.3 \text{ in}^2$$



6 inches diameter
 $r = \frac{6}{2}$ $r = 3$
 15 inches h

Cone is just wrapped around the ice cream

2. How much cone are you eating when you eat a drumstick if it has a radius of 2 cm and a slant height of 7 cm?

there is no circle part

$$S_{co} = \pi r^2 + \pi r l$$

$$= \pi(2)(7)$$

$$= 14\pi \text{ cm}^2$$

or

$$\approx 44.0 \text{ cm}^2$$



The peel only covers the orange

3. If the average orange has a circumference of approximately 7.85 in, there is approximately how much orange peel in a bag of 5 oranges?

$$S_{sp} = (4\pi r^2) \cdot 5$$

$$\approx 20\pi(1.2)^2$$

$$\approx 90.5 \text{ in}^2$$

$$C \approx 7.85 = 2\pi r$$

$$\frac{7.85}{2\pi} = r$$

$$1.2 \approx r$$

4. Daniele bought half a watermelon. If it has a radius of 20 cm, how much of it is peel?



$$S_{ph} = \frac{4\pi r^2}{2}$$

$$= 2\pi(20)^2$$

$$= 2\pi(400)$$

$$= 800\pi \text{ cm}^2$$

or

$$\approx 2513.3 \text{ cm}^2$$

covers the melon

!!!

5. Approximately how much paint would it take to repaint the mail box?

2 sides rect. + 2 front rect + 1/2 cylinder

2lw + 2lw + 1/2(2\pi r^2 + 2\pi rh)

$$2(3.5)(1.4) + 2(2)(3.5) + \pi(0.7)^2 + \pi(0.7)(2)$$

$$\approx 29.7 \text{ ft}^2$$



3.5 ft
 1.4 ft
 2 ft
 $r = \frac{1.4}{2}$