

Playtex Sipsters Spill-Proof Straw Training Cup Packaging Project

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Instructions:

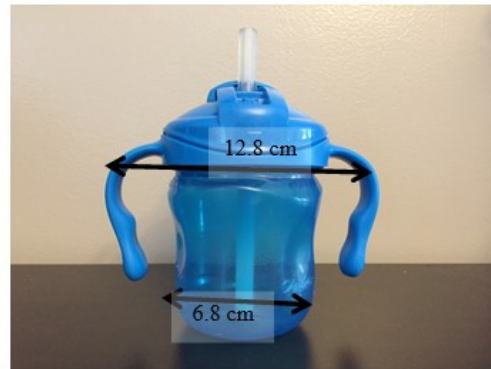
You will design three differently shaped packages for this sippy cup.

Problem and design:

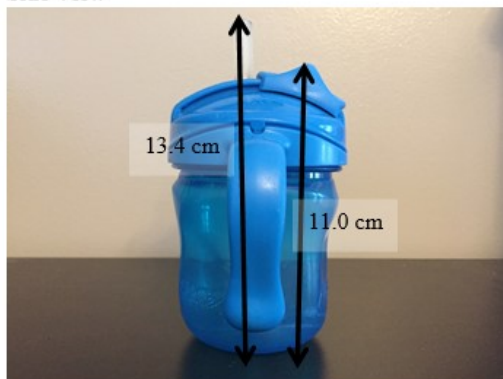
You must design 3 different packages for the following product:



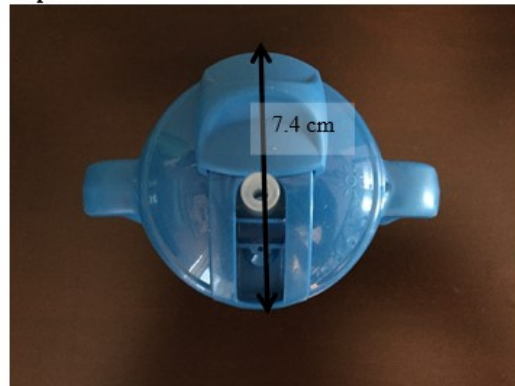
Front View



Side View



Top View



Important considerations!

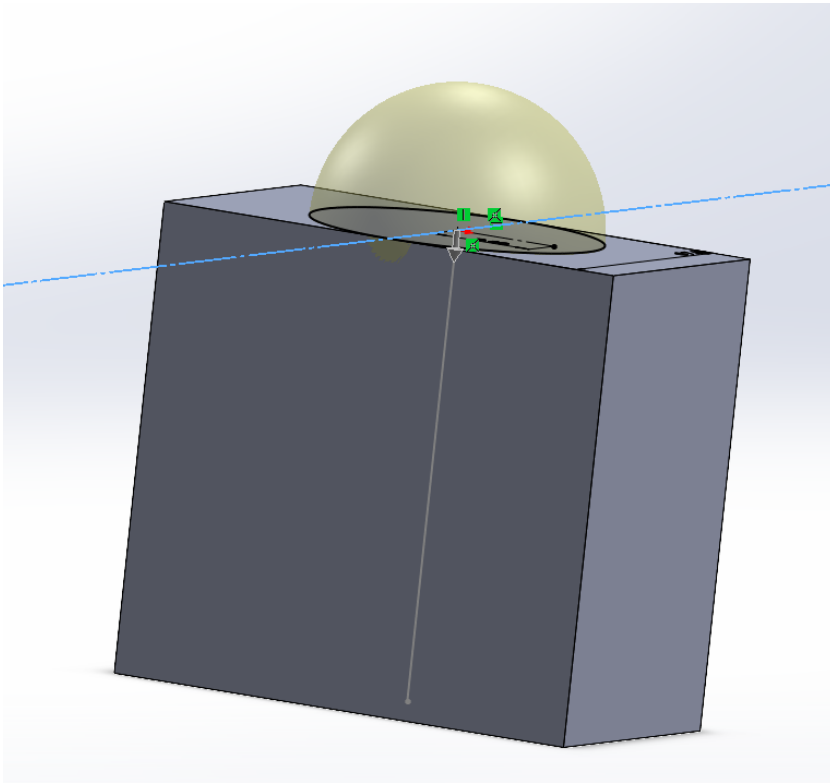
All the units expressed in the document are cm.

A slack of 2 cm was left between each of the measurements of the bottle to easen the entry of the product.

First design composite prism:

Package design

The design of the first model is a composite prism of a cylinder with a rectangular prism and a half sphere, the product enters from the bottom part and fits smoothly with a little slack of +2 cm.

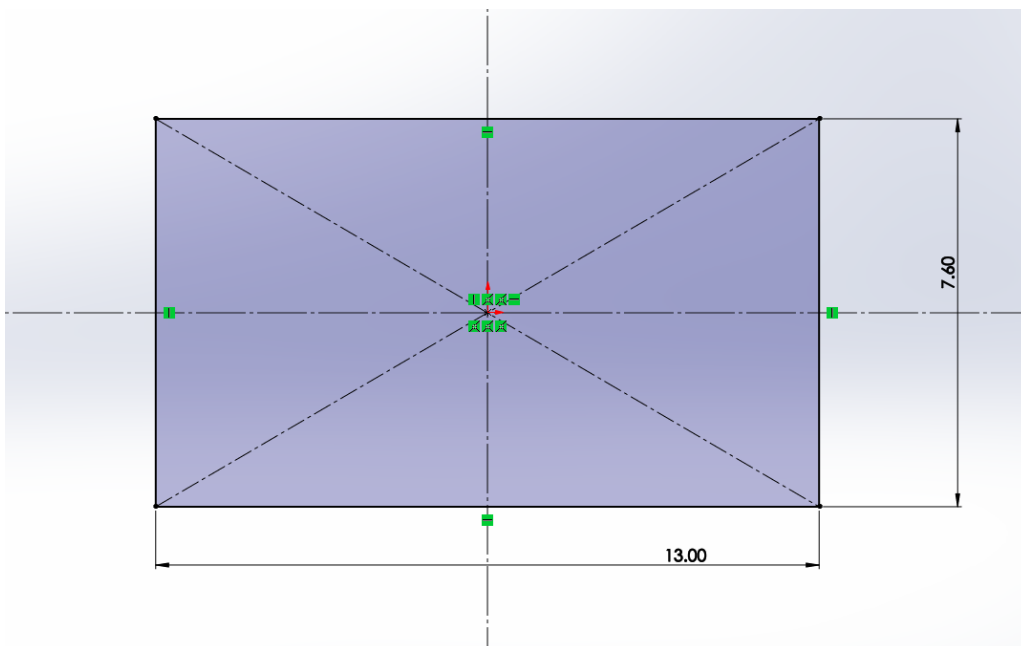


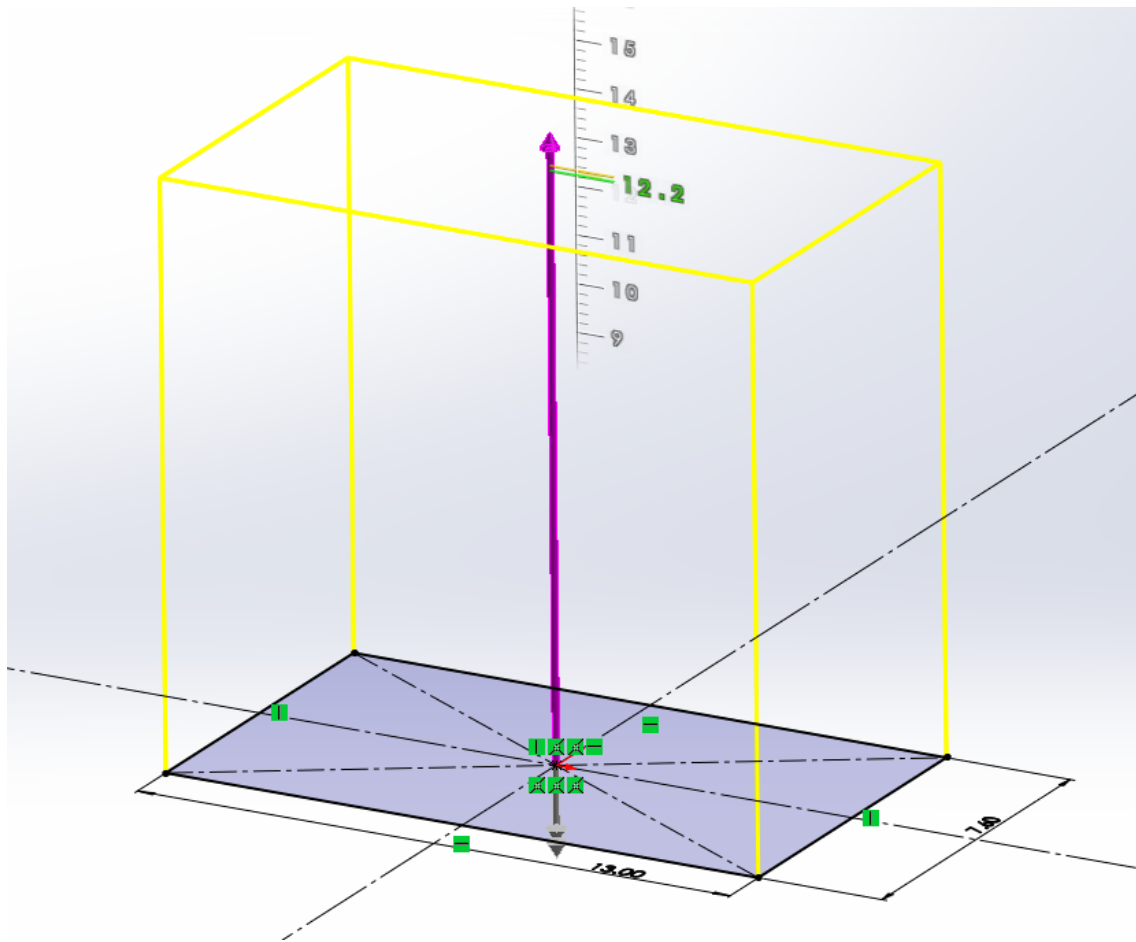
Measurements of the design

Rectangular prism

$$l = 13 \quad w = 7.6 \quad h = 10.2$$

Image

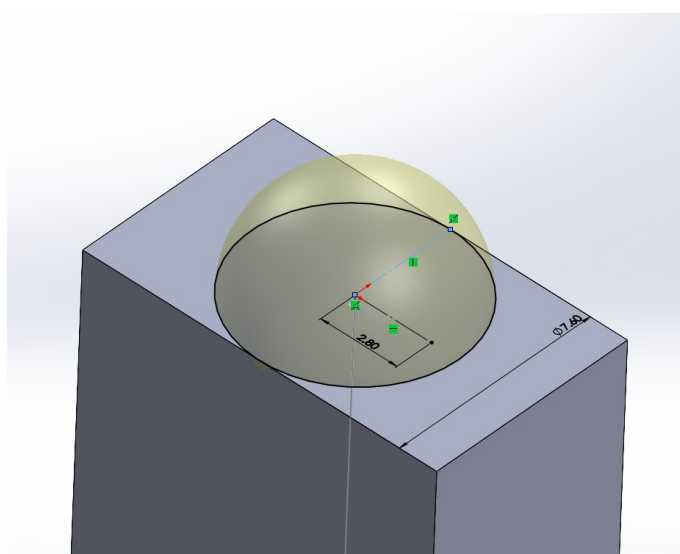




Half sphere

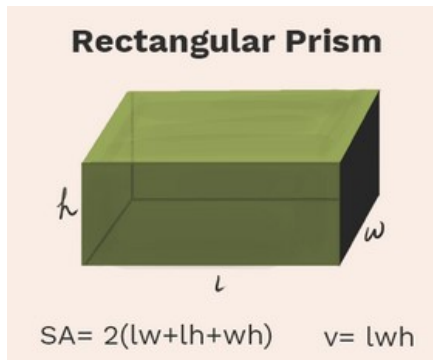
$$r = 2.8$$

Image



Surface area [Units in cm]

Rectangular prism (base)

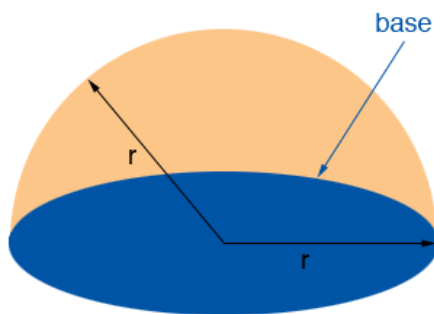


$$SA = 2((13) * (7.6) + (13) * (10.2) + (7.6) *$$

(10.2)

$$SA = 617.84 \text{ cm}^2$$

Half sphere



Formula: $2 \pi r^2$.

$$SA = 2\pi * (3.8)^2$$

$$SA = 90.72 \text{ cm}^2$$

Total surface area= 708.56

Volume of package [Units in cm]

Rectangle (base)

$$v = lwh \quad 13 * 7.6 * 10.2$$

$$V = 1007.76$$

Half circle

$$\text{Volume } V = \frac{2}{3} \pi r^3$$

$$\frac{2}{3} \pi 3.8^3$$

Cost

If the material cost is \$0.10 for a 100 cm² of cardstock, calculate how much it will cost to create each of your designs.

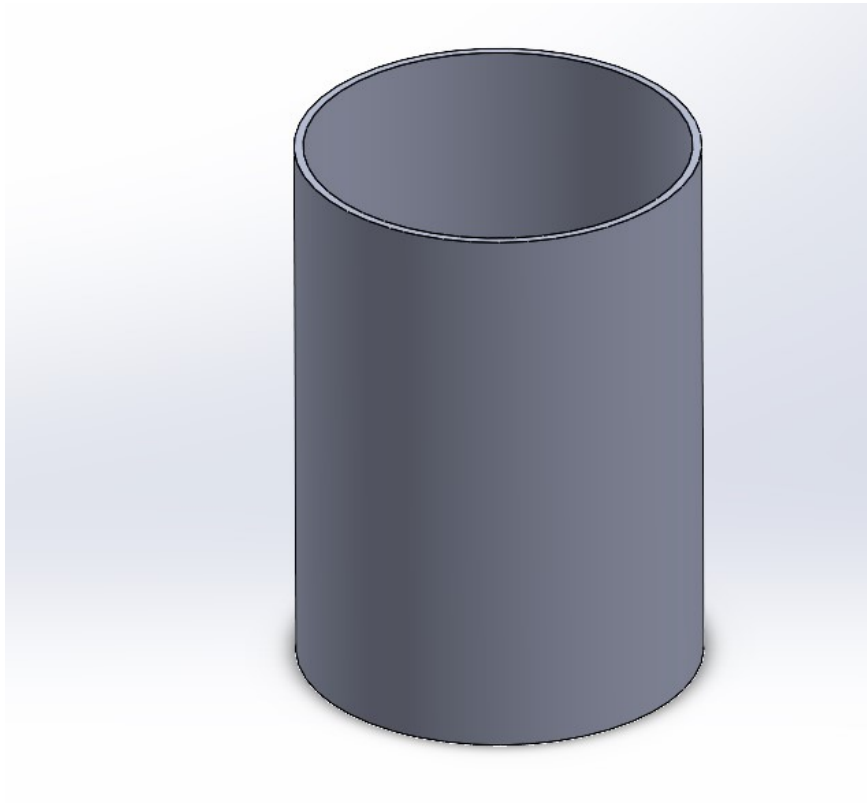
The cost of this design would be

Total surface area= 708.56

Cost= \$0.7085

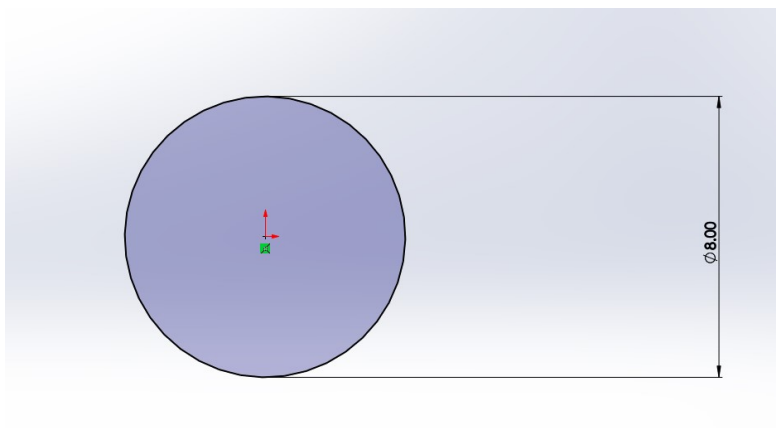
Second design cylinder design

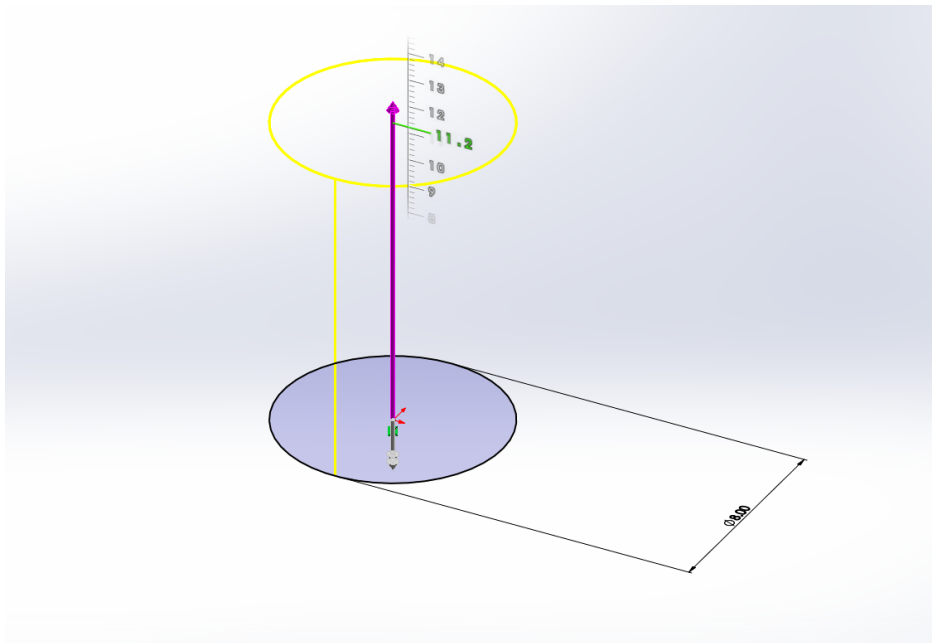
Package design



Measurements of the design

$$r = 4\text{cm} \quad h = 11.2\text{cm}$$





Surface area [Units in cm]



$$SA = 2\pi(4)^2 + 2\pi(4)(11.2)$$

$$SA = 382.01\text{cm}^2$$

Volume of package [Units in cm]

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

$$\pi(4)^2 * (11.2)$$

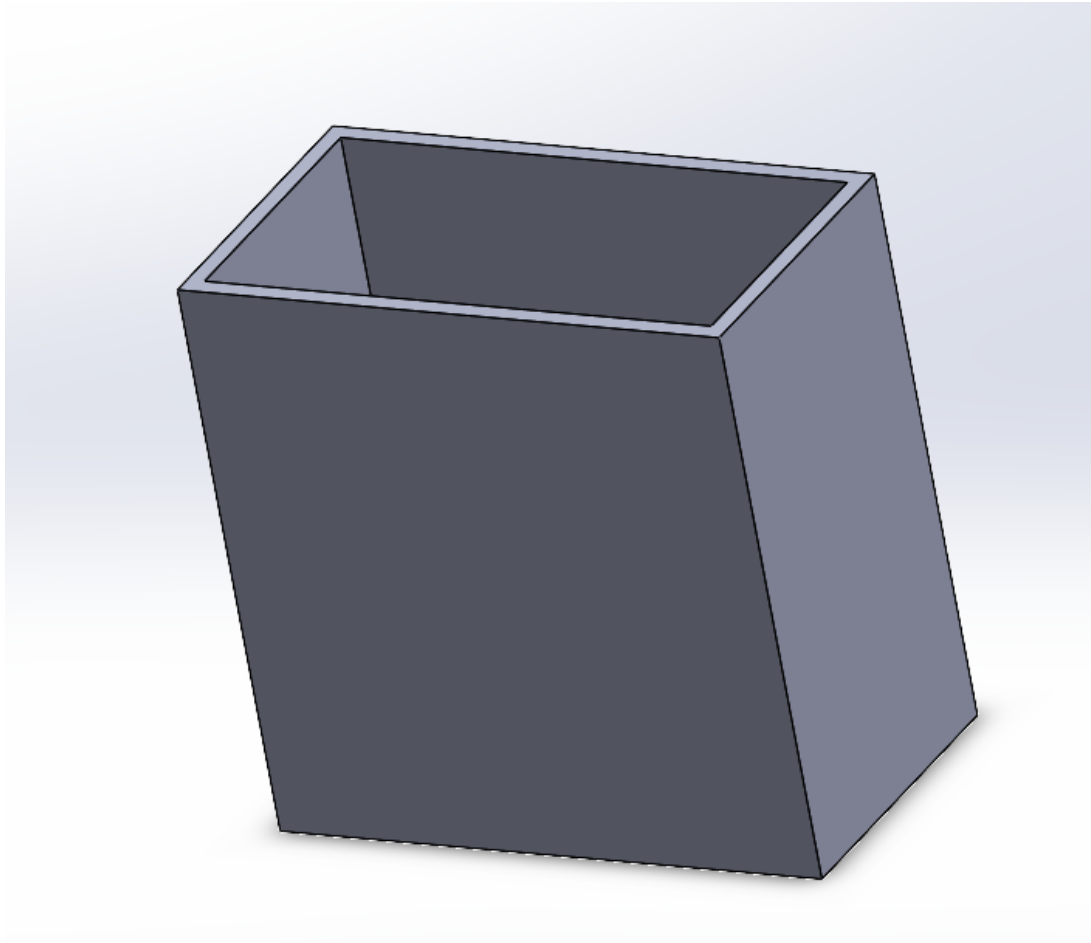
$$V = 562.97\text{cm}^3$$

Cost

If the material cost is \$0.10 for a 100 cm² of cardstock, calculate how much it will cost to create each of your designs.

$$\text{Cost} = \$3.82$$

Third design: Rectangular prism
Package design

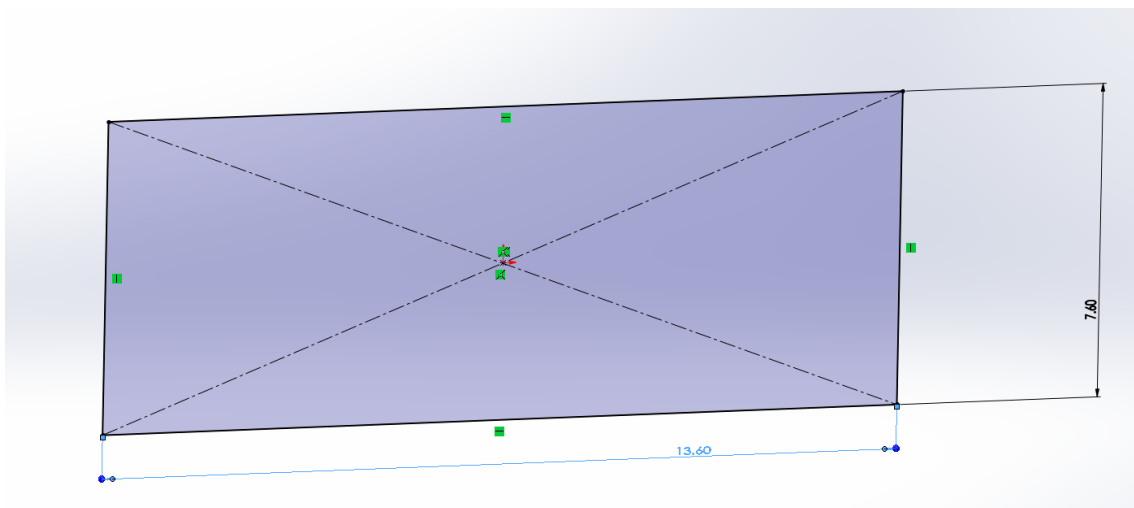


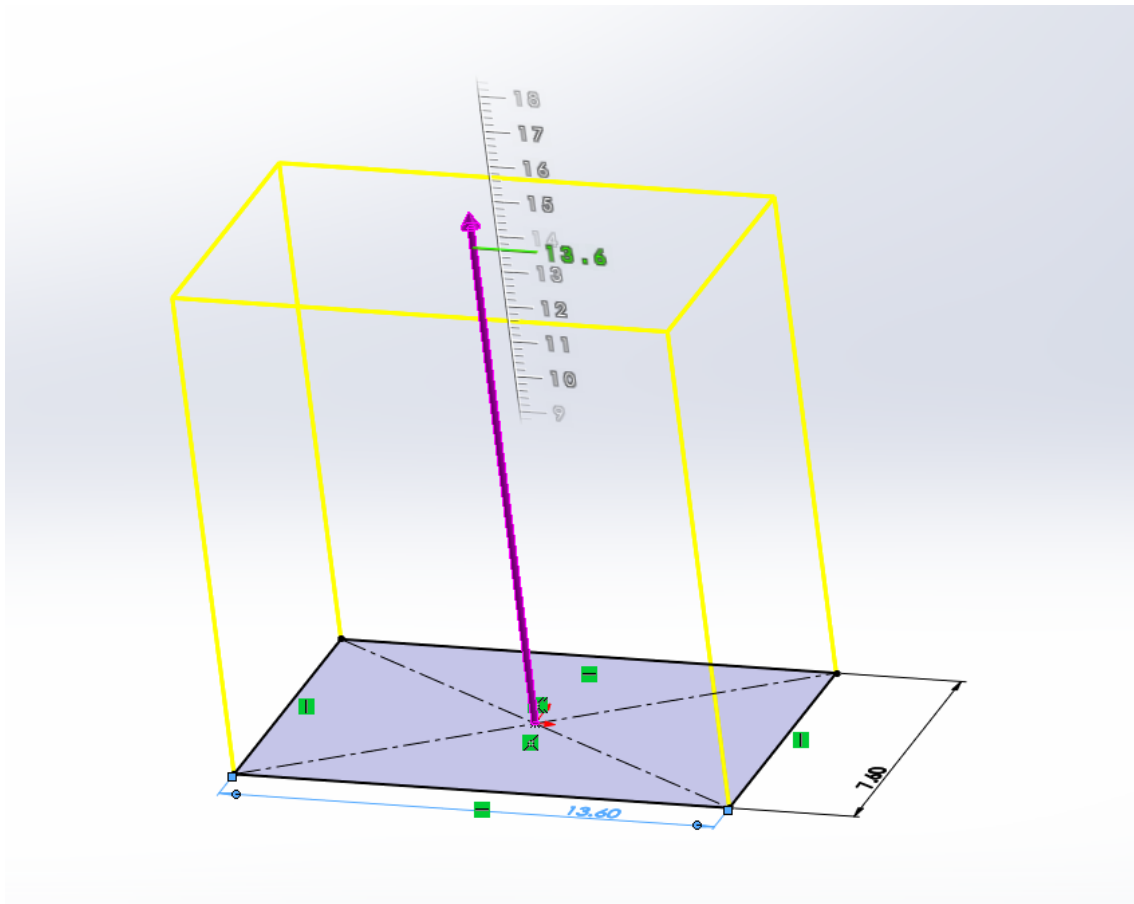
Measurements of the design

$l=13$

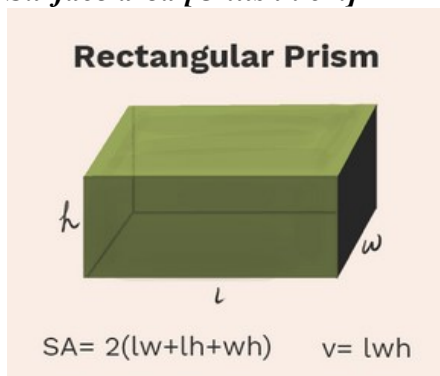
$w=7.6$

$h=13.6$





Surface area [Units in cm]



$$SA = 2((13) * (7.6) + (13) * (13.6) + (7.6) * (13.6))$$

(13.6)

$$SA = 757.92$$

Volume of package [Units in cm]

$$v = lwh$$

$$v = 13 * 7.6 * 13.6$$

$$v = 1343 \text{ cm}^3$$

Cost

If the material cost is \$0.10 for a 100 cm² of cardstock, calculate how much it will cost to create each of your designs.

\$0.10 per 100cm²

Cost= \$0.757