

**Container Project****Show work for all calculations.**

1. A cola company is deciding what dimensions they want to use for their can. They are going to use a cylinder shape. Can A will have a radius of 2.7 cm and a height of 14.6 cm. Can B will have a radius of 3.1 cm and a height of 11.1 cm. Calculate the surface area and volume of each. Round your answers to the nearest hundredth.

<b>Can A</b>	<b>Can B</b>
Surface Area:	Surface Area:
Volume:	Volume:

Which cola can would you choose? Explain your reasoning.

2. A cereal company is looking into two sizes of cereal boxes. The first box is 12 in. x 8 in. x 1.5 in. The second box is 13 in. x 9 in. x 2 in. Calculate the surface area and volume of each.

<b>1<sup>st</sup> Cereal Box</b>	<b>2<sup>nd</sup> Cereal Box</b>
Surface Area:	Surface Area:
Volume:	Volume:

Which cereal box would cost less per cubic inch of cereal? Show or explain your reasoning.

3. A candy company is choosing between a cylindrical container and a square prism. The cylindrical container will have a diameter of 6 inches and height of 8 inches. The square prism will have dimensions of 6 inches by 6 inches by 10 inches. The material they use to create the containers costs  $\$0.032/\text{in}^2$ .

<b>Cylindrical Container</b>	<b>Square Prism Container</b>
Draw the shape and label the dimensions:	Draw the shape and label the dimensions:
Volume: (Round to the nearest hundredth)	Volume:
Surface Area: (Round to the nearest hundredth)	Surface Area:
Cost to produce the container: (Round to the nearest hundredth)	Cost to produce the container: (Round to the nearest hundredth)
Cost per cubic inch of candy: (Round to the nearest thousandth)	Cost per cubic inch of candy: (Round to the nearest thousandth)

The company produces an average of  $1,000,000 \text{ in}^3$  of candy per week. Based on your answer for the cost per cubic inch of candy, find the cost for  $1,000,000 \text{ in}^3$  of candy.

Cost per $1,000,000 \text{ in}^3$ of candy:	Cost per $1,000,000 \text{ in}^3$ of candy:
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How much money could the company save per week by choosing the square prism container?

## Container Project – Answer Key

Show work for all calculations.

1. A cola company is deciding what dimensions they want to use for their can. They are going to use a cylinder shape. Can A will have a radius of 2.7 cm and a height of 14.6 cm. Can B will have a radius of 3.1 cm and a height of 11.1 cm. Calculate the surface area and volume of each. Round your answers to the nearest hundredth.

Can A	Can B
Surface Area:  $293.49 \text{ cm}^2$	Surface Area:  $276.59 \text{ cm}^2$
Volume:  $334.37 \text{ cm}^3$	Volume:  $335.12 \text{ cm}^3$

Which cola can would you choose? Explain your reasoning.

Sample Answer: Can B – It has about the same volume but uses less material.

2. A cereal company is looking into two sizes of cereal boxes. The first box is 12 in. x 8 in. x 1.5 in. The second box is 13 in. x 9 in. x 2 in. Calculate the surface area and volume of each.

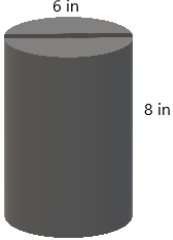
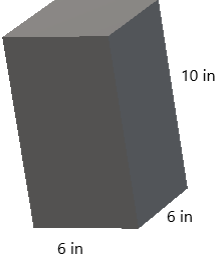
1 <sup>st</sup> Cereal Box	2 <sup>nd</sup> Cereal Box
Surface Area:  $252 \text{ in}^2$	Surface Area:  $322 \text{ in}^2$
Volume:  $144 \text{ in}^3$	Volume:  $234 \text{ in}^3$

Which cereal box would cost less per cubic inch of cereal? Show or explain your reasoning.

The 2<sup>nd</sup> box uses less material per cubic inch.

Surface Area to Volume Ratio: 1<sup>st</sup> Box:  $1.75 \text{ in}^2/\text{in}^3$  2<sup>nd</sup> Box:  $1.38 \text{ in}^2/\text{in}^3$

3. A candy company is choosing between a cylindrical container and a square prism. The cylindrical container will have a diameter of 6 inches and height of 8 inches. The square prism will have dimensions of 6 inches by 6 inches by 10 inches. The material they use to create the containers costs \$0.032/in<sup>2</sup>.

<b>Cylindrical Container</b>	<b>Square Prism Container</b>
Draw the shape and label the dimensions: 	Draw the shape and label the dimensions: 
Volume: (Round to the nearest hundredth) <b>226.19 in<sup>3</sup></b>	Volume: <b>360 in<sup>3</sup></b>
Surface Area: (Round to the nearest hundredth) <b>207.35 in<sup>2</sup></b>	Surface Area: <b>312 in<sup>2</sup></b>
Cost to produce the container: (Round to the nearest hundredth) <b>\$6.64</b>	Cost to produce the container: (Round to the nearest hundredth) <b>\$9.98</b>
Cost per cubic inch of candy: (Round to the nearest thousandth) <b>\$0.029/in<sup>3</sup></b>	Cost per cubic inch of candy: (Round to the nearest thousandth) <b>\$0.028/in<sup>3</sup></b>

The company produces an average of 1,000,000 in<sup>3</sup> of candy per week. Based on your answer for the cost per cubic inch of candy, find the cost for 1,000,000 in<sup>3</sup> of candy.

Cost per 1,000,000 in <sup>3</sup> of candy: <b>\$29,000</b>	Cost per 1,000,000 in <sup>3</sup> of candy: <b>\$28,000</b>
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How much money could the company save per week by choosing the square prism container? **About \$1,000**