Kellogg's Corn Flakes Investigation

Which size is the most eco-friendly?

Which size gives the best value, and by how much?

Kellogg's Corn Flakes come in various sizes of box. The main ones are listed below. Use the measurements given for each type to calculate the volume and surface area.

Box Size	Weight (g)	Cost	Height	Width	Depth	Volume	Surface Area
Small	250	£1.39	***25cm***	***19cm***	***5.5cm***		
Medium	500	£1.98	***29.5cm***	***23cm***	***7cm***		
Large	750	£2.68	***35cm***	***24.5cm***	***9cm***		

Remember:

- To calculate volume, *multiply all 3 dimensions together*.
- To calculate surface area, *find the area of all 6 faces and add them together.*

1. How much greater is the volume of the 500g box than the volume of the 250g box?
   Hint: divide the 500g box volume by the 250g box volume.

2. How much greater is the surface area of the 500g box than the 250g box?
   Hint: divide the 500g box surface area by the 250g box surface area.

3. The 750g box holds 3 times the weight of cornflakes as the 250g box.

   How much greater is the volume?

   How much greater is the surface area?

   What do you notice?

Kellogg's Corn Flakes
Solutions

Which size is the most eco-friendly?

Which size gives the best value, and by how much?

Kellogg's Corn Flakes come in various sizes of box. The main ones are listed below. Record the measurements for each type below, and calculate the volume and surface area.

Box Size	Weight (g)	Cost	Height	Width	Depth	Volume	Surface Area
Small	250	£1.39	***25cm***	***19cm***	***5.5cm***	***2612.5cm³***	***1434cm²***
Medium	500	£1.98	***29.5cm***	***23cm***	***7cm***	***4749.5cm³***	***2092cm²***
Large	750	£2.68	***35cm***	***24.5cm***	***9cm***	***7717.5cm³***	***2786cm²***

Remember:

- To calculate volume, *multiply all 3 dimensions together*.
- To calculate surface area, *find the area of all 6 faces and add them together.*

1. How much greater is the volume of the 500g box than the volume of the 250g box?
   Hint: divide the 500g box volume by the 250g box volume.

$$\frac{4749.5}{2612.5} = \mathbf{1.82\ times\ larger\ volume}$$

2. How much greater is the surface area of the 500g box than the 250g box?
   Hint: divide the 500g box surface area by the 250g box surface area.

$$\frac{2092}{1434} = \mathbf{1.46\ times\ larger\ surface\ area}$$

3. The 750g box holds 3 times the weight of cornflakes as the 250g box.

   How much greater is the volume?

$$\frac{7717.5}{2612.5} = \mathbf{2.95\ times\ larger\ volume}$$

   How much greater is the surface area?

$$\frac{2786}{1434} = \mathbf{1.94\ times\ larger\ surface\ area}$$

   What do you notice?

The volume is about 3 times greater (which makes sense – we need 3 times the space), but the surface area is only 2 times greater (large boxes are more efficient than smaller ones).