



Wipe out Waste



Bulk/Bigger Buy vs Single Serve/Multipack

Introduction

Today we can purchase many items in 'single serves' for perceived convenience, but what is the cost of these items to the environment and your budget?

Much of the readily available recess and lunch food on offer is highly packaged. Reducing the amount of packaging involved with purchases also reduces the amount of water, energy and resources required to make each item and reduces our need to send material to landfill.

In this resource, **bulk/bigger** buy refers to food bought in a large pack which can then be decanted into containers for smaller serves (eg. one 175g pack of chips). Single serve/multipack refers to food bought in a large amount and has multiple smaller serves in it (eg. a box containing multiple 20g packs of chips).

Benefits of buying food items in bulk or bigger volumes include;

- less physical waste to manage from less packaging
- ability to recycle larger cardboard or plastic containers. Often the material used to package single serve/multipack items cannot be recycled.
- sending a message to manufacturers to use less or recyclable packaging.

Buying bulk/bigger serves can also have a positive impact on finances.

Bulk/Bigger volumes are often less expensive (eg. per 100g) than buying the same item in single serve/multipacks.

Buying in bulk/bigger volume, and sending a small amount to school in a reusable container each day, can have a very positive impact on the family budget.

Please note: Images used in this resource are examples only.



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Bulk/Bigger Buy vs Single Serve/Multipack Maths Activities

Suggested learning experiences

1. Investigate the costs of bulk/bigger buy and single serve/multipack items . What foods you can think of that come in both ways?
2. Students calculate the mass and volume of packaging from buying in 'bulk' compared to buying an equal sized multipack of single serves. Which one has the larger mass of packaging? Which one has the larger volume of packaging?
3. What are the price comparisons per 100g for bulk/bigger buy versus single serve? Which is cheaper?
4. Students consider 'How much do you save by buying your item (eg. small biscuits) in bulk ? What maths would you use for calculating this saving?'
5. Using the chart wizard in an excel spreadsheet, create a graph to show the price per 100g of buying single serve/multipack versus bulk buying.
6. Using online supermarket prices, students can explore prices for their favourite food items.
7. Extension activity: Look at ingredients/nutrition labels on food items to explore: food miles, nutritional/health value, sustainability of ingredients.
8. Refer to the separate document 'Bulk/Bigger Buy vs Single Serve/Multipack graphs'. Found at www.wow.sa.gov.au/uploads/1/9/2/6/19269635/single_serve_vs_bulk_buy_graphs.pdf



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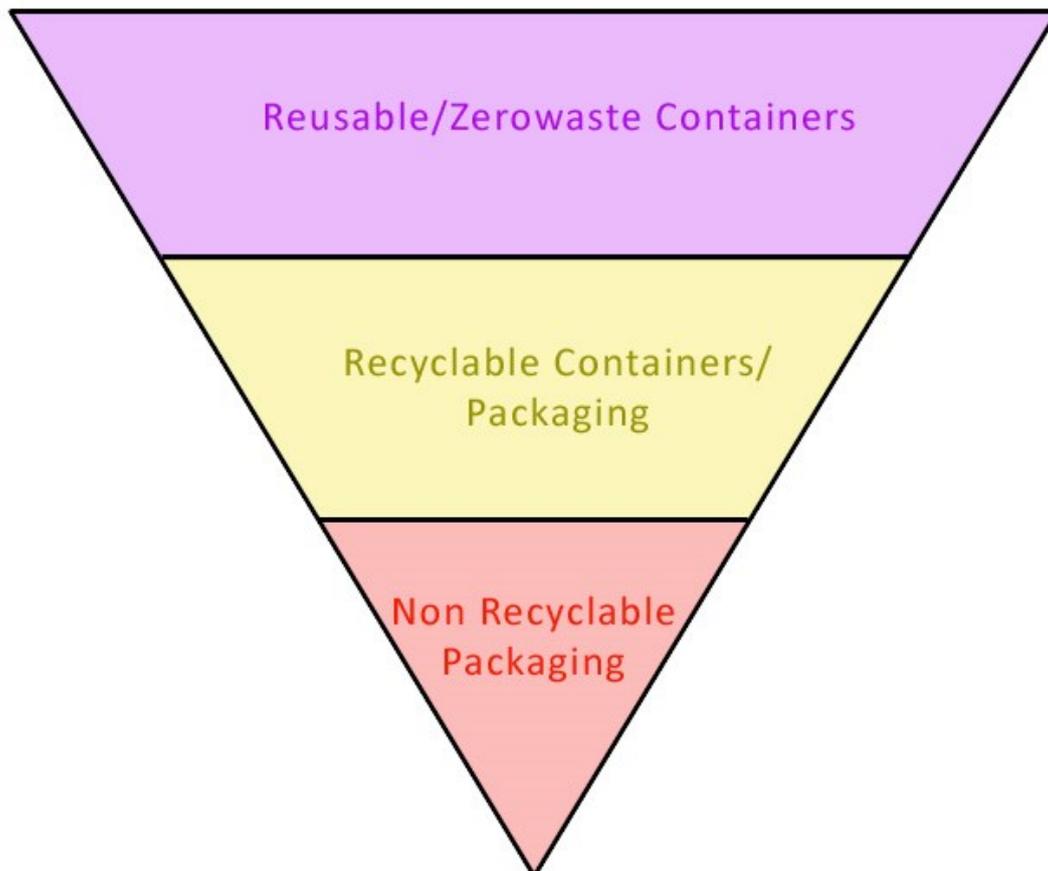
Maths Activities

Food comes to school in different ways. The packaging hierarchy shows the preferred methods (top of triangle) to least preferred methods (bottom of triangle) of food packaging.

9. Compare the different types of food packaging.

Consider the following for each item:

- **Longevity** (how long can you reuse it),
- **Cost** (cost of one item),
- **Cost per day** (for length of the usability),
- **Ease of reuse** (how easy to clean),
- **Recyclability** (at the end of useful life).





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Maths Activities - Glossary

9. For the purpose of this resource, our use of the following terms is explained.

Longevity

The longevity of the packaging material refers to the expected period of time that the packaging is expected to be able to be used for.

Cost

The cost refers to the initial expense of purchasing the packaging material - per item.

Cost per day

Cost per day refers to the daily expense of the material based on its expected longevity. Cost per day is calculated at 200 school days a year, and based on 1 item, or 1 metre, used for the expected longevity.

Ease of reuse

Refers to how easy it is to clean the packaging material so that it can be reused the following day. Some items may need a wipe with a damp cloth, others may become too sticky or crinkled to be hygienic enough for reuse.

Recyclability

Refers to whether the product can be recycled at the end of its reusability. Some packaging materials can be recycled in kerbside recycling or organics collections, while other materials need to be sent to landfill.

***Clean soft plastics can currently be taken to REDcycle collections at supermarkets*

Note: Some items that can be recycled at home where they can be rinsed out, may be landfill items at school if they cannot be cleaned.



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Maths Activities

9. Compare the cost difference between different packaging materials.

Consider the following for each item.

	Packaging type	Longevity	Cost	Cost per day	Ease of reuse	Recyclability
						
						
						
						
						
						
						



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Maths Activities - Answer Sheet (based on 2017 prices)

9. Compare the cost difference between different packaging materials.

	Packaging type	Longevity	Cost	Cost per day*	Ease of reuse	Recyclability
	Reusable Plastic Containers	2-13 years	approx. \$5+	Less than \$0.01	Wash/wipe to reuse	Recycling bin
	Material/ Beeswax Food Wrap	5+ years	approx. \$12.95 (or DIY!)	\$0.01	Wash/wipe to reuse	Landfill or compost (non-recyclable)
	Baking Paper *containing wax/ silicone	2-5 days	\$2.7 for 15m (\$0.18 per m)	\$0.03	Use for relatively dry food	Landfill
	Paper Bag	2-4 days	\$2.63 for 100 (\$0.03 each)	\$0.03	Use for relatively dry food	Compostable
	Alfoil	1-3 days	\$8.50 for 30x60 m (\$0.17 per m)	\$0.04	Use for relatively dry food	Recycling bin (if collected into a fist size ball)
	Zip-lock Bag	1-5 days	\$5.40 for 120 (\$0.04 each)	\$0.04	Use dry/clean foods for reuse	Landfill (non-recyclable) **Or REDcycle
	Cling Wrap	1-2 days	\$1.50 for 30m (\$0.05 per m)	\$0.02	Not suitable for reuse	Landfill (non-recyclable)



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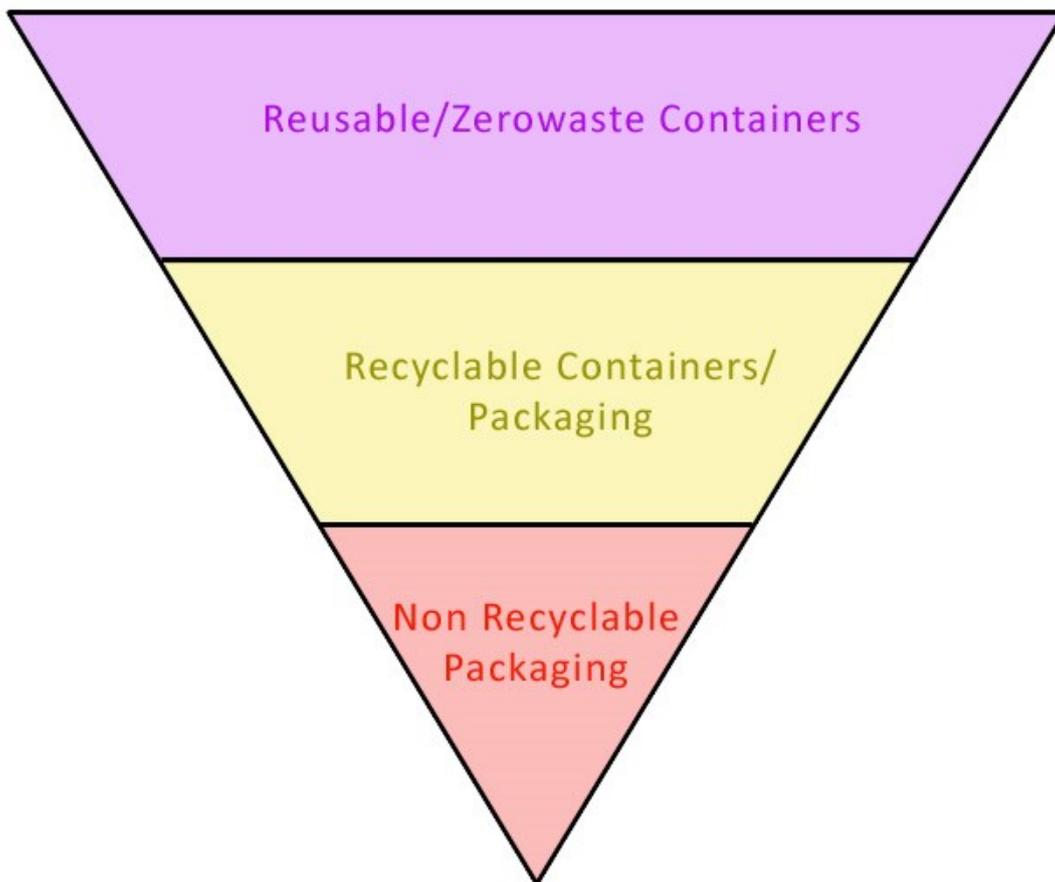
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Maths Activities

10. Cut and paste the different types of containers below and identify where they fit on the hierarchy.

An A3 version can be found on the WOW website at

www.wow.sa.gov.au/uploads/1/9/2/6/19269635/single_serve_vs_bulk_buy_a3_hierarchy.pdf





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Bulk/Bigger Buy vs Single Serve/Multipack

Inquiry Questions and Investigation Activities

Suggested learning experiences

1. Students consider and discuss whether bulk/bigger buy or single serves generate more waste. (Initially some students may think that the larger packaging of an item bought in bulk is more 'wasteful' but when considering wastage from packaging the same amount of food in single serves, it is likely to be more than bulk.) Collect a weeks worth in your class and make physical graphs from packaging.
2. Compare and contrast materials used for bulk/bigger buy and single serve packaging. Which product had the most packaging per 100g? Which had the most recyclable materials per 100g? This links to the Healthy Lunchbox Challenge on the WOW website (see additional links).
3. Discuss why you think people choose to purchase foods in different types of packaging. Survey students, staff, parents and relatives.
4. What are the hidden costs of highly packaged foods? These may include:
 - Energy and resources used to create packaging material,
 - Transportation to supermarkets,
 - Cost from litter issues (light weight packaging easily blown away),
 - Cost to schools of disposing of packaging (costs of bin collection, staff time, student time for litter pick ups)
5. Students consider advantages and disadvantages for buying in bulk and make suggestions for how a family may modify shopping behaviour to save money and reduce waste.
6. Students prepare own school lunches. Try estimating the time it would take to do this and trial for a week at home. Share your results in class and at home.
7. What are some alternatives to packaged snacks? Calculate how the costs per 100g, nutritional information (sodium, sugars etc) may compare with other foods (eg. a whole apple versus a pre-packaged apple).



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Inquiry Questions and Investigation Activities

Suggested learning experiences continued...

7. Use discussion points and findings to create a poster or brochure to share your learning about bulk/bigger buy vs single serve. (Please email us a copy!)
8. Link to Healthy Eating and Food gardens. Investigate the costs of fresh fruit and vegies compared to single serve packaged food. Analyse nutritional information on packets and compare with fresh food options. Link to school and home food gardens– and compare the cost of growing your own to buying. Have a picnic or morning tea (invite parents) with the costings and health information displayed on each type of food.

Additional Links

Recycle Right Resource - <http://www.wow.sa.gov.au/recycle-right-resource.html>

Nude Food (WOW webpage) - <http://www.wow.sa.gov.au/nude-food.html>

Includes the following documents/resources:

Nude Food info for Families

Sample letter to families

Healthy Lunchbox Challenge

Reusable containers options

Less to Landfill Challenge - <http://www.wow.sa.gov.au/less-to-landfill-challenge.html>

4 My Earth sandwich wraps - <http://www.4myearth.com.au/>

DIY Beeswax Wraps - <http://www.beekeep.com.au/d-i-y>