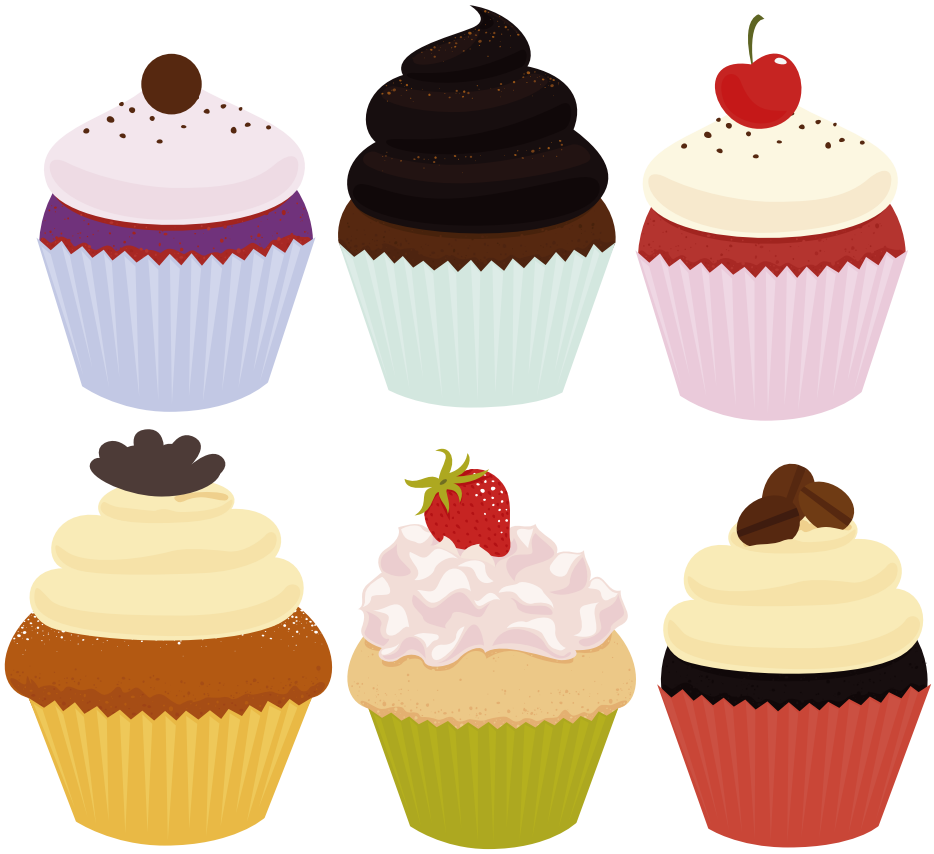
Reasoning in the classroom

Buying cakes

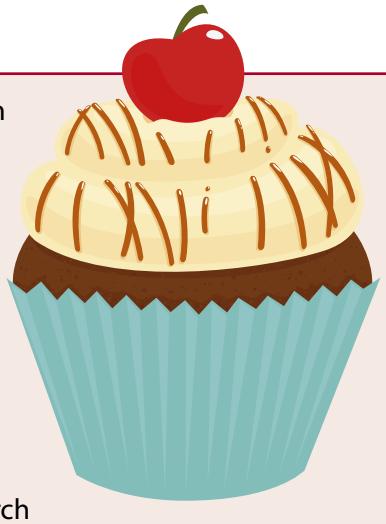


Support materials for teachers

Year 6

Llywodraeth Cymru
Welsh Government

Year 6 Reasoning in the classroom – Buying cakes



These Year 6 activities encourage learners to use their numerical skills within real-life contexts.

Activity 1

Buying cakes
Learners consider the most cost-effective way to buy 10 cakes.

Includes:
- Buying cakes questions
- Markscheme

Activity 2

Best value for money
They compare costs of different packs of cereal and research how supermarkets give prices per 100g to support comparisons.

Includes:
- Explain and question – instructions for teachers
- Whiteboard – Which cornflakes?
- Resource sheet – Comparing prices

Reasoning skills required

Identify	Communicate	Review
Learners use their mathematical skills when problem solving.	They show how they work out different calculations.	They discuss, compare and refine their methods.

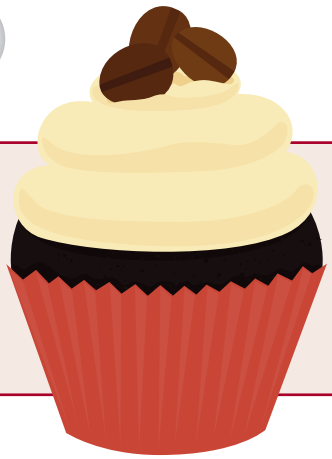
Procedural skills

- **Multiplication and division**
- **Simple proportion**
- **Make comparisons between prices and understand which is best value for money**

Activity 1

Buying cakes

Activity 1 – Buying cakes



Outline

Learners consider different ways to buy 10 cakes when the cakes are sold in packs of 2, 4 and 6.

Then they compare costs.

You will need

Buying cakes questions
One page for each learner

Markscheme

		
Pack of **2** cakes	Pack of **4** cakes	Pack of **6** cakes
60p	**£1.00**	**£1.80**

There are **five** different ways to buy **10** cakes.

Show them all.

Buy 1 pack of 4 and 1 pack of 6

or buy _____

or buy _____

or buy _____

or buy _____

2m

Which way is **cheapest**? How do you know?

2m

Activity 1 – Buying cakes – Markscheme

Q	Marks	Answer
i	2m	Shows all four remaining different ways, in any order, i.e. **5** packs of **2** **3** packs of **2** and **1** pack of **4** **2** packs of **2** and **1** pack of **6** **1** pack of **2** and **2** packs of **4**
	Or 1m	Shows any **three** different ways

◀ **For 2m or 1m, ignore repetition of 1 pack of 4 and 1 pack of 6, i.e. do not count this as a correct way**

ii	2m	Identifies the cheapest as **1** pack of **2** and **2** packs of **4** and justifies why, e.g. • Most are 30p each, but the pack of 4 is 25p each so you want as many of those as possible • 1 of 4 and 1 of 6 is £2.80 5 lots of 2 is £3 3 of 2 and 1 of 4 is £2.80 2 of 2 and 1 of 6 is £3 1 of 2 and 2 of 4 is £2.60 so that is best
	Or 1m	Identifies the cheapest as **1** pack of **2** and **2** packs of **4** Or Shows **25p** and **30p** Or Shows at least three correct prices

◀ **Accept £2.60**

◀ **For 2m, if their method is to find and compare prices, all five costs must be shown correctly, in £ or pence**

◀ **Costs per cake**

Activity 1 – Buying cakes – Exemplars

Buy 1 pack of 4 and 1 pack of 6

or buy 5 packs of 2

or buy 1 pack of 6 and 2 of 2

or buy 2 of 4 and 1 of 2

or buy 3 of 2 and 1 of 4

Which way is **cheapest**? How do you know?

It's because pack of 2c = 1c as 30p but pack of 4c = 1c as 25p and pack of 6c = 30p as well.
So if you buy as many 4 packs as possible you will get the cheapest price.

Part i, correct; **2 marks**

Part ii, correct; **2 marks**

- This justification shows good insight into the problem. Discussion about the meaning of the equals sign would help this learner improve their numerical communication.

Buy 1 pack of 4 and 1 pack of 6

or buy 5 x 2 = 3

or buy 1 x 2 and 2 x 4 = 2.60

or buy 3 x 2 and 1 x 4 = 2.80

or buy 2 x 2 and 1 x 6 = 3.00

Which way is **cheapest**? How do you know?

Part i, correct; **2 marks**

- Although the numerical communication is poor, the intention to show the number of each pack is clear so is acceptable.

Part ii, at least 3 correct prices; **1 mark**

- Correct costs are shown in part i of the question.

Buy 1 pack of 4 and 1 pack of 6

or buy 2 packs of 2 cakes and 1 of 6

or buy 2 packs of 4 cakes and 1 of 2

or buy 5 packs of 2 cakes

or buy 1 pack of 4 and 3 packs of 2

Which way is **cheapest**? How do you know?

2 packs of 4 and 1 of 2 because from working out the total prices of the ammounts it is cheepest

Part i, correct; **2 marks**

Part ii, incomplete justification; **1 mark**

Common error Although the cheapest way is identified, the costs are not shown.

Buy 1 pack of 4 and 1 pack of 6

or buy 2 packs of 4 and 1 of 2

or buy 5 packs of 2 cakes

or buy 1 pack of 4 and 1 of 6

or buy

Which way is **cheapest**? How do you know?

Because you get more if you buy them in bigger quantatys it is £2.80

Part i, only 2 correct ways; **0 marks**

- The given way, 1 pack of 4 and 1 of 6, is repeated.

Part ii, incorrect; **0 marks**

- This learner has assumed that buying a pack of 6 and a pack of 4 must be cheapest so has not checked the other costs.

Activity 2

Best value for money

Activity 2 – Best value for money

or

Outline

This activity is designed to carry on from **Activity 1 – Buying cakes**.

Learners compare the cost of different sizes of a breakfast cereal. Then they research how supermarkets help their customers to compare prices, and try to find real-life examples of when the biggest pack does not give best value for money.

You will need

WB **Whiteboard – Which cornflakes?**

R **Resource sheet – Comparing prices**

Activity 2 – Best value for money

Explain

Show **Which cornflakes?** on the whiteboard. Ask learners to work together in small groups to decide which pack offers best value for money – but they must give reasons to support their decisions.

Discuss some or all of the methods used. Explain that when we compare prices there are usually lots of correct ways to do it but the most important thing is to make the method clear so that someone else can understand what is being done and why.

Now ask learners to complete the resource sheet **Comparing prices**. If necessary, complete one or two rows to make sure that they understand what is being asked.

Solution:

	250g pack	*500g pack*	*750g pack*
250g	*£1.40*	*£1.05*	*£0.90*
500g	*£2.80*	*£2.10*	*£1.80*
750g	*£4.20*	*£3.15*	*£2.70*
50g	*£0.28*	*£0.21*	*£0.18*
100g	*£0.56*	*£0.42*	*£0.36*

Then, as a home-based research activity, ask learners to find out how supermarkets help customers to compare prices.

Also give them the challenge below.

- Usually, supermarkets make sure that the biggest pack is best value for money. Why? Can you find some examples of products where the biggest pack is **not** best value for money?

Question

- If you know how much 250g costs, how can you find the cost of 500g? What about if you know the cost of 500g? Which costs are easy to work out from that? How?
- How does the worksheet help you compare prices? Which weight would you use to compare? Why?
- If the price of the 500g pack of cornflakes had been £2.09 rather than £2.10, what would your answer have been for the cost of 250g? Why? *(This raises the issue of whether or not to round which can link to the accuracy used by supermarkets when they show price per 100g.)*

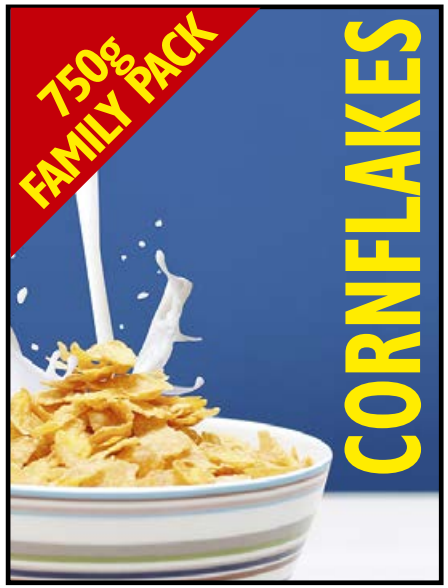
WB

Cornflakes 250g

£1.40

Cornflakes 500g

£2.10



Cornflakes 750g

£2.70

Cornflakes 250g

£1.40

For this size of Cornflakes, work out the cost of:

250g £1.40

500g _____ (because _____)

750g _____ (because _____)

50g _____ (because _____)

100g _____ (because _____)

Cornflakes 500g

£2.10

For this size of Cornflakes, work out the cost of:

250g _____ (because _____)

500g £2.10

750g _____ (because _____)

50g _____ (because _____)

100g _____ (because _____)

Cornflakes 750g

£2.70

For this size of Cornflakes, work out the cost of:

250g _____ (because _____)

500g _____ (because _____)

750g £2.70

50g _____ (because _____)

100g _____ (because _____)