Shortcut Percentages

Cents in the dollar

Overview

This activity introduces the cents in the dollar approach to calculating discounts.

Ideally it follows on from the previous activity: *Shortcut percentages: The 'per 100' method*

Skills and Knowledge

- Explaining discounts as per 100
- Calculating percentages by cents in the dollar shortcuts.

Preparation and Materials

Photocopy Practice Sheets 1 & 2 (1 per student).

Suggested Procedure

Introducing percentage discounts

Sketch a 20% discount Sale Sign on the board.
If this is following from *Shortcut percentages: The 'per 100' method*, explain to students that you will now explore how to use this same idea to calculate discounts for smaller amounts.

If not, then begin by asking the students:

- *How do you read this sign?*
- *What does the word 'percent' in the sign mean?*

You are looking for a response that indicates that it is the amount in every 100.

Calculating the discount for whole dollar amounts

Ask:

- *How many cents are there in a dollar?*
- *If we had a 20% discount on $1 how many cents is that?*
  [20 cents in 100 cents or 20 cents in $1]
- *What about 20% of $3?*
- *How would you calculate that?*
  [3 lots of 20 cents: either 20+20+20 or 3 x 20]

Some practice

Work through the following examples with the students using whichever version of the per hundred method they feel comfortable with (see below).

Example calculation for*: A 20% discount on prices of: $5.00 and $7.00*

<table>
<tr>
<td>Version 1 method
$5 = 500 cents

From the table the discount is 100 cents. That is $1

Discounts are taken <u>off</u> the price, so the final cost is: $5 - $1 = $4

<table><tr><td>100</td><td>20</td></tr><tr><td>100</td><td>20</td></tr><tr><td>100</td><td>20</td></tr><tr><td>100</td><td>20</td></tr><tr><td>100</td><td>20</td></tr><tr><td>500</td><td>100</td></tr></table></td>
<td>Version 2 method
$5

Discount:
20% is 20 cents for every $1

We have $5
so → 5 x 20 = 100 cents = $1

Final price: $5 - $1 = $4</td>
</tr>
<tr>
<td>$7 = 700 cents

From the table the discount is 140 cents. That is $1.40

Discounts are taken off the price, so the final cost is $7.00 - $1.40 = $5.60

<table><tr><td>100</td><td>20</td></tr><tr><td>100</td><td>20</td></tr><tr><td>100</td><td>20</td></tr><tr><td>100</td><td>20</td></tr><tr><td>100</td><td>20</td></tr><tr><td>100</td><td>20</td></tr><tr><td>100</td><td>20</td></tr><tr><td>700</td><td>140</td></tr></table></td>
<td>$7

Discount:
20% is 20 cents for every $1

We have $7 so → 7 x 20
= 140 cents = $1.40

Final price: $7.00 - $1.40 = $5.60</td>
</tr>
</table>

Discounts on 50 cents - both versions

Ask students:

- *How much would a 20% discount be on a 50 cent item?*
  [50 cents is half of 100 cents or $1
  so the discount would be half of 20 cents = 10 cents]

Ask students to:

- *Work in pairs to calculate these discounts:*
  20% of $2.50, $4.50 and $7.50
  [Answers: 50 cents, 90 cents, $1.50]

Then:

- *Calculate the final prices after the 20% discount*
  [Answers: $2.00, $3.60, $6.00]

Try a few examples using an odd number for the percentage to ensure that students can work out the discount amount for 50 cents, which requires them to halve the amount.
Example: 5% discount on items worth $4.50 and $7.50

Version 1 method
$4.50 = 450 cents

The discount is 22½ or almost 23 cents.

The final price is approximately:

$4.50 – 23c = $ 4.27

100	5
100	5
100	5
100	5
50	2 ½
450	**22½**

Version 2 method
$4.50

5% is 5 cents for every $1
We have $4 and 50 cents
So → 4 x 5 + (½ of 5) = 20 + 2 ½
= 22 ½ cents = almost 23 cents

Final price**:** $4.50 – 23c = $ 4.27

As a group work through a 5% discount on $7.50

Note: This method can be used for any percentage amount, even though simple numbers such as 20% and 5% were used to demonstrate the process.

Practice sheets 1 & 2 allow students to practise these types of calculations, with 5%, 7% and 12%. You could also ask students to try different variations such as 9%, 17%.

How do supermarkets work?

Discuss with students what kinds of approximations are used in supermarkets and other shops when the discount comes to half a cent. Do they give you a slightly larger discount, as we did in the examples, or do they give you less?

Encourage students to bring some sample dockets along to class to discuss the discounts and how they are shown on the dockets.

Suggestions for further practice

Bring advertisements from newspapers or junk mail and get students to calculate discount prices for items that might interest them.

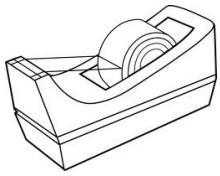
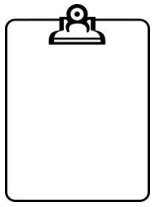
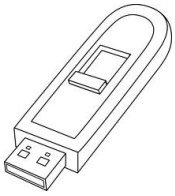
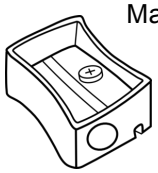
Other activities in this series describe alternative shortcut calculations for particular percentages. These include: *Shortcut Percentages 10%, Shortcut Percentages: 20%, 30% …5%, Shortcut Percentages: 50%, 25% & 75%.*

Cents in the dollar – Discounts Practice sheet 1

Tuesdays Only!!!

7 % off ALL goods

Use shortcut methods to calculate the discounts and the new price.

1.  Marked price $4 Discount? New price?	2.  Marked price $ 3 Discount? New price?
3.  Marked price $6 New price?	4.  Marked price $ 5 New price?
5.  Marked price $4.50 New price?	6.  Marked price $1.50 New price?

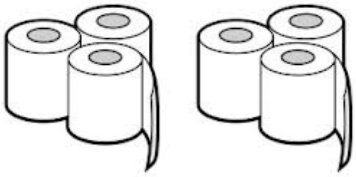
If the discount was increased to 12% what would these now cost?

1.	2.	3.
4.	5.	6.

Cents in the dollar – Discounts Practice Sheet 2

At the local supermarket the staff get a 5% discount.

Calculate the staff discount for each of these items. Then work out the final price they would pay.

 Normal price: $10 Staff discount: Final price:	 Normal price: $2 Staff discount: Final price:
 Normal price: $5 Final price:	 Normal price: $3 Final price:
 Normal price: $6 Final price:	 Normal price: $4.50 Final price: