

## Unitary Method

### Example 10

- a** Find 100% of a quantity if 6% of the quantity is 42.  
**b** Find 71% of a quantity if 40% of the quantity is 480.

<b>a</b>	6%	corresponds to 42	
	$\therefore$ 1%	corresponds to 7	{ divide by 6 }
	$\therefore$ 100%	corresponds to 700	{ multiply by 100 }
<b>b</b>	40%	corresponds to 480	
	$\therefore$ 1%	corresponds to 12	{ divide by 40 }
	$\therefore$ 71%	corresponds to 852	{ multiply by 71 }

## EXERCISE 7E

- 1** Find 100% of a quantity if:
- |                     |                     |                    |
|---------------------|---------------------|--------------------|
| <b>a</b> 20% is 240 | <b>b</b> 36% is 288 | <b>c</b> 7% is 126 |
| <b>d</b> 30% is 12  | <b>e</b> 57% is 513 | <b>f</b> 45% is 36 |
- 2** Find:
- a** 60% of a quantity if 15% of the quantity is 45
  - b** 72% of a quantity if 8% of the quantity is 64
  - c** 86% of a quantity if 14% of the quantity is 420
  - d** 12% of a quantity if 75% of the quantity is 250.
- 3** 36% of students at a school use public transport. If 144 students use public transport, how many students attend the school?
- 4** An alloy contains 16% zinc and the rest is pure copper. If 20 kg of zinc is used, how much:
- |                                    |                              |
|------------------------------------|------------------------------|
| <b>a</b> of the alloy will be made | <b>b</b> copper is required? |
|------------------------------------|------------------------------|
- 5** John scored 60% for a test. If his actual score was 72, what was the maximum mark possible for the test?



## Profit & Loss

### PROFIT AND LOSS

Obviously shopkeepers, in order to run a successful business, attempt to sell their products at a price which is greater than they paid for them, making a **profit**.

However, on some occasions due to circumstances, products must be sold at a price less than that for which they were bought, thus incurring a **loss**.

- The **cost price** is the price for which a person or business buys an article.
- The **selling price** is the price for which a person or business sells an article.
- If the selling price is greater than the cost price, then a **profit** is made and the profit is the difference between the cost and selling prices.
- If the selling price is less than the cost price, then a **loss** is made and the loss is the difference between the cost and selling prices.

- Note that
- percentage **profit** is a percentage **increase**
  - percentage **loss** is a percentage **decrease**.

- $\text{percentage profit} = \frac{\text{profit}}{\text{cost price}} \times 100\%$  and
- $\text{percentage loss} = \frac{\text{loss}}{\text{cost price}} \times 100\%$

### EXERCISE 7H.1

- 1 Copy and complete the following table:

	<i>Cost price</i>	<i>Selling price</i>	<i>Profit or loss?</i>	<i>How much profit or loss?</i>
<b>a</b>	\$45	\$60		
<b>b</b>	\$125	\$95		
<b>c</b>	\$255	\$199		
<b>d</b>	\$2225	\$2555		

- 2 Copy and complete the following table:

	<i>Cost price</i>	<i>Selling price</i>	<i>Profit or loss?</i>
<b>a</b>	\$60		\$25 profit
<b>b</b>		\$195	\$35 loss
<b>c</b>	\$275		\$95 loss
<b>d</b>		\$297	\$135 profit

**Example 15**

A bicycle was purchased for \$600 and was sold two months later for \$450. Find the loss as a percentage of the cost price.

cost price = \$600                      selling price = \$450

selling price < cost price, so we have a loss,

and loss = \$600 - \$450 = \$150

$$\begin{aligned}\therefore \% \text{ loss} &= \frac{\text{loss}}{\text{cost price}} \times 100\% \\ &= \frac{\$150}{\$600} \times 100\% \\ &= 25\%\end{aligned}$$

- 3** Find for the following transactions (ignoring GST)
- the profit or loss made
  - the percentage profit or loss made:
- I bought a CD set for \$50 and then sold it for \$30.
  - Jon bought a car for \$5000 and then sold it for \$6250.
  - Jodie bought a bicycle for \$200 and then sold it for \$315.
  - Hilda sold a sewing machine which cost her \$680 for \$816.
  - Frank sold a kitchen sink which cost him \$325 for \$422.50.
- 4** A car was purchased for \$28 000 and was sold 2 years later for \$21 000. Find the loss as a percentage of the cost price.
- 5** An agent buys a refrigerator for \$800 and sells it for \$960. Find the profit as a percentage of the cost price.
- 6** A second hand car dealer purchased a motor vehicle for \$22 500 and it was sold one week later for \$27 000. Find the profit made on the sale of the car and express this profit as a percentage of the cost price.
- 7** An agent buys forty pairs of running shoes for a total price of \$3400. He then sells the shoes for \$123.25 per pair. Calculate the total profit and express this profit as a percentage of the cost price.
- 8** A newsagent buys 120 magazines for \$1.20 each. If only 72 of the magazines are sold for \$1.95 each, determine whether the newsagent made a profit or a loss on these transactions. Express the profit or the loss as a percentage of the cost price.
- 9**



Prior to Easter, a supermarket orders 2000 Easter eggs for \$1.60 each. In the first week it sells 1450 of the eggs for \$2.20 each and in the second week the rest are placed on special at \$1.85. If at the end of the second week 50 eggs remain unsold, determine the total profit, and express this profit as a percentage of the cost price.

**Example 16**

Find the selling price for goods purchased for \$150 and sold at a 20% profit.

For a 20% profit we must increase \$150 by 20%.

*Two step method:*

$$\begin{aligned}\text{profit} &= 20\% \text{ of } \$150 \\ &= 0.2 \times \$150 \\ &= \$30\end{aligned}$$

$$\begin{aligned}\text{So, selling price} & \\ &= \$150 + \$30 \\ &= \$180\end{aligned}$$

*or*

*Using the multiplier*

To increase by 20% we multiply by 120%.

$$\begin{aligned}\text{So, selling price} &= 120\% \text{ of } \$150 \\ &= 1.20 \times \$150 \\ &= \$180\end{aligned}$$

**10** Find the selling price for goods bought for:

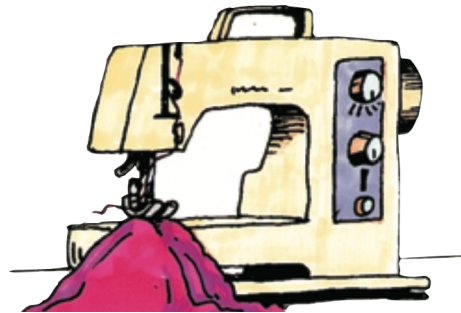
**a** \$500 and sold to gain 20%

**b** \$350 and sold at a 25% loss

**c** \$4500 and sold at a profit of 8%

**d** \$8000 and sold at a loss of 35%

**11** Jacki bought a sewing machine for \$560 and sold it for a profit of 18%. Ignoring GST, at what price did she sell the sewing machine?



## Discount

### Example 17

If the marked price of a video recorder is \$320 and a 22% discount is offered, find the actual selling price.

We have to decrease \$320 by 22%.

To decrease by 22% we multiply by  $100\% - 22\% = 78\%$ .

So, selling price = 78% of marked price  
= 78% of \$320  
=  $0.78 \times \$320$   
= \$249.60



The word 'of' indicates that we should multiply.



### EXERCISE 7H.2

- 1
  - a If the marked price of a television is \$1300 and a 12% discount is offered, find the actual selling price.
  - b A furniture distributor advertises kitchen tables at a marked price of \$480 with a 15% discount for the first 20 customers. What is the actual selling price if you are the first customer?

- 2 Copy and complete the following table:

	Marked price	Discount	Selling price	Discount as % of marked price
a	\$125	\$25		
b	\$240			26%
c	\$1.85			20%
d		55 cents	\$2.45	
e	\$142		\$127	

## Answers

### EXERCISE 7E

- 1 a 1200 b 800 c 1800 d 40 e 900 f 80
- 2 a 180 b 576 c 2580 d 40
- 3 400 students 4 a 125 kg b 105 kg 5 120

## EXERCISE 7H.1

1

	<i>Cost Price</i>	<i>Selling Price</i>	<i>Profit or loss</i>	<i>How much profit or loss</i>
a	\$45	\$60	profit	\$15
b	\$125	\$95	loss	\$30
c	\$255	\$199	loss	\$56
d	\$2225	\$2555	profit	\$330

2

	<i>Cost Price</i>	<i>Selling Price</i>	<i>Profit or loss</i>
a	\$60	\$85	\$25 profit
b	\$230	\$195	\$35 loss
c	\$275	\$180	\$95 loss
d	\$162	\$297	\$135 profit

- 3 a i \$20 loss ii 40% loss  
 b i \$1250 profit ii 25% profit  
 c i \$115 profit ii 57.5% profit  
 d i \$136 profit ii 20% profit  
 e i \$97.50 profit ii 30% profit
- 4 25% loss 5 20% profit 6 \$4500, 20%
- 7 \$1530, 45% 8 \$3.60 loss, 2.5% loss
- 9 \$915 profit, 28.59% profit
- 10 a \$600 b \$262.50 c \$4860 d \$5200
- 11 \$660.80

## EXERCISE 7H.2

- 1 a \$1144 b \$408

<b>2</b>	<i>Marked Price</i>	<i>Discount</i>	<i>Selling Price</i>	<i>Discount as % of marked price</i>
<b>a</b>	\$125	\$25	\$100	20%
<b>b</b>	\$240	\$62.40	\$177.60	26%
<b>c</b>	\$1.85	37 cents	\$1.48	20%
<b>d</b>	\$3.00	55 cents	\$2.45	18.3%
<b>e</b>	\$142	\$15	\$127	10.6%