

STUDY TIPS

MATHS FOR INTRODUCTORY ACCOUNTING: RATIO AND PERCENTAGE

Ratio

A ratio is a comparison between two (or more) quantities expressed in a particular order.

A ratio may be written using the ratio symbol ':' **A : B**, or as a fraction **A/B**.

Order is important. **A:B** is not the same as **B:A**.

All units must be the same. For example, do not compare cm. with mm. or dollars with cents.

Examples

1. If A = 7 and B = 15 the ratio of A to B is 7:5 or 7/15

2. Find the ratio of Income to Expenditure if:

Income = \$50 000

Expenditure = \$40 000

Income : Expenditure = 50 000 : 40 000

= 50 000/40 000

= 5/4

= 1.25 This means income is 1.25 times expenditure.

3. If

Current assets = \$255 000

Inventory = \$130 000

Current liabilities = \$200 000

Find (a) Current ratio and (b) Quick asset ratio.

$$(a) \text{ Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$= \frac{\$255\,000}{\$200\,000}$$

= 1.275 Current assets are 1.275 times current liabilities.

$$(b) \text{ Quick asset ratio} = \frac{\text{Current assets} - \text{Inventory}}{\text{Current liabilities}}$$

$$= \frac{(\$255\,000 - \$130\,000)}{\$200\,000}$$

(Evaluate the numerator first then divide or, using the calculator, put the numerator in brackets. The divide line acts as a bracket.)

$$= \frac{\$125\,000}{\$200\,000}$$

$$= 0.625$$

4. Current market price = \$4.50

Earnings per share = 50c = \$0.50 [both quantities must be in the same units. Convert cents to dollars]

Calculate the price earnings ratio.

$$\text{Price earnings ratio} = \frac{\text{Current market price}}{\text{Earnings per share}}$$

$$= \frac{\$4.50}{\$0.50}$$

$$= 9.5$$

See exercise 1

Percentage

Percentage means 'out of 100'

23% means 23 out of 100 or 23/100.

Converting a number to a percentage

A ratio (or any number) may also be written as a percentage. To convert a ratio to a percentage, multiply by 100.

Examples

1. Write (a) $1/2$, (b) $3/4$, (c) 0.27, (d) 1.46 and (e) $(234\,000)/(78\,000)$ as percentages.

$$(a) \, 1/2 = (1/2) \times 100 = 50\% \quad (b) \, 3/4 = (3/4) \times 100 = 75\% \quad (c) \, 0.27 = 0.27 \times 100 = 27\%$$

$$(d) \, 1.46 = 1.46 \times 100 = 146\% \quad (e) \, (234\,000)/(78\,000) = (234\,000)/(78\,000) \times (100) = 300\%$$

2. Total liabilities = \$456 000

Total assets = \$710 000

Calculate debt ratio as a percentage.

$$\begin{aligned} \text{Debt ratio} &= \frac{\text{Total liabilities}}{\text{Total assets}} \times 100 \\ &= \frac{\$456\,000}{\$710\,000} \times 100 \\ &= 64.2\% \end{aligned}$$

Finding a percentage of a number.

To find a percentage of a number:

1. convert the percentage to a decimal by dividing the percentage by 100.

2. multiply by the number.

Examples

1. Find 20% of 550.

$$20\% = 20/100 = 0.2$$

$$0.2 \times 550 = 110$$

$$20\% \text{ of } 550 = 110$$

2. Find 63% of \$245 000.

$$63\% = 63/100 = 0.63$$

$$0.63 \times 245\,000 = 154\,350$$

$$63\% \text{ of } \$245\,000 = \$154\,350$$

3. Find 4% of \$5 000

$$4\% = 4/100 = 0.04$$

$$0.04 \times 5\,000 = 200$$

$$4\% \text{ of } \$5\,000 = \$200$$

See exercise 2.

*Accounting examples.

Statement of financial position

Current assets		Current liabilities	
Bank	\$1000	Accounts payable	\$3 000
Inventory	\$11 000	Wages	\$1 000
Accounts receivable	\$2000		
Noncurrent assets		Noncurrent liabilities	
Factory	\$100 000	Loan	\$40 000
		Owners equity	
		Capital	\$70 000

Calculate 1. Current ratio

2. Debt ratio

$$1. \text{ Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$= \frac{(\$1\,000 + \$11\,000 + \$2\,000)}{(\$3\,000 + \$1\,000)} \quad \text{[evaluate numerator and denominator before dividing, or use brackets on the calculator]}$$

$$= \frac{\$14\,000}{\$4\,000}$$

$$= 3.5$$

$$\text{As a percentage} = 3.5 \times 100 = 35\%$$

$$2. \text{ Debt ratio (\%)} = \frac{\text{Total liabilities}}{\text{Total assets}} \times 100$$

$$= \frac{(\$3\,000 + \$1\,000 + \$40\,000)}{(\$1\,000 + \$11\,000 + \$2\,000 + \$100\,000)} \times 100 \quad \text{[evaluate numerator and denominator before dividing, or use brackets on the calculator]}$$

$$= \frac{\$44\,000}{\$114\,000}$$

$$= 38.6\%$$

* The SLC acknowledges these worked examples provided by SLAMS

Exercises

Exercise 1

(a) If A = 6 and B = 8 calculate (i) A : B and (ii) B : A

(b) If net cash flow = \$126 135 and current liabilities = \$350 247

Calculate the ratio, 'net cash flow : current liabilities'.

Express the answer using the ratio symbol and also as a fraction.

(c) Income = \$110 000

Expenditure = \$90 000

Evaluate the ratio of income to expenses.

(d) if a = \$2 000, b = \$15 000, c = \$500 and d = \$3 000 evaluate the following

$$(i) \quad \frac{a + b - c}{d}$$

$$(ii) \quad \frac{b}{d + c}$$

$$(iii) \quad \frac{b - d}{(d + c)/2}$$

(e) Current market price = \$5.20

Earnings per share = 55c

Calculate the ratio 'current market price : earnings per share'

Exercise 2

(a) Convert the following to percentages.

(i) 0.6 (ii) 1.3, (iii) $1/4$, (iv) $5/8$ (v) $12/5$

(b) If gross profit = \$565 000 and sales revenue = \$2 550 000

Calculate the ratio 'gross profit : sales revenue'. (as a percentage)

(c) Total liabilities = \$234 125

Total assets = \$348 000

Evaluate the ratio of total liabilities to total assets and express as a percentage.

(d) Calculate the following percentages.

(i) 45% of 625 (ii) 3% of \$5000 (iii) 75% of \$250 000

Answers

Exercise 1

(a) (i) $6/8 = 0.75$ (ii) $8/6 = 1.33$

(b) $\$126\,135 : \$350\,247$, $(\$126\,135 / \$350\,247) = 0.36$

(c) 1.22

(d) (i) 5.5, (ii) 4.29, (iii) 6.86

(e) 9.45

Exercise 2

(a) (i) 60%, (ii) 130%, (iii) 25%, (iv) 62.5, (v) 240%

(b) 22.1%

(c) 67.3%

(d) (i) \$281.25, (ii) \$150, (iii) \$187 500