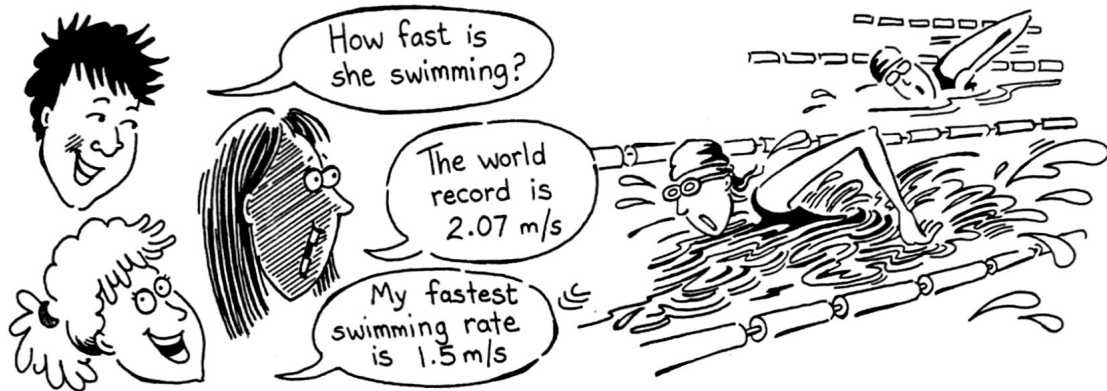


# 5 Sports and Leisure



You often talk about rates in daily life.

A rate is a comparison of 2 measurements of different types.

- The rate \$10 per kg compares money and mass.
- The rate 50 km/h compares distance and time.
- The rate \$15 per hour compares money and time.

In sports, rates are used to ensure that the efforts of athletes are compared fairly. To compare how fast 2 athletes do the same thing, you use rates like metres per second.

Measurements of length are also important in sports.

These include:

- the length of a playing field
- the height of a net
- the time allowed for a game

1. The text above includes an example of one rate used in sports. List 2 more examples.

a) \_\_\_\_\_ b) \_\_\_\_\_

2. Three examples of lengths used in sports are given. List 2 more examples.

a) \_\_\_\_\_ b) \_\_\_\_\_

3. What might you need to measure if you are organizing a sports event?

a) \_\_\_\_\_ b) \_\_\_\_\_

c) \_\_\_\_\_ d) \_\_\_\_\_

# 5.1 Personal Rates

Focus: determining equivalent ratios, rates, and equivalent rates

Warm Up	
<p><b>1.</b> A recipe has flour to sugar in a ratio of 3 : 2. The recipe asks for 2 cups of sugar. How much flour is needed?</p> <p>_____ cups of flour</p>	<p><b>2.</b> What is the ratio of grape juice to orange juice?</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p><b>Fruit Punch</b> 1 L grape juice 2 L orange juice</p> </div> <p>_____ : _____</p>
<p><b>3.</b> 1 batch of waffles serves 4 people. How many people will a double batch serve?</p> <p>_____</p>	<p><b>4.</b> Apples cost \$3.00 per 3 kg. How much will 9 kg of apples cost?</p> <p>\$ _____</p>

Chapter  
**5**

## Skills Practice 12: Equivalent Ratios

1 cat to 2 dogs and 2 cats to 4 dogs are **equivalent ratios**.

The number of cats and dogs being compared is different, but the ratio of cats to dogs is the same.

Equivalent ratios can be written in fraction form.  $\frac{1}{2} = \frac{2}{4}$

They can also be written like this.  $1 : 2 = 2 : 4$

- 1.** A summer sports camp has 1 coach for every 8 campers.



1 : 8

Use 2 colours of counters to model the ratios of coaches to campers.



2 : \_\_\_\_\_

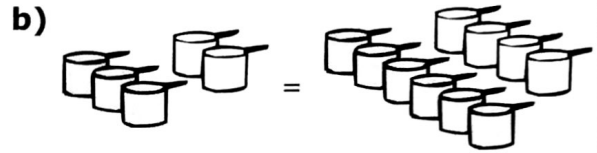
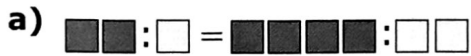
3 : \_\_\_\_\_

Fill in the blanks to write other equivalent ratios.

4 : \_\_\_\_\_

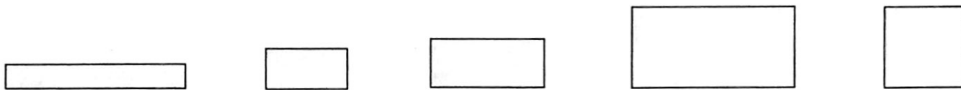
5 : \_\_\_\_\_

2. Express each diagram as an equivalent ratio.

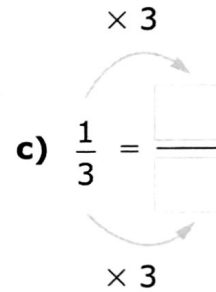
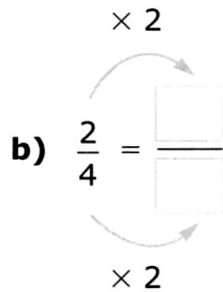
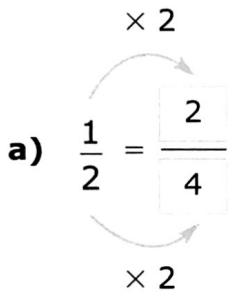


\_\_\_\_\_ : \_\_\_\_\_ = \_\_\_\_\_ : \_\_\_\_\_ = \_\_\_\_\_ : \_\_\_\_\_

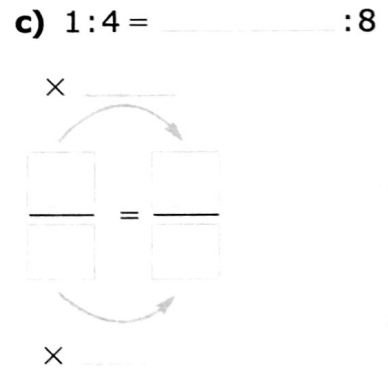
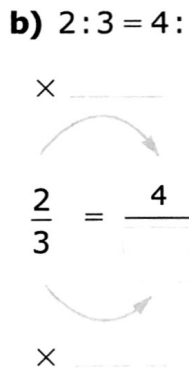
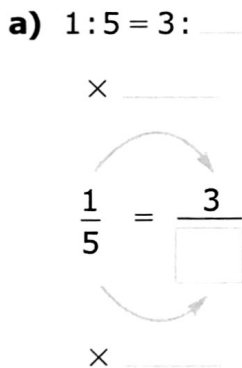
3. Circle the 3 shapes that have the same ratio of base to height.



4. Determine each equivalent ratio. The first one is done for you.



5. Write each ratio in fraction form. Then, determine the equivalent ratio.



6. Circle the three equivalent ratios. Explain how you know.

- 1:2    2:4    3:5    2:1    3:6    2:3

- A **rate** compares 2 different measurements.
- 80 km/h is a rate. It is read "80 kilometres per hour" because the second unit has a measurement of 1.
- The rate 45 wpm means typing 45 words per minute or 45 words in 1 min.

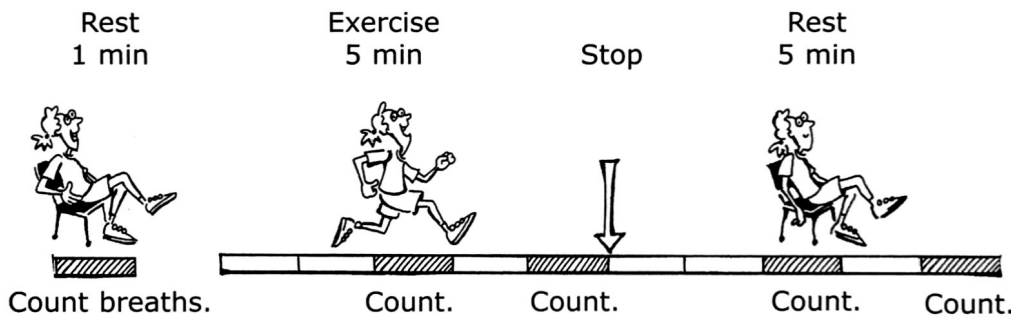
Use these abbreviations for time:  
 hours (h)  
 minutes (min)  
 seconds (s)

1. What other rates do you use often?

\_\_\_\_\_ / \_\_\_\_\_    \_\_\_\_\_ / \_\_\_\_\_    \_\_\_\_\_ / \_\_\_\_\_

**Breathing Rates**

- How does your breathing rate change when you exercise?
2. a) Guess how many breaths you take in 1 min while resting. \_\_\_\_\_
- b) Complete the chart as you do the activity shown. Each time you count your breaths for 1 min, record your count.



Activity	Begin to Count Breaths	Count for ...	Number of Breaths in 1 min	Breathing Rate (breaths/min)
Resting	anytime	1 min		_____ breaths/min
Exercising	after 2 min	1 min		
Exercising	after 4 min	1 min		
Resting	after 2 min	1 min		
Resting	after 4 min	1 min		

c) What is your resting breathing rate?

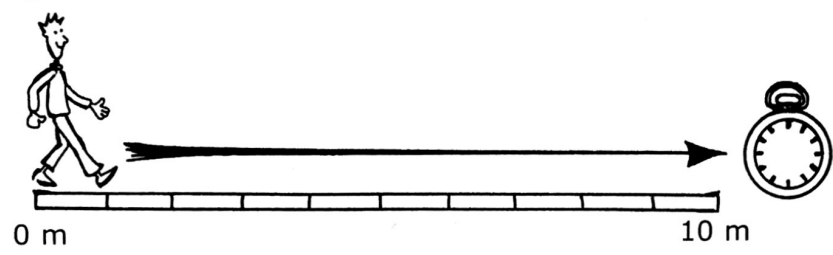
\_\_\_\_\_ breaths/min

How close is your guess? \_\_\_\_\_

d) Your breathing rate after 4 min of exercise was

\_\_\_\_\_ breaths/min. By how much did your breathing rate increase?

### Walking Rates



- Measure off 10 m.
  - How fast do you walk?
- 3. a)** Record how long it takes you to walk 10 m. \_\_\_\_\_ s
- b)** Express your rate of speed in metres per second.
- \_\_\_\_\_

**4.** At the rate in #3b), how long will it take you to walk each distance?

- a)** 50 m                      **b)** 200 m                      **c)** 1 km

1 km = \_\_\_\_\_ m

10 m ⇒ _____ s	50 m ⇒ _____ s	200 m ⇒ _____ s
20 m ⇒ _____ s	100 m ⇒ _____ s	400 m ⇒ _____ s
30 m ⇒ _____ s	150 m ⇒ _____ s	600 m ⇒ _____ s
40 m ⇒ _____ s	200 m ⇒ _____ s	800 m ⇒ _____ s
50 m ⇒ _____ s		1000 m ⇒ _____ s

**5.** How many hours would it take you to walk 10 km?

### ✓ Check Your Understanding

How do you tell the difference between a ratio and a rate?

\_\_\_\_\_

\_\_\_\_\_