

Instructions to students: Use your text book on chapter 6 and attempt the questions in this test.

Due Date: 16/07/2018

**Chapter 6: Ratios and rates
Test A (40 marks)**

Name: _____

Part A – Multiple-choice

(10 marks)

1 A fruit bowl contains 6 oranges, 5 apples and 3 bananas. The ratio of apples to other fruits is:

- A** 5 : 3 **B** 5 : 6 **C** 5 : 9
D 5 : 12 **E** 5 : 14

2 Which of the following is *not* equivalent to 8 : 12?

- A** 2 : 3 **B** 6 : 8 **C** 4 : 6
D 10 : 15 **E** 16 : 24

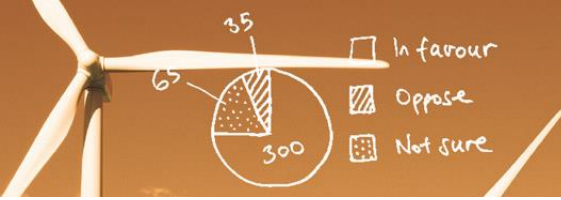
3 When the ratio 24 : 48 : 84 is simplified, it becomes:

- A** 1 : 2 : 4 **B** 6 : 12 : 21 **C** 2 : 4 : 7
D 4 : 8 : 14 **E** 3 : 6 : 14

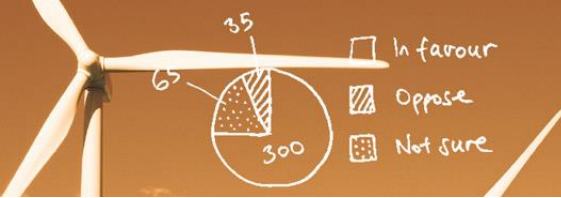
4 6 mm to 3 cm expressed as a ratio in simplest form is:

- A** 3 : 6 **B** 5 : 1 **C** 6 : 3
D 1 : 5 **E** 1 : 2

5 2 cm on a scale drawing represents an actual distance of 50 m. The scale ratio is:



- A** 1 : 2500 **B** 2 : 50 **C** 1 : 250
- D** 2 : 500 **E** 1 : 25 000
- 6** Holly was 108 cm tall when she turned 5 years old, and 162 cm when she turned 14 years old. Her average rate of growth is:
- A** 5.5 cm/year **B** 6 cm/year **C** 6.5 cm/year
- D** 7 cm/year **E** 7.5 cm/year
- 7** Maria can touch type 159 words in 3 minutes. How many words can she type in 7 minutes?
- A** 343 words **B** 357 words **C** 364 words
- D** 371 words **E** 378 words
- 8** A footballer scores 15 goals over 6 games. How many games will it take for him to have scored 50 goals?
- A** 18 games **B** 20 games **C** 22 games
- D** 23 games **E** 24 games
- 9** Two hoses from two different taps are used to fill a fishpond. The first hose alone takes 20 minutes to fill the fishpond. The second hose alone takes 30 minutes to fill the fishpond. How long would it take to fill the fishpond if both hoses are used?
- A** 12 minutes **B** 15 minutes **C** 24 minutes
- D** 30 minutes **E** 50 minutes
- 10** Which of the following is *false*?
- A** $\text{Average speed} = \frac{\text{Distance travelled}}{\text{Time taken}}$
- B** $\text{Distance travelled} = \text{Average speed} \times \text{Time taken}$
- C** $\text{Time taken} = \frac{\text{Distance travelled}}{\text{Average speed}}$
- D** $\text{Time taken} \times \text{Average speed} = \text{Distance travelled}$



E Distance travelled = $\frac{\text{Time taken}}{\text{Average speed}}$

Part B – Short-answer

(20 marks)

1 Simplify the following ratios.

a 9 : 24

b 30 : 75

c $\frac{1}{3} : \frac{3}{4}$

d $1\frac{5}{6} : 2\frac{2}{3}$

(1 + 1 + 1 + 2 = 5 marks)

2 Write each of the following as a simplified rate.

a 300 mL in 5 minutes

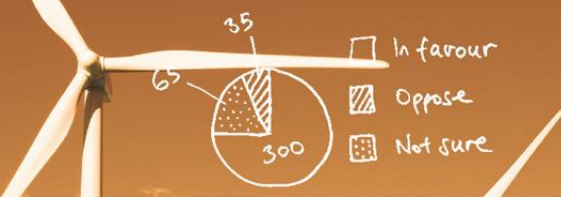
b \$48.60 for 9 kilograms

(2 × 1 = 2 marks)

3 Convert the following rates into the units given in the brackets.

a 200 g/day (kg/week)

b \$18/h (c/min)



(2 × 2 = 4 marks)

4 A model town has a scale ratio of 1 : 4000.

a Find the actual length, in metres, of a street that has a scaled length of 7 cm.

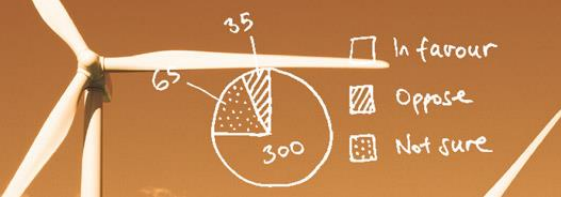
b Find the scaled height, in millimetres, of a tree that is 8 m tall in real life.

(2 × 1 = 2 marks)

5 a Divide 60 kg in the ratio of 5 : 7.

b Divide \$180 in the ratio of 2 : 3 : 4.

c The ratio of boys to girls in Year 8 is 5 : 6. If there are 72 girls in Year 8, what is the total number of students in the year level?



- d** When Jessica makes cupcakes she requires a ratio of sugar to flour of 2 : 5. If Jessica uses half a cup of sugar for a particular batch of cupcakes, how much flour does she need?

(1 + 1 + 1 + 2 = 5 marks)

- 6** Bill can paint a small house in 3 days, Sharon can paint a small house in 4 days and Wilber can paint a small house in 5 days. How long will it take for Bill, Sharon and Wilber together to paint one small house? Give your answer as a fraction.

(2 marks)

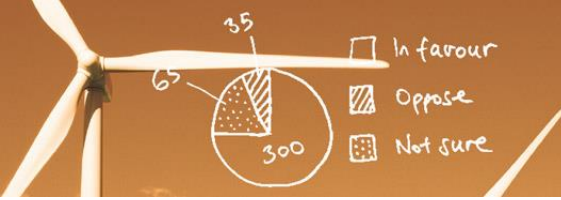
Part C – Extended-response

(10 marks)

- 1** Patrick is driving from Sydney to Canberra. He travels the 288 km trip in 4 hours.

- a** Show that Patrick's average speed is 72 km/h.

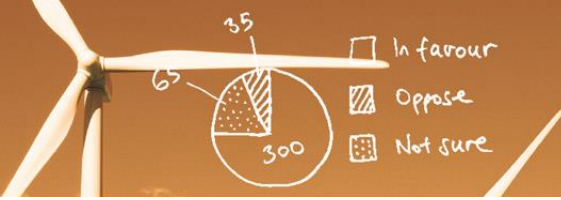
- b** Convert this speed to m/s.



- c** If Patrick had driven at this speed for 6 hours, what distance would he have travelled?

- d** How long would it take, in minutes, for Patrick to travel 12 km if he were travelling at this speed?

(1 + 2 + 1 + 2 = 6 marks)



2 Patrick calculates that his car has used 24 L of petrol to travel the 288 km trip.

a What is the fuel economy, in kilometres per litre, of Patrick's car?

b The petrol tank in Patrick's car has a capacity of 50 L. How far can Patrick travel on a full tank of petrol?

c How much petrol will Patrick use if he travels 96 km?

(1 + 1 + 2 = 4 marks)