

2021 Year 8 Topic Tests Information Sheet

2021 Year 8 Topic Tests is a set of short answer questions and their solutions.

The topics covered are:

- Numbers, Percentages and Fractions (4 questions)
- Ratios, Rates and Time (4 questions)
- Patterns and Algebra (4 questions)
- Geometry (4 questions)
- Linear Relationships (5 questions)
- Probability (3 questions)
- Statistics (3 questions)

2021 Year 8 Topic Tests also includes a **Mid-year test** that consists of:

- 15 multiple choice questions
- 5 short answer questions
- 2 extended response questions

Mid-year test covers all topic except Probability and Statistics.

Distribution

We will email electronic copies

File format

MS Word DOCX format and PDF format

Sample

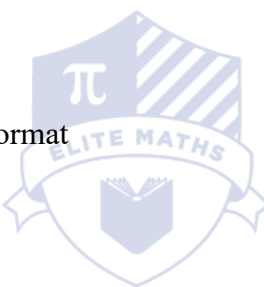
We have attached sample questions

Release date

1st of March 2021

Price

\$105



**2021 Year 8 Mathematics
Numbers, Percentages and Fractions Test**

**Time allowed: 1 hour
Total marks: 35 marks**

Question 1 (8 marks)

a. Determine whether the following statements are true or false.

i. 1 is a prime number. 1 mark

True False

ii. 3^2 is equal to 27. 1 mark

True False

iii. 3, 5, 7 and 27 are all integers. 1 mark

True False

iv. 5 is the lowest common multiple of 15 and 27. 1 mark

True False

b. Consider the numbers 1, 2, 3, 5, 8, 12, 15 and 54. 1 mark

How many of these numbers are even?

c. Write 54 as a product of its prime factors. 2 marks

d. Evaluate $\sqrt{15}$, correct to two decimal places. 1 mark

Question 3 (10 marks)

- a. Simplify $\frac{36}{42}$. 1 mark

- b. Evaluate $\frac{12}{35} \div \frac{2}{7}$. 2 marks

Write your answer as an improper fraction.

- c. Evaluate $\frac{7}{4} + \frac{8}{3}$. 2 marks

Write your answer as an improper fraction.

- d. Write the fractions $\frac{1}{2}$, $\frac{3}{4}$ and $\frac{3}{7}$ in ascending order (from smallest to largest). 2 marks

- e. A class of 18 girls and 14 boys were asked if they study Japanese. 3 marks

$\frac{1}{4}$ of the students said that they are studying Japanese.

$\frac{1}{7}$ of the boys said that they are studying Japanese.

What fraction of the girls are studying Japanese?

**2021 Year 8 Mathematics
Ratios, Rates and Time Test**

**Time allowed: 1 hour
Total marks: 35 marks**

Question 1 (7 marks)

a. Here are some metric units.

cm km g kg mL L

Choose the most appropriate metric unit from the list above that could be used to measure each of the following quantities.

i. The distance between Brisbane and the Gold Coast. 1 mark

ii. The volume of a large milk bottle. 1 mark

iii. The height of a coffee table. 1 mark

iv. The weight of several teaspoons of salt. 1 mark

b. Convert 200 m to km. 1 mark

c. The volume of a box is 360000 cm^3 . 2 marks
Convert this to m^3 .

Question 2 (7 marks)

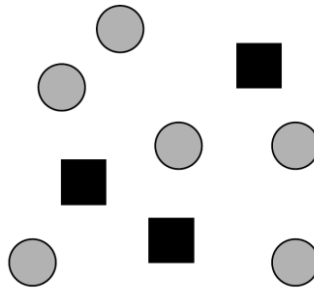
a. Complete the ratio below by writing the appropriate number in the box.

1 mark

$$2:5 = 6:\boxed{}$$

b.

2 marks



What is the ratio between the number of circles and the number of squares?
Simplify your answer.

c. Julian and Cameron share \$5200 in the ratio of 3:5.
How much will Cameron get?

2 marks

d. The recipe for making 100 grams of a dumpling sauce is given below.

2 marks

- 3 tablespoons of soy sauce
- 1 tablespoon of sugar
- 2 tablespoons of vinegar
- 1 tablespoon of chilli powder

How many tablespoons of vinegar are needed to make 450 grams of the dumpling sauce?

**2021 Year 8 Mathematics
Patterns and Algebra Test**

**Time allowed: 1 hour
Total marks: 35 marks**

Question 1 (9 marks)

a. Evaluate $4 - 36 \div (-9)$.

2 marks

b. If $k = -2$, evaluate $3k^2$.

2 marks

c. Evaluate $\sqrt{900}$.

1 mark

d. Simplify $\frac{24a^2f^3}{6af^2}$.

2 marks

e. Simplify $z \times y \times y \times y \times z$.

2 marks

Question 3 (9 marks)

a. Bryan is 10 years older than Alex.

Cary is as twice old as Alex.

The sum of the ages of Alex, Bryan and Cary is 46.

Let Alex's age be a .

i. Write down Bryan's age in terms of a .

1 mark

ii. Write down Cary's age in terms of a .

1 mark

iii. The steps used to find Bryan's age are given below, but they are incomplete.

3 marks

Complete the working by writing the appropriate numbers or symbols in the boxes.

<p>Since the sum of the ages of the three people is 46</p> $a + (a + 10) + 2a = 46$ $\boxed{} + 10 = 46$ $a = 9$ <p>Therefore, Alex's age is $\boxed{}$ and Bryan's age is $\boxed{}$.</p>	
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b. The width of a rectangle is 2 cm less than one third of its length.

4 marks

Let the length of the rectangle be L cm.

Show that the perimeter of the rectangle is given by $\frac{8L-12}{3}$ cm.

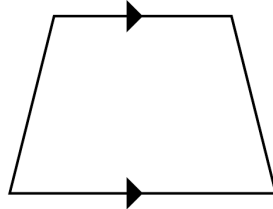
**2021 Year 8 Mathematics
Geometry Test**

**Time allowed: 1 hour
Total marks: 35 marks**

Question 1 (6 marks)

a.

1 mark



What is the name of the shape shown above?

b. What type of angle is 56° ?

1 mark

Circle the correct answer.

Acute angle

Right angle

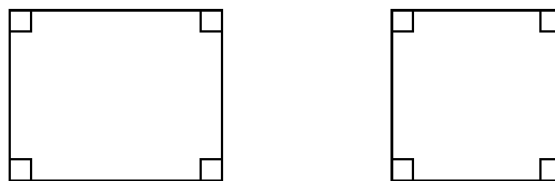
Obtuse angle

c. Write down an example of a reflex angle.

1 mark

d.

2 marks



Complete the following paragraph by writing down the missing words.

A square is a quadrilateral with four equal sides and four _____ angles.

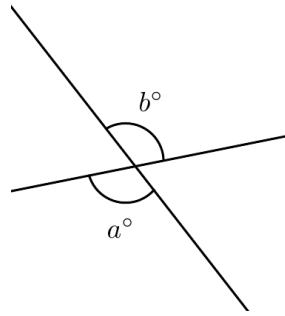
This makes a square a special kind of _____.

e. What is the sum of the internal angles of a quadrilateral?

1 mark

c.

2 marks

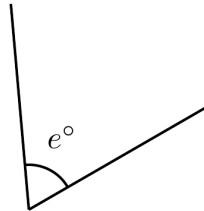


Complete the following sentence by writing down the missing words.

a and b have the _____ value since a° and b° are vertically _____ angles.

d. The diagram shown below is drawn to scale.

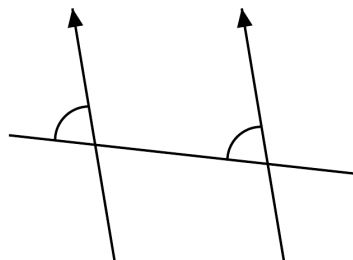
3 marks



It is given that angles e° and f° are complementary angles.
Find the value of f .

e.

1 mark



What is the name given to the angles shown above?

Circle the correct answer.

Alternate angles

Corresponding angles

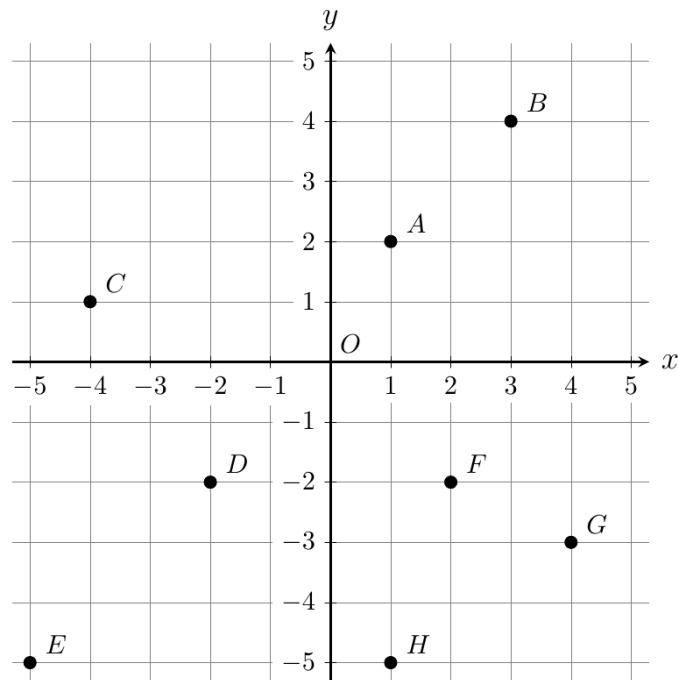
Co-interior angles

**2021 Year 8 Mathematics
Linear Relationships Test**

**Time allowed: 1 hour
Total marks: 35 marks**

Question 1 (5 marks)

Eight points (A to H) are drawn on the number plane shown below.



a. Write down the coordinates of point A . 1 mark

b. Write down the y -coordinate of point F . 1 mark

c. How many points are in the 3rd quadrant? 1 mark

d. Which point corresponds to the image of point F after a reflection in the y -axis? 1 mark

e. The coordinates of point S are $(4,1)$. 1 mark
Draw point S on the number plane above.

Question 2 (8 marks)

a. For the linear equation $y = 2x - 3$, state the coefficient of x .

1 mark

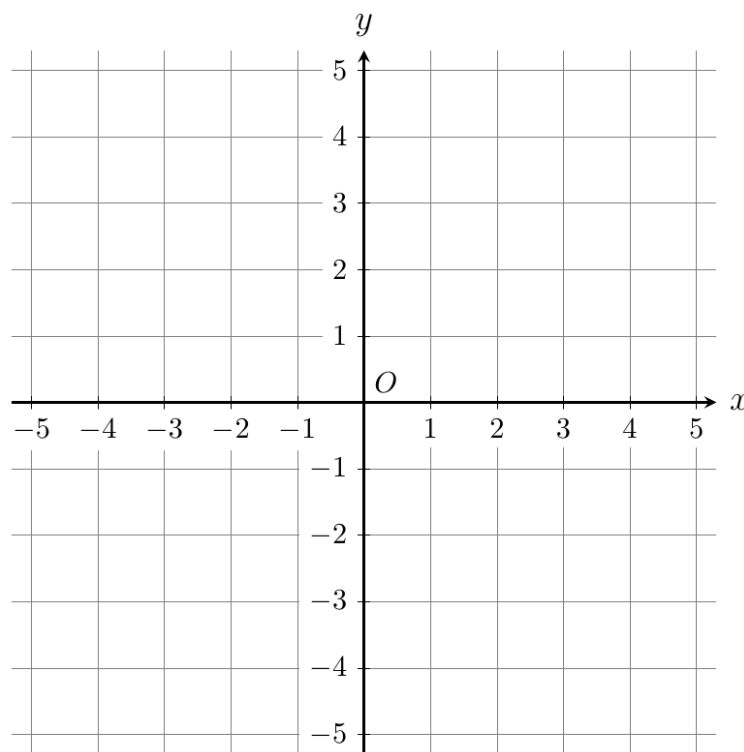
b. For the linear equation $y = x + 2$, complete the table of values below.

3 marks

x	-1	0	1	2	3
y		2	3		

c. Sketch the graph of $y = x + 2$ on the set of axes below.

2 marks



d.

2 marks

x	0	1	2	3
y	4	3	2	1

Find the linear equation for the table of values above.

**2021 Year 8 Mathematics
Probability Test**

**Time allowed: 1 hour
Total marks: 25 marks**

Question 1 (7 marks)

a.

Impossible	Unlikely	Likely	Certain
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For each of the following events, choose the most appropriate word from the list above that describes the likelihood of

i. You travelling to Mars this evening. 1 mark

ii. You drinking water sometime this week. 1 mark

iii. You receiving an email or a text in the next hour. 1 mark

b. List all the possible outcomes when a fair coin is tossed. 1 mark

c. Find the probability of obtaining a head when a fair coin is tossed. 1 mark

d. Write down the complement event of “Going to the shopping mall tomorrow”. 1 mark

e. The chance of winning a random draw is 1 out of 4000. 1 mark
Write this probability as a decimal.

**2021 Year 8 Mathematics
Statistics Test**

**Time allowed: 1 hour
Total marks: 25 marks**

Question 1 (11 marks)

The following data is a sample of ten Year 8 students.

Exam mark is the number of marks obtained in the end-of-year mathematics exam, which was out of 100.

<i>Age</i>	<i>Gender</i>	<i>Exam mark</i>
14	Female	75
14	Male	62
14	Male	79
13	Male	81
14	Male	54
13	Male	68
13	Female	79
14	Female	70
14	Female	81
13	Male	100

a. What type of data is **Exam mark**?

1 mark

Circle the correct answer.

Categorical

Numerical

b. What is the mode Exam mark?

1 mark

c. One student's Exam mark in this sample is 100.

2 marks

Is this likely to be an outlier?

Justify your answer.

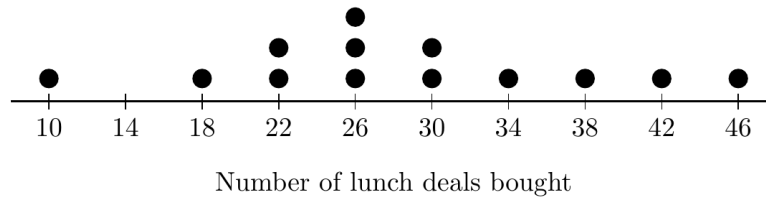
d. Complete the following frequency table.

2 marks

<i>Gender</i>	<i>Frequency</i>
Male	
Female	
Total	

Question 3 (7 marks)

A restaurant records the number of lunch deals bought each day, over a particular number of days. The following dot plot displays the results.



a. How many days were considered in this data?

1 mark

b. What is the median number of lunch deals bought?

1 mark

c. What is the range of this data?

1 mark

d. Complete the following stem-and-leaf plot for the data above.

2 marks

Stem	Leaf
1	0 8
2	2 2 6 6 6
3	
4	

1|0 means 10 times

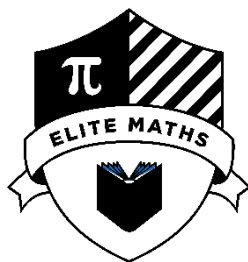
e. Suppose that an additional day, during which 85 lunch deals were bought, is added to the data. Explain the effect of this on

i. the median number of lunch deals bought

1 mark

ii. the mean number of lunch deals bought.

1 mark



2021 YEAR 8 MATHEMATICS

MIDYEAR TEST

Reading time: 15 minutes

Writing time: 2 hours

QUESTION BOOK

Structure of book

Section	Number of questions	Number of questions to be answered	Number of marks
A	15	15	15
B	5	5	25
C	2	2	20
			Total 60

SECTION A**Instructions for Section A**

Answer **all** questions.

Choose the response that is **correct** for the question.

A correct answer scores 1, an incorrect answer scores 0.

Marks will **not** be deducted for incorrect answers.

No marks will be given if more than one answer is completed for any question.

Question 1

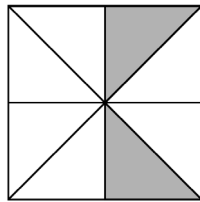
Which one of the following is a composite number?

- A. 2
- B. 5
- C. 6
- D. 7

Question 2

The ratio 2:5 is equivalent to

- A. 6:15
- B. 2:7
- C. 1:3
- D. 5:2

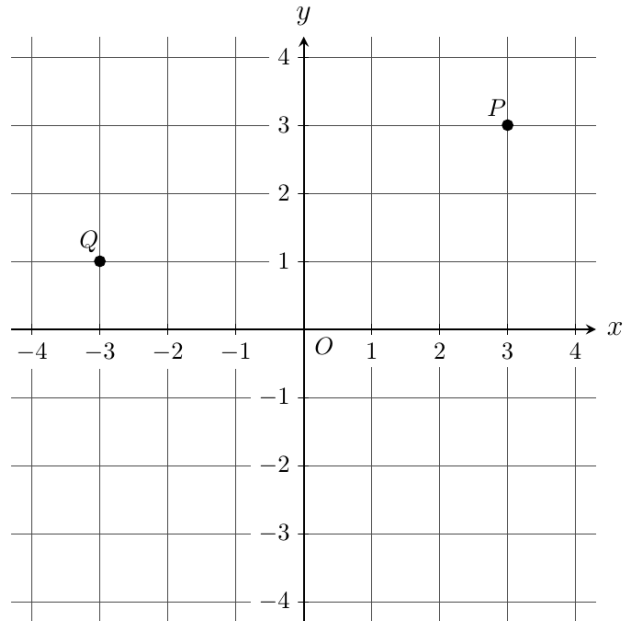
Question 3

The shaded region in the above diagram as a percentage of the total area is

- A. 0.2%
- B. 0.25%
- C. 25%
- D. 37.5%

Question 12

Consider the points P and Q shown on the number plane below.

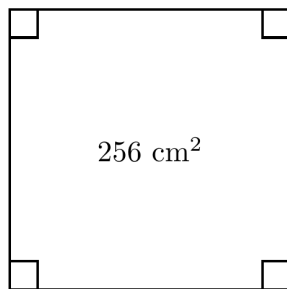


The sequence of transformations that takes point P to the point Q is

- A. a reflection in the x -axis, followed by a translation of 2 units upward
- B. a reflection in the y -axis, followed by a translation of 2 units downward
- C. a reflection in the x -axis, followed by a translation of 2 units downward
- E. a clockwise rotation of 90° about the origin, followed by a translation of 2 units downward

Question 13

The area of the square shown below is 256 cm^2 .



The perimeter of the square is

- A. 16 cm
- B. 32 cm
- C. 64 cm
- D. 128 cm

SECTION B**Instructions for Section B**

Answer **all** questions.

In all questions where a numerical answer is required, an **exact** value must be given unless otherwise specified.

In questions where more than one mark is available, appropriate working **must** be shown.

Unless otherwise indicated, the diagrams in this book are **not** drawn to scale.

Question 1 (5 marks)

a. How many decimal places does the number 8.793 have? 1 mark

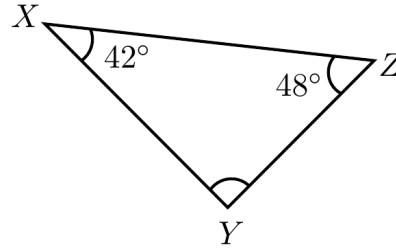
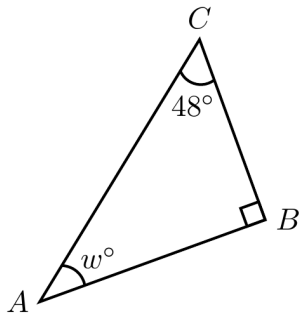
b. Evaluate $0.26 + 1.51$. 1 mark

c. Find the lowest common multiple of 18 and 36. 1 mark

d. List all the prime factors of 12. 2 marks

Question 5 (5 marks)

Consider triangle ABC and triangle XYZ shown below.



a. Complete the following sentence with the appropriate number.

1 mark

The internal angles of a triangle sum to _____ degrees.

b. Find the value of w .

2 marks

c. A Year 8 student claims that the two triangles above must be congruent.
Explain whether the student is correct.

2 marks

SECTION C

Instructions for Section C

Answer **all** questions.

In all questions where a numerical answer is required, an **exact** value must be given unless otherwise specified.

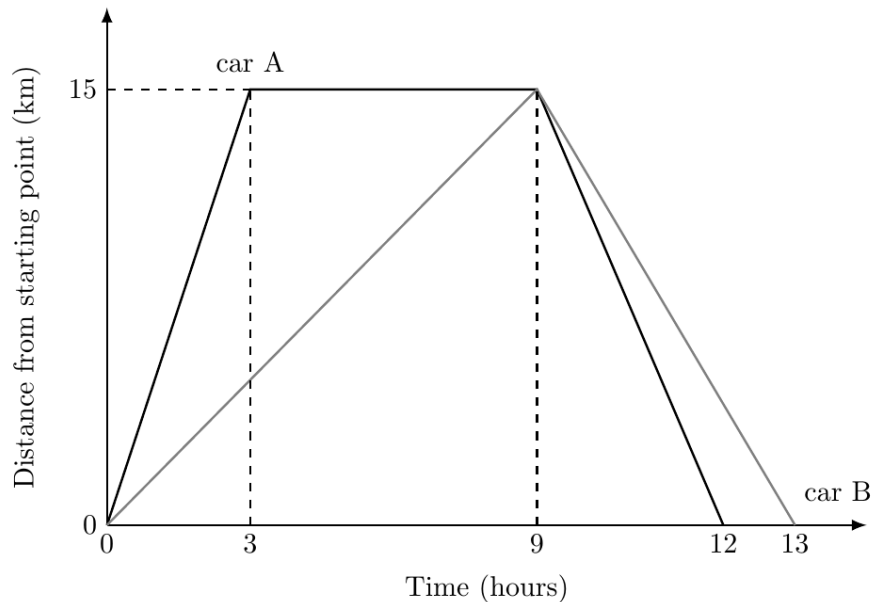
In questions where more than one mark is available, appropriate working **must** be shown.

Unless otherwise indicated, the diagrams in this book are **not** drawn to scale.

Question 1 (10 marks)

Car A and car B both depart from the same starting point at the same time to travel to an airport 15 km away.

The following graph shows how the cars travel.



a. How long does car A stay at the airport for?

1 mark

b. At what time are car A and car B both at the airport?

1 mark

c. Calculate the speed of car A, in km per hour, in the first 3 hours.

2 marks

Question 2 (10 marks)

The cost price of a frying pan is \$50, which is then marked up by 38% by a retailer.

The retailer then added an additional 10% as GST, making the final selling price of the frying pan \$ C .



Housemates Rebecca and Jill buy a frying pan together, and share the price in the ratio 6:4 respectively.

The weight of the frying pan is 1.25 kg.

a. Find the selling price of the frying pan before GST is added.

2 marks

b. Show that the value of C is \$75.90.

2 marks

c. Find the amount that Jill pays for the frying pan.

2 marks

d. What is the weight of the frying pan in grams?

1 mark

SOLUTIONS**SECTION A**

Question	Answer
1	C
2	A
3	C
4	B
5	D
6	B
7	C
8	D
9	B
10	C
11	A
12	B
13	C
14	C
15	D

Question 1

6 is the composite number.

Answer is **C**.

Question 2

2:5 is equivalent to 6:15.

Answer is **A**.

Question 3

$$\frac{2}{8} \times 100 = 25\%$$

Answer is **C**.

Question 3 (5 marks)**a.** 1 mark

$$\frac{n}{3} \text{ (A1)}$$

b. 1 mark

$$n - \frac{n}{3} = 22 \text{ (A1)}$$

• Also accept $\frac{n}{3} = n - 22$.

c. 3 marks

$$n - \frac{n}{3} = 22$$

$$\frac{2n}{3} = 22 \text{ (A1)}$$

$$n = 22 \times \frac{3}{2} \text{ (A1)}$$

$$= 33 \text{ (A1)}$$

• Also accept solving $\frac{n}{3} = n - 22$ instead.

Question 4 (5 marks)**a.** 2 marks

$$\text{Area} = 5 \times 4 - 2 \times \frac{1}{2} \times \pi \times 2^2 \text{ (A1)}$$

$$\approx 7.4 \text{ cm}^2 \text{ (A1)}$$

b. 3 marks

$$\text{Perimeter} = 2 \times \frac{1}{2} \times 2 \times \pi \times 2 + 5 \times 2 \text{ (A1)}$$

$$= 22.5663... \text{ cm (A1)}$$

$$\text{Cost} = 22.5663... \times 0.74$$

$$\approx \$16.70 \text{ (A1)}$$

SECTION C**Question 1** (10 marks)

- a.** 1 mark
6 hours (A1)
- b.** 1 mark
At 9 hours (A1)
- c.** 2 marks
Speed = $\frac{15}{3}$ (A1)
= 5 km per hour (A1)
- d.** 2 marks
Car A travels at a constant speed for the first 3 hours, and then it remains stationary for the subsequent 6 hours. (A1)
Car B travels at a constant speed. (A1)
- e.** 2 marks
Average speed = $\frac{30}{12}$ (A1)
= 2.5 km per hour (A1)
- f.** 1 mark
1 hour (A1)
- g.** 1 mark
The gradient/slope for car A is steeper than that for car B. (A1)