

## Week 7

### This week in a nutshell:

Questions 1, 2 and 3 are familiar topics which shouldn't require much revision before students are able to get started. Discussing common misconceptions around these topics is a powerful way to consolidate understanding. Questions 4 and 5 could require a review of facts and some examples before students are confident to work independently. Consider some paired work making posters of each angle fact to use as visual aids throughout the week.

**Question 1:** Simplifying ratio

**Question 2:** Powers and roots

**Question 3:** Fraction, decimal and percentage equivalence

**Question 4:** Angles in triangles

**Question 5:** Lines and angles

The questions aim to develop and deepen understanding over the week. Due to the necessity of the topics covered this week, there is an emphasis on the interchangeability of command words, and language flexibility. It may be worth taking some extra time this week to make sure your students are developing their mathematical literacy.

### This week's ideas for class discussion include:

#### Question 1: Simplifying ratio

- Discuss the similarities between simplifying fractions and simplifying ratio. Do you know how to use the fraction button on your calculator to check the answer to a simplifying ratio question?

#### Question 2: Powers and roots

- Calculate  $3^2$  and  $(-3)^2$ . Then think about the answer to  $\sqrt{9}$ . Also consider  $\sqrt{-9}$ .
- Calculate  $2^3$  and  $(-2)^3$ . Then think about the answer to  $\sqrt[3]{8}$ . Also consider  $\sqrt[3]{-8}$ .
- Discuss powers and roots as inverse operations and any implications from the findings above.

#### Question 3: Fraction, decimal and percentage equivalence

- The teacher says 0.47 is equivalent to 47%. Simon then writes the rule, "to change a decimal to a percentage just write the digits after the decimal place with a percentage sign". Write 3 examples of changing a decimal to a percentage where Simon's rule does not work.

#### Question 4: Angles in triangles

- A triangle has an angle of  $50^\circ$  and an angle of  $70^\circ$ . To find the third angle which calculation would you do? (a)  $180 - (50 + 70) = 60$  or (b)  $180 - 50 - 70 = 60$ . Discuss which method is more efficient.

#### Question 5: Lines and angles

- Draw pictures to represent each angle rule you know and ask a partner to guess what each one is.

## Week 7: Day 1

- 1) Simplify the ratio fully:

$$10 : 5$$

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- 2) Evaluate:

$$3^3 =$$

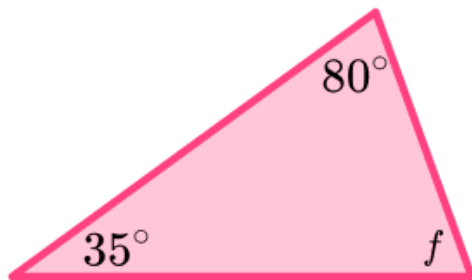
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- 3) Complete:  $\frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \boxed{0.7} = \boxed{\phantom{00}}\%$

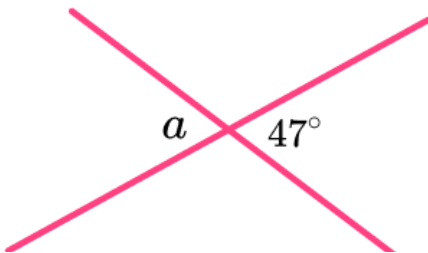
Fraction = Decimal = Percentage

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- 4) Calculate the size of angle  $f$ .



- 5) What is the size of angle  $a$ ? Give a reason for your answer.



## Week 7: Day 1 Answers

- 1) Simplify the ratio fully:

$$10 : 5 \quad 2 : 1$$

- 2) Evaluate:

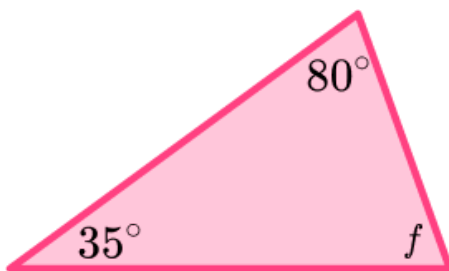
$$3^3 = 27$$

- 3) Complete:

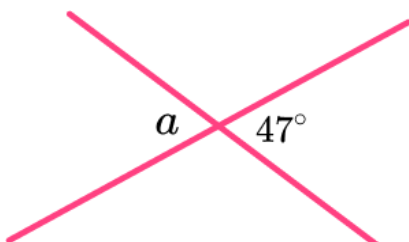
$$\frac{7}{10} = 0.7 = 70\%$$

Fraction = Decimal = Percentage

- 4) Calculate the size of angle  $f$ .  $65^\circ$



- 5) What is the size of angle  $a$ ? Give a reason for your answer.  $a = 47^\circ$



(vertically opposite angles are equal)

## Week 7: Day 2

- 1) Simplify the ratio fully:

$$21 : 35$$

- 2) Evaluate:

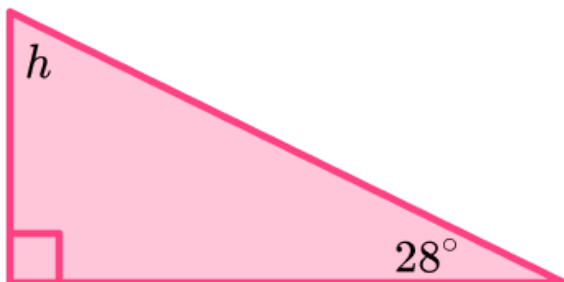
$$2^2 \times 10^4 =$$

- 3) Complete:

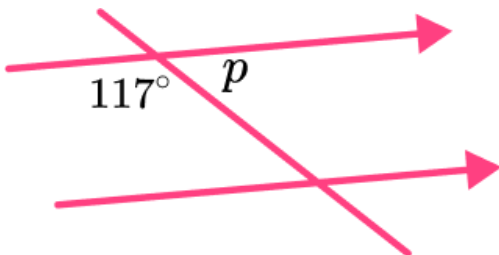
$$\frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \boxed{0.4} = \boxed{\phantom{00}}\%$$

Fraction = Decimal = Percentage

- 4) Calculate the size of angle  $h$ .



- 5) What is the size of angle  $p$ ? Give a reason for your answer.



## Week 7: Day 2 Answers

- 1) Simplify the ratio fully:

$$21 : 35 \quad 3 : 5$$

- 2) Evaluate:

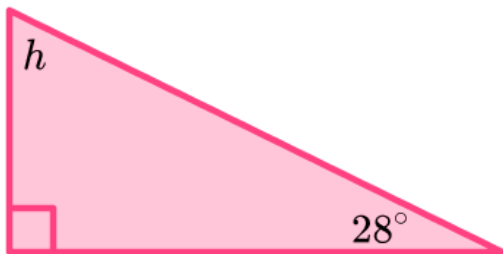
$$2^2 \times 10^4 = 40000$$

- 3) Complete:

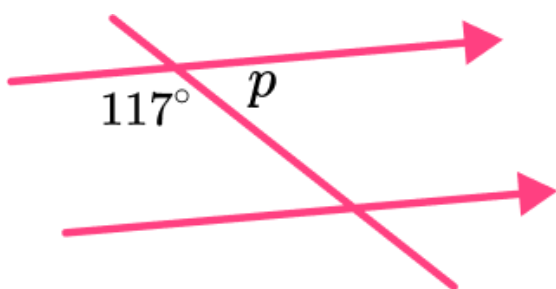
$$\frac{2}{5} = 0.4 = 40\%$$

Fraction = Decimal = Percentage

- 4) Calculate the size of angle  $h$ .  $62^\circ$



- 5) What is the size of angle  $p$ ? Give a reason for your answer.  $p = 63^\circ$



(Angles on a straight line sum to  $180^\circ$ )

## Week 7: Day 3

- 1) Simplify the ratio fully:

$$27 : 15 : 12$$

- 2) Evaluate:

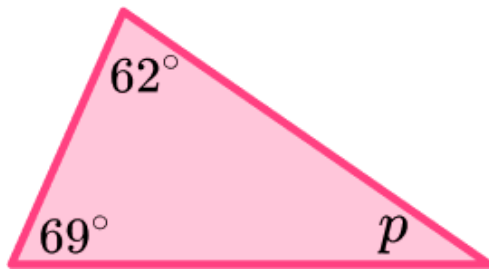
$$3^2 \times \sqrt{49} =$$

- 3) Complete:

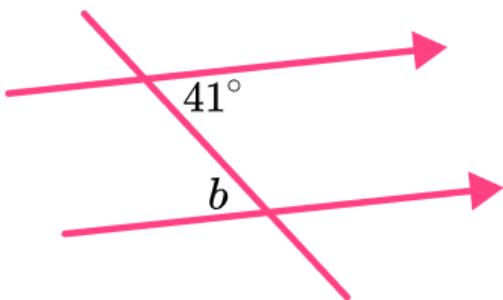
$$\frac{\boxed{1}}{\boxed{4}} = \boxed{\phantom{00}} = \boxed{\phantom{00}}\%$$

Fraction = Decimal = Percentage

- 4) Calculate the size of angle  $p$ .



- 5) What is the size of angle  $b$ ? Give a reason for your answer.



## Week 7: Day 3 Answers

- 1) Simplify the ratio fully:

$$27 : 15 : 12 \quad 9 : 5 : 4$$

- 2) Evaluate:

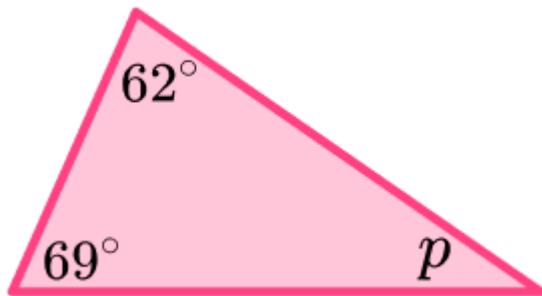
$$3^2 \times \sqrt{49} = 63$$

- 3) Complete:

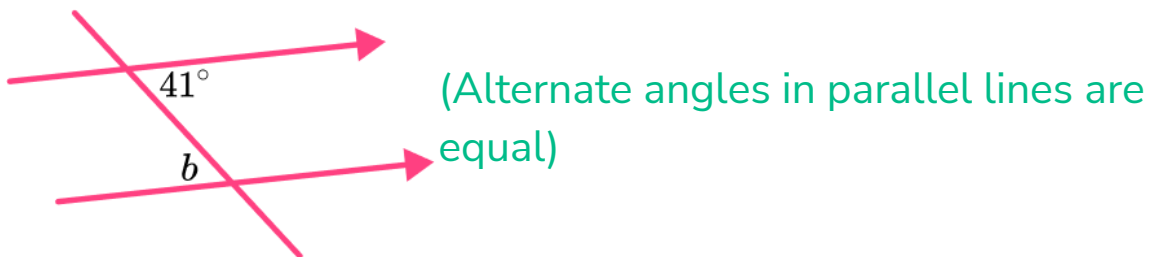
$$\frac{\boxed{1}}{\boxed{4}} = \boxed{0.25} = \boxed{25\%}$$

Fraction = Decimal = Percentage

- 4) Calculate the size of angle  $p$ .  $49^\circ$



- 5) What is the size of angle  $b$ ? Give a reason for your answer.  $b = 41^\circ$



## Week 7: Day 4

- 1) Simplify the ratio fully:

$$1.6 : 2.8$$

- 2) Evaluate:

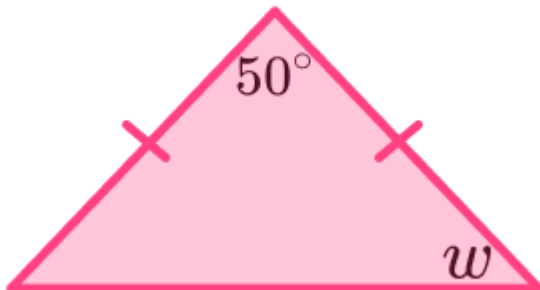
$$30 \div \sqrt[3]{125} =$$

- 3) Complete:

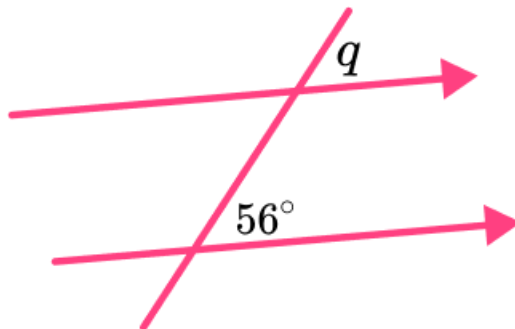
$$\frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \boxed{0.35} = \boxed{\phantom{00}}\%$$

Fraction = Decimal = Percentage

- 4) Calculate the size of angle  $w$ .



- 5) What is the size of angle  $q$ ? Give a reason for your answer.





## Week 7: Day 4 Answers

- 1) Simplify the ratio fully:

$$1.6 : 2.8 \quad 4 : 7$$

- 2) Evaluate:

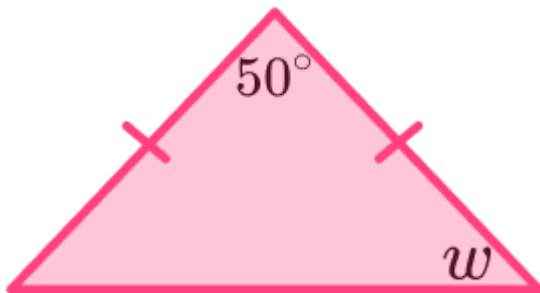
$$30 \div \sqrt[3]{125} = 6$$

- 3) Complete:

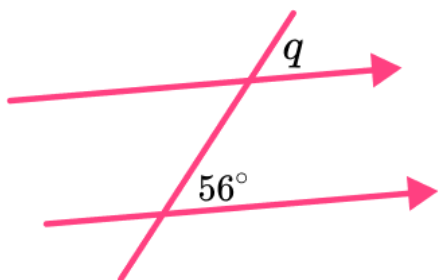
$$\frac{7}{20} = 0.35 = 35\%$$

Fraction = Decimal = Percentage

- 4) Calculate the size of angle  $w$ .  $65^\circ$



- 5) What is the size of angle  $q$ ? Give a reason for your answer.  $q = 56^\circ$



(Corresponding angles in parallel lines are equal)

## Week 7: Day 5

- 1) Simplify the ratio fully:

$$12 : 4.5$$

- 2) Evaluate:

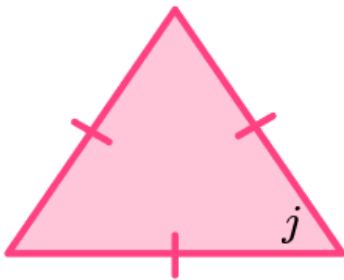
$$\sqrt{14400} =$$

- 3) Complete:

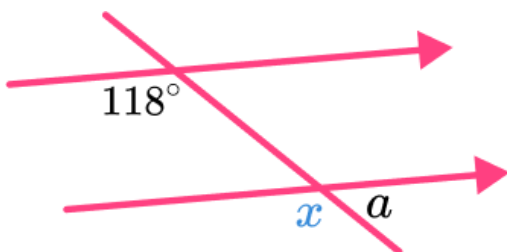
$$\frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \boxed{\phantom{00}} = \boxed{34\%}$$

Fraction = Decimal = Percentage

- 4) Calculate the size of angle  $j$ .



- 5) What is the size of angle  $a$ ? Give reasons for your answer.



## Week 7: Day 5 Answers

- 1) Simplify the ratio fully:

$12 : 4.5$

$8 : 3$

- 2) Evaluate:

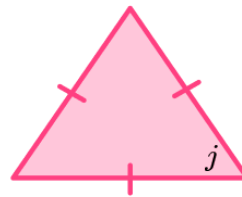
$\sqrt{14400} = 120$

- 3) Complete:

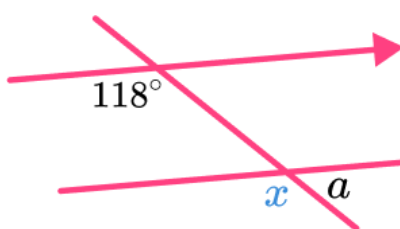
$$\frac{17}{50} = 0.34 = 34\%$$

Fraction = Decimal = Percentage

- 4) Calculate the size of angle  $j$ .  $60^\circ$



- 5) What is the size of angle  $a$ ? Give reasons for your answer.  $a = 62^\circ$



( $x = 118^\circ$  because corresponding angles in parallel lines are equal)  
( $a = 62^\circ$  because angles on a straight line sum to  $180^\circ$ )

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