

Week 1

This week in a nutshell:

Year 9 begins with familiar topics; aim for a confidence building start to the term. Early success will create a positive learning atmosphere for upcoming new material. Question 3 is not just designed to promote knowledge of square numbers and using the order of operations; the questions are here to help with the prerequisites for engaging with Pythagoras' Theorem.

Question 1: Simplifying ratio

Question 2: Place value

Question 3: Using square numbers

Question 4: Forming expressions

Question 5: Angles in triangles

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**

- What skills are necessary to simplify a ratio?

Question 2: **Place value**

- Discuss the uses of place value systems not based on 10.

Question 3: **Using square numbers**

- What applications of square numbers can you give?
- Are indices a necessity or a notation shortcut?

Question 4: **Forming expressions**

- How do you form an expression?
- What is the difference between forming an expression and forming an equation?

Question 5: **Angles in triangles**

- How and why can the rules for angles in triangles be extended to other polygons?

Week 1: Day 1

- 1) Write the ratio in its simplest terms:

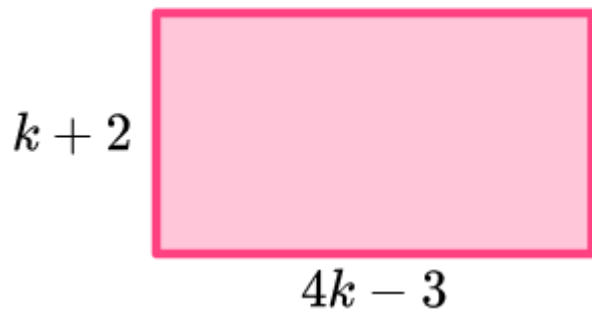
$$18 : 15$$

- 2) What is the place value of the 3 in 8239?
-

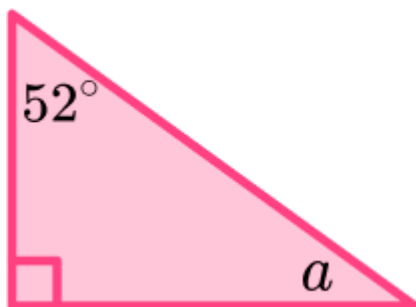
- 3) Calculate:

$$7^2 + 3^2 =$$

- 4) Find an expression for the perimeter of this rectangle.



- 5) Work out the size of angle a.



Week 1: Day 1 Answers

- 1) Write the ratio in its simplest terms:

$$18 : 15 \quad 6 : 5$$

- 2) What is the place value of the 3 in 8239?

30 (thirty)

- 3) Calculate:

$$\begin{aligned} 7^2 + 3^2 &= 49 + 9 \\ &= 58 \end{aligned}$$

- 4) Find an expression for the perimeter of this rectangle.

$$10k - 2$$

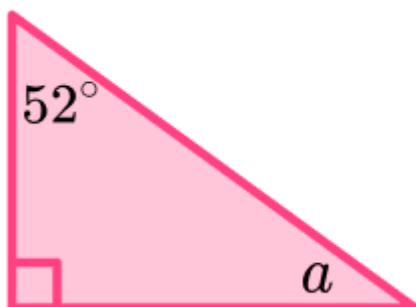
$$k + 2$$



$$4k - 3$$

- 5) Work out the size of angle a.

$$38^\circ$$



Week 1: Day 2

- 1) Write the ratio in its simplest terms:

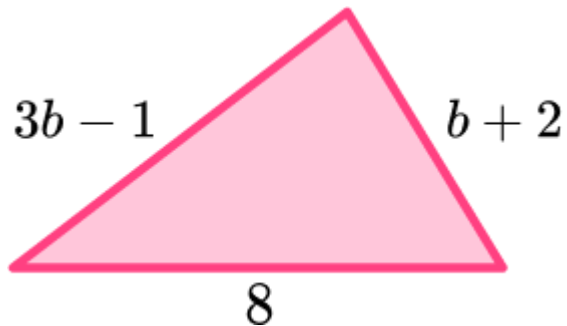
$$24 : 44$$

- 2) What is the place value of the 4 in 483?
-

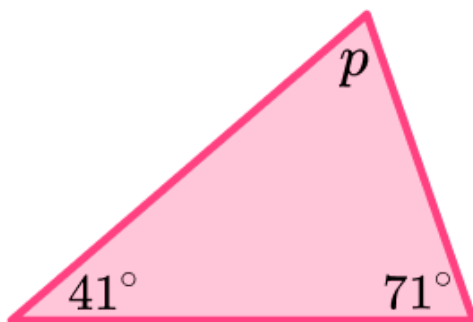
- 3) Calculate:

$$5^2 + 9^2 =$$

- 4) Find an expression for the perimeter of this triangle.



- 5) Work out the size of angle p .



Week 1: Day 2 Answers

- 1) Write the ratio in its simplest terms:

$$24 : 44 \quad 6 : 11$$

- 2) What is the place value of the 4 in 483?

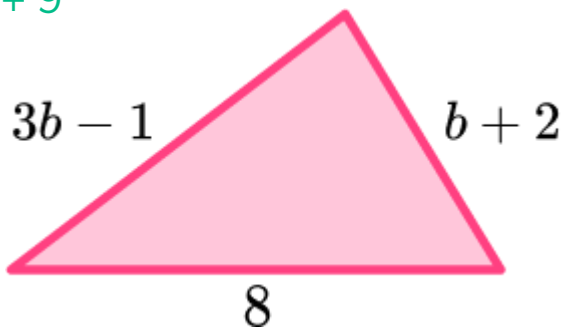
400 (four hundred)

- 3) Calculate:

$$\begin{aligned} 5^2 + 9^2 &= 25 + 81 \\ &= 106 \end{aligned}$$

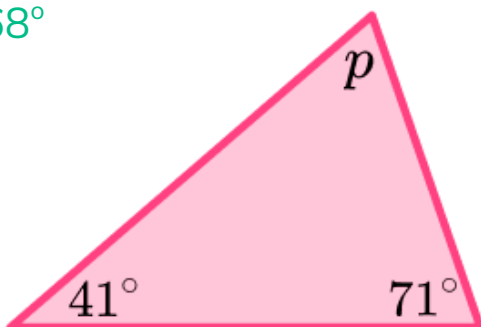
- 4) Find an expression for the perimeter of this triangle.

$$4b + 9$$



- 5) Work out the size of angle p .

$$68^\circ$$



Week 1: Day 3

- 1) Write the ratio in its simplest terms:

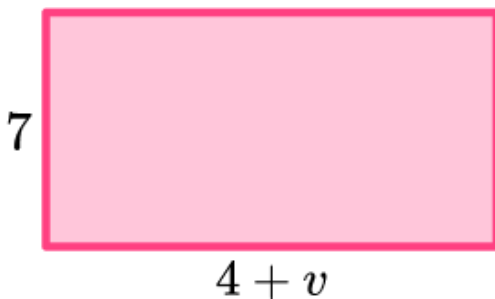
$$0.5 : 0.75$$

- 2) What is the place value of the 6 in 23.061?
-

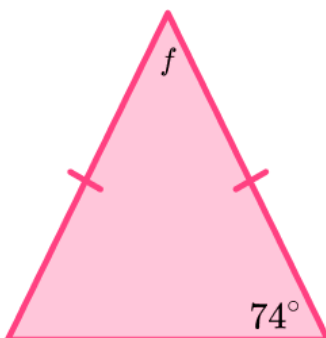
- 3) Calculate:

$$8^2 - 5^2 =$$

- 4) Find an expression for the area of this rectangle.



- 5) Work out the size of angle f .



Week 1: Day 3 Answers

- 1) Write the ratio in its simplest terms:

$$0.5 : 0.75 \quad 2 : 3$$

- 2) What is the place value of the 6 in 23.061?

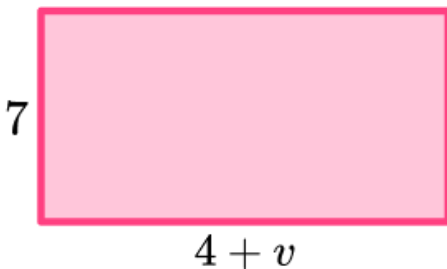
0.06 (six hundredths)

- 3) Calculate:

$$\begin{aligned} 8^2 - 5^2 &= 64 - 25 \\ &= 39 \end{aligned}$$

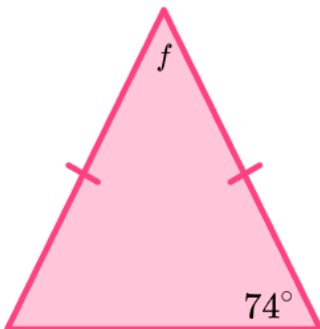
- 4) Find an expression for the area of this rectangle.

$$7(4 + v) \quad \text{or} \quad 28 + 7v$$



- 5) Work out the size of angle f .

$$32^\circ$$



Week 1: Day 4

- 1) Write the ratio in its simplest terms:

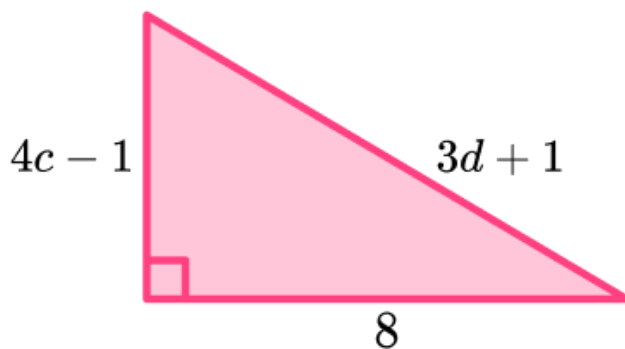
$$\frac{4}{5} : \frac{5}{8}$$

- 2) What is the place value of the 2 in 9.38267?

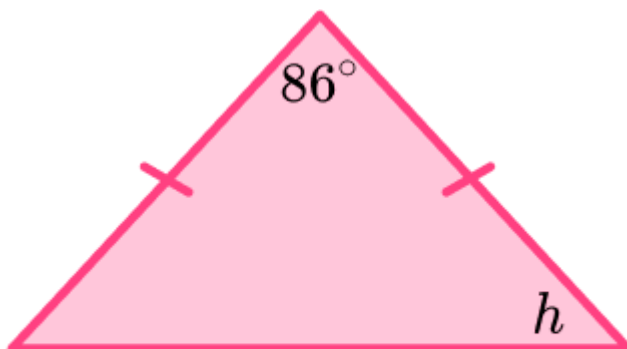
- 3) Calculate:

$$5^2 + 10^2 + 11^2 =$$

- 4) Find an expression for the area of this triangle.



- 5) Work out the size of angle h .



Week 1: Day 4 Answers

- 1) Write the ratio in its simplest terms:

$$\frac{4}{5} : \frac{5}{8} \quad 32 : 25$$

- 2) What is the place value of the 2 in 9.38267?

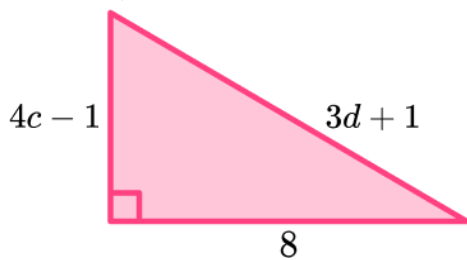
0.002 (two thousandths)

- 3) Calculate:

$$5^2 + 10^2 + 11^2 = 25 + 100 + 121 \\ = 246$$

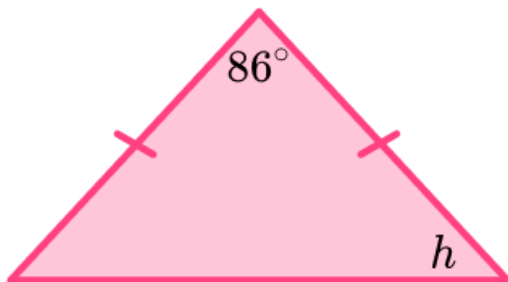
- 4) Find an expression for the area of this triangle.

$$4(4c - 1) \quad \text{or} \quad 16c - 4$$



- 5) Work out the size of angle h .

47°



Week 1: Day 5

- 1) Write the ratio in its simplest terms:

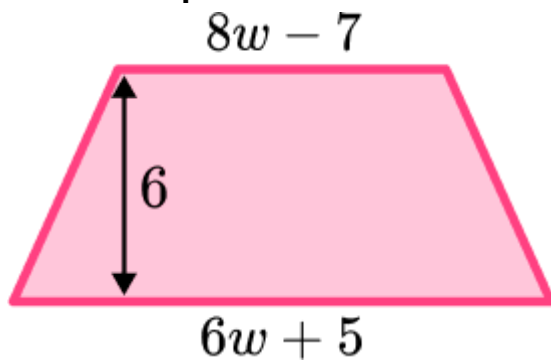
$$27 : 18 : 54$$

- 2) What is the place value of the 7 in 57298?

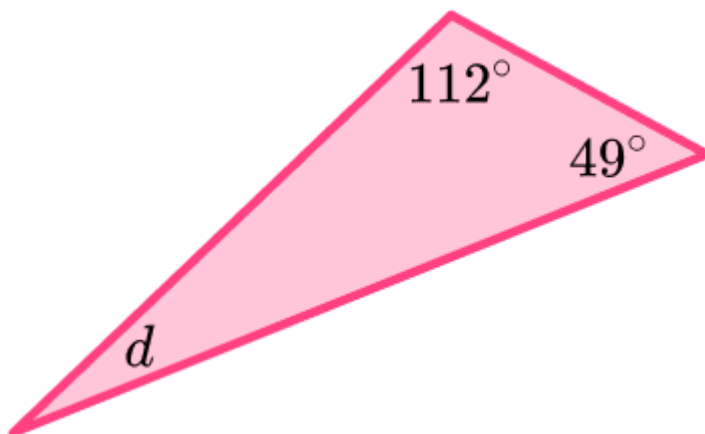
- 3) Calculate:

$$12^2 - 4^2 =$$

- 4) Find an expression for the area of this trapezium.



- 5) Work out the size of angle d .



Week 1: Day 5 Answers

- 1) Write the ratio in its simplest terms:

$$27 : 18 : 54 \quad 3 : 2 : 6$$

- 2) What is the place value of the 7 in 57298?

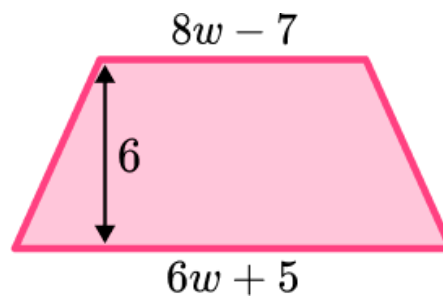
7000 (seven thousand)

- 3) Calculate:

$$12^2 - 4^2 = 144 - 16 \\ = 128$$

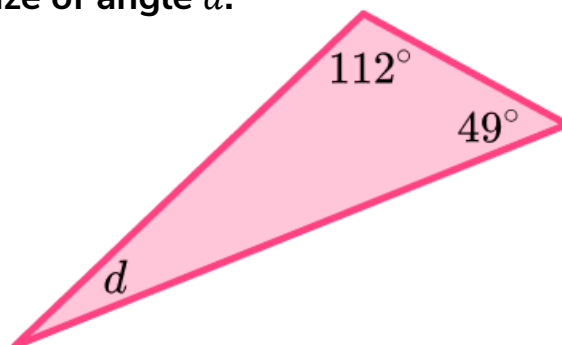
- 4) Find an expression for the area of this trapezium.

$$\frac{1}{2}(14w - 2) \times 6 \quad \text{or} \\ 3(14w - 2) \quad \text{or} \quad 42w - 6$$



- 5) Work out the size of angle d .

19°



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