

Week 4

This week in a nutshell:

Once again, this week's questions have been designed in such a way that calculators should not need to be used. As before, amendments that some students may require should not be disregarded, however handwritten methods should be encouraged with students being reminded that one of their GCSE papers is solely non-calculator.

Question 1: Arithmetic progressions

Question 2: Factorising

Question 3: Correcting standard form

Question 4: Writing expressions for area and perimeter

Question 5: Statistical diagrams

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: Arithmetic progressions

- Why do you think these sequences are called arithmetic?
- What word would you use if arithmetic were to be changed? Why?

Question 2: Factorising

- What is the difference between factorising and fully factorising? Can you give an example?

Question 3: Correcting standard form

- Why does standard form have to be written a certain way?

Question 4: Writing expressions for area and perimeter

- *reflect on previous learning*

Question 5: Statistical diagrams

- Which statistical diagrams have you seen used in the last week?
- How were these diagrams used?
- What type of information were they presenting?

Week 4: Day 1

- 1) Find the missing term in the arithmetic progression:

3, 10, 17, ____, ____, ...

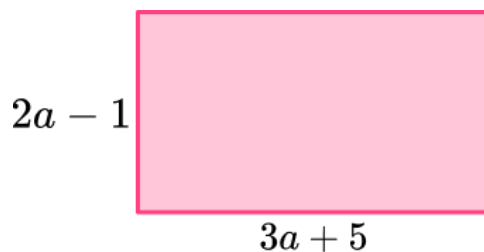
- 2) Fully factorise:

$$6x + 9$$

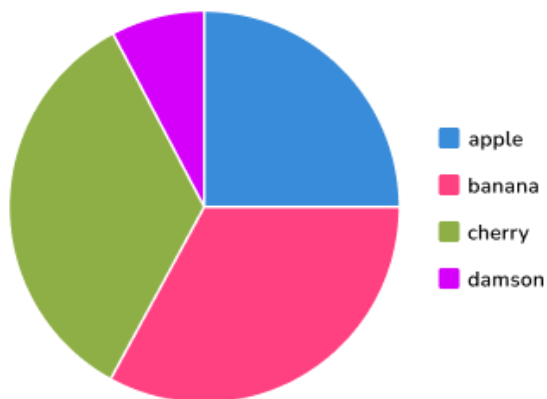
- 3) Write in standard form:

$$11.2 \times 10^2 =$$

- 4) Write an expression for the perimeter of the rectangle:



- 5) In a survey, 36 people were asked about their favourite fruit. How many chose apple?



Week 4: Day 1 Answers

- 1) Find the missing term in the arithmetic progression:

3, 10, 17, 24, 31, ...

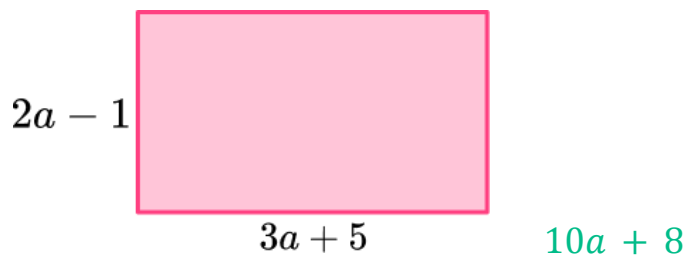
- 2) Fully factorise:

$$6x + 9 = 3(2x + 3)$$

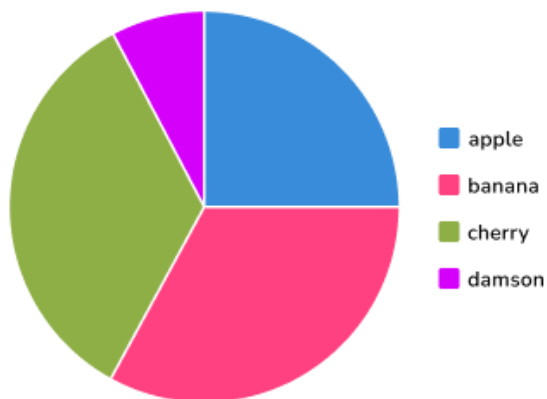
- 3) Write in standard form:

$$11.2 \times 10^2 = 1.12 \times 10^3$$

- 4) Write an expression for the perimeter of the rectangle:



- 5) In a survey, 36 people were asked about their favourite fruit. How many chose apple?



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Week 4: Day 2

- 1) Find the missing term in the arithmetic progression:

11, 7, 3, ____, ____, ...

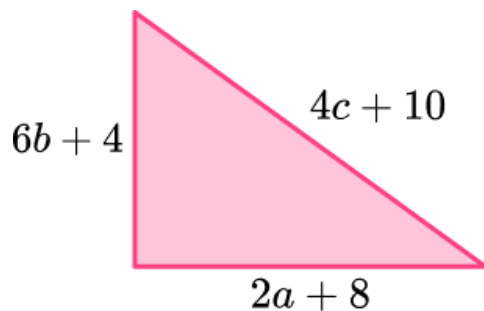
- 2) Fully factorise:

$8y - 20$

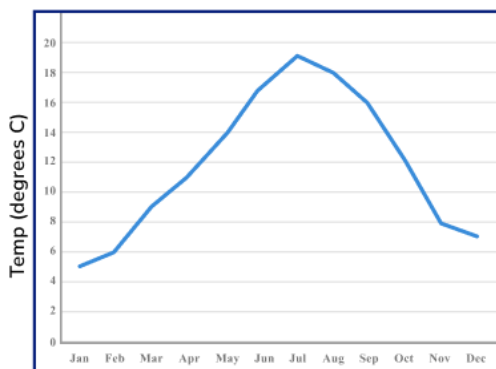
- 3) Write in standard form:

$392 \times 10^4 =$

- 4) Write an expression in the simplest form for the area of the triangle:



- 5) The diagram shows the average daily temperature in Penridge. What was the average daily temperature in May?



Week 4: Day 2 Answers

- 1) Find the missing term in the arithmetic progression:

11, 7, 3, -1, -5, ...

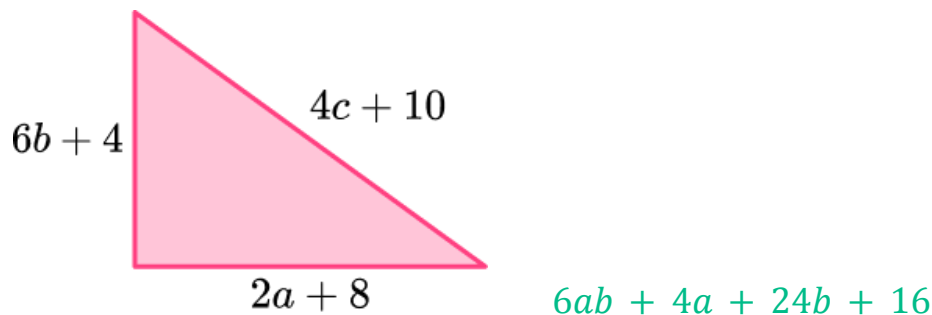
- 2) Fully factorise:

$$8y - 20 = 4(2y - 5)$$

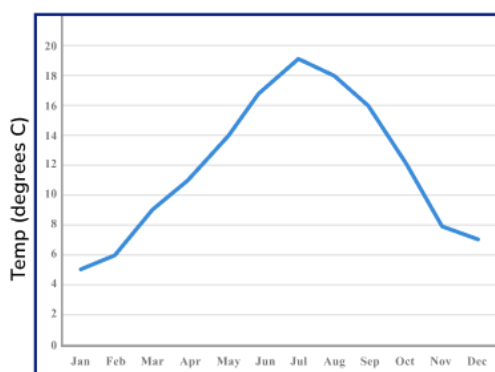
- 3) Write in standard form:

$$392 \times 10^4 = 3.92 \times 10^6$$

- 4) Write an expression in the simplest form for the area of the triangle:



- 5) The diagram shows the average daily temperature in Penridge. What was the average daily temperature in May?



14°C

Week 4: Day 3

- 1) Find the missing term in the arithmetic progression:

$$2, _, _, 29, 38, \dots$$

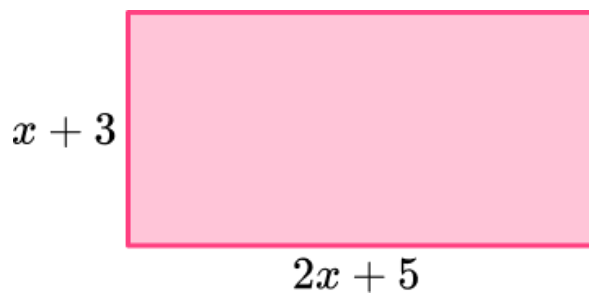
- 2) Fully factorise:

$$2mp + 6np$$

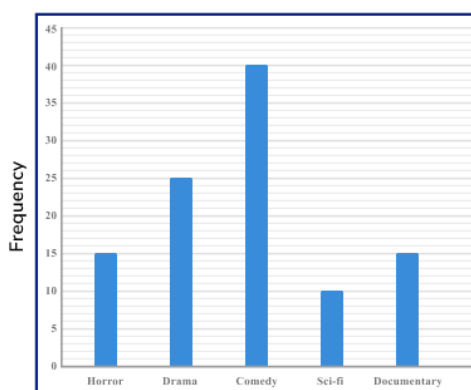
- 3) Write in standard form:

$$0.0051 \times 10^3 =$$

- 4) Write an expression, in the form $ax^2 + bx + c$, for the area of the rectangle:



- 5) Of those surveyed, how many more preferred comedy films compared to horror?



Week 4: Day 3 Answer

- 1) Find the missing term in the arithmetic progression:

2, 11, 20, 29, 38, ...

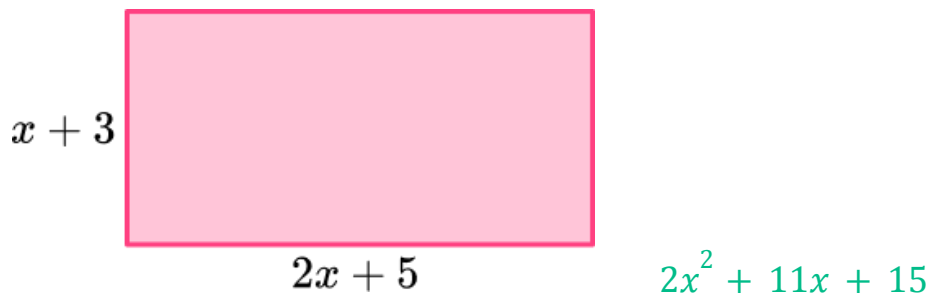
- 2) Fully factorise:

$$2mp + 6np = 2p(m + 3n)$$

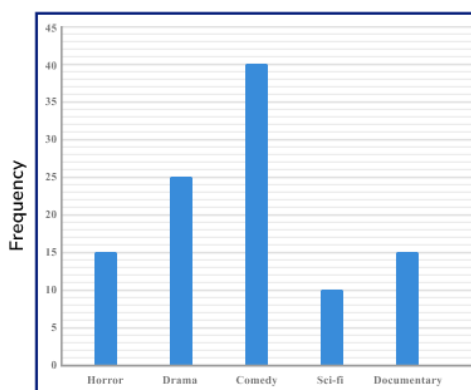
- 3) Write in standard form:

$$0.0051 \times 10^3 = 5.1 \times 10^0$$

- 4) Write an expression, in the form $ax^2 + bx + c$, for the area of the rectangle:



- 5) Of those surveyed, how many more preferred comedy films compared to horror?



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Week 4: Day 4

- 1) Find the missing term in the arithmetic progression:

$$8, _, 20, _, 32, \dots$$

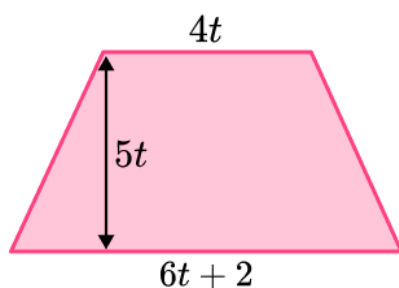
- 2) Fully factorise:

$$3x + 12y + 6z$$

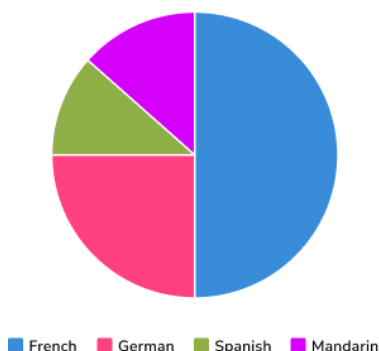
- 3) Write in standard form:

$$2003 \times 10 =$$

- 4) Write an expression for the area of the trapezium in the simplest form:



- 5) In Year 10 each student chooses one language to study. Given that 23 students chose Mandarin, how many students are in Year 10?



Week 4: Day 4 Answers

- 1) Find the missing term in the arithmetic progression:

8, 14, 20, 26, 32, ...

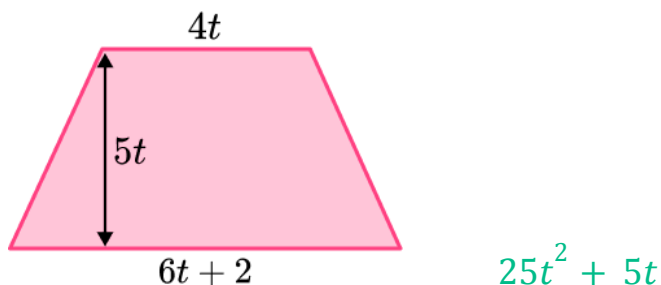
- 2) Fully factorise:

$$3x + 12y + 6z = 3(x + 4y + 2z)$$

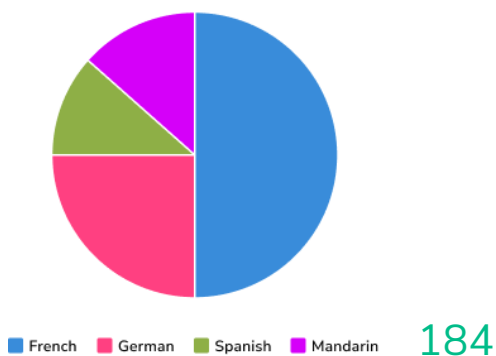
- 3) Write in standard form:

$$2003 \times 10 = 2.003 \times 10^4$$

- 4) Write an expression for the area of the trapezium in the simplest form:



- 5) In Year 10 each student chooses one language to study. Given that 23 students chose Mandarin, how many students are in Year 10?



Week 4: Day 5

- 1) Find the missing term in the arithmetic progression:

____, ____, 1.5, 2.25, 3, ...

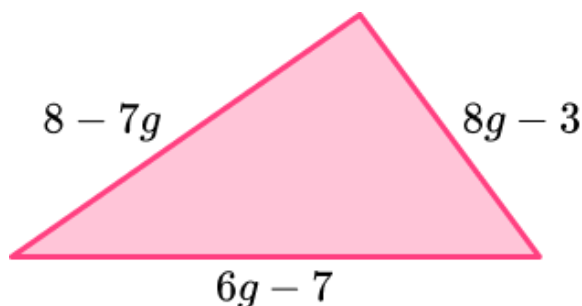
- 2) Fully factorise:

$$8x + 2xy - 10x^2$$

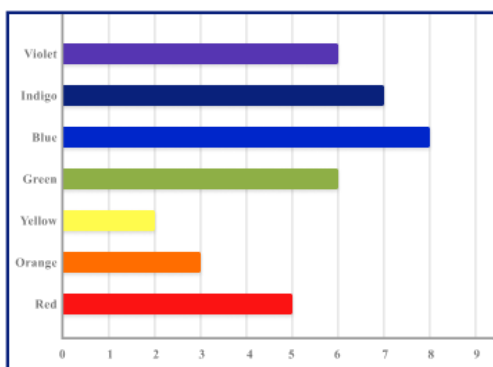
- 3) Write in standard form:

$$0.46 \times 10^5 =$$

- 4) Write an expression for the perimeter of the triangle:



- 5) From a survey on favourite colour from the rainbow, which colour was the mode?



Week 4: Day 5 Answers

- 1) Find the missing term in the arithmetic progression:

0, 0.75, 1.5, 2.25, 3, ...

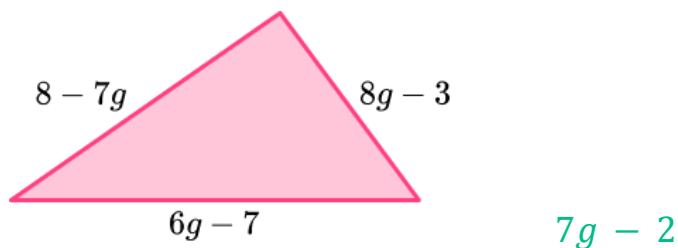
- 2) Fully factorise:

$$8x + 2xy - 10x^2 = 2x(4 + y - 5x)$$

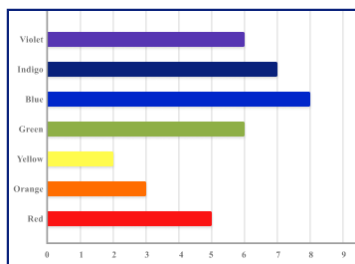
- 3) Write in standard form:

$$0.46 \times 10^5 = 4.6 \times 10^4$$

- 4) Write an expression for the perimeter of the triangle:



- 5) From a survey on favourite colour from the rainbow, which colour was the mode?



Blue

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