

## Week 7

### This week in a nutshell:

The only new skill this week is finding the  $n$ th term, so students can attempt this alongside topics that they are already familiar with. The topics here are high frequency in terms of usage throughout GCSE Maths, so developing and maintaining confidence will help students going forward.

**Question 1:** Collecting like terms

**Question 2:** Writing fractions as decimals

**Question 3:** Finding the  $n$ th term

**Question 4:** Plotting coordinates

**Question 5:** Multiplicative reasoning

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: **Collecting like terms**

- Why can we add " $x$  and  $x$ " but not " $x$  and  $xy$ "?

Question 2: **Writing fractions as decimals**

- Is there more than one way of converting a fraction to a decimal?
- Can all fractions be written as decimals?

Question 3: **Finding the  $n$ th term**

- Why is it called the  $n^{\text{th}}$  term?

Question 4: **Plotting coordinates**

- How has your efficiency grown when plotting coordinates? Why is this?

Question 5: **Multiplicative reasoning**

- Describe your method for this working with this type of problem.

## Week 7: Day 1

- 1) Simplify by collecting like terms:

$$3b + b - 2b$$

- 2) Express this fraction as a decimal:

$$\frac{1}{2} =$$

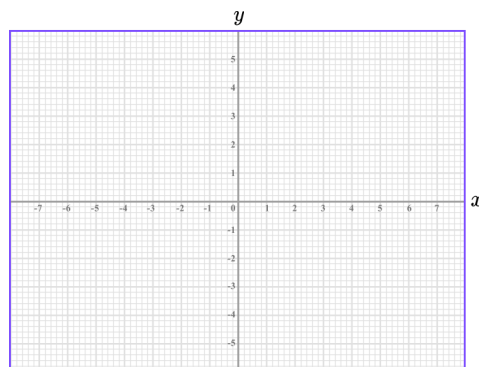
- 3 Find a rule for the  $n^{\text{th}}$  term:

$$2, 4, 6, 8, \dots$$

- 4) Plot and label:

A (3, 1)

B (-4, -2)



- 5) The cost to buy 5 bottles of water is £4.00.

How much does it cost to buy 3 bottles of water?

## Week 7: Day 1 Answers

- 1) Simplify by collecting like terms:

$$3b + b - 2b = 2b$$

- 2) Express this fraction as a decimal:

$$\frac{1}{2} = 0.5$$

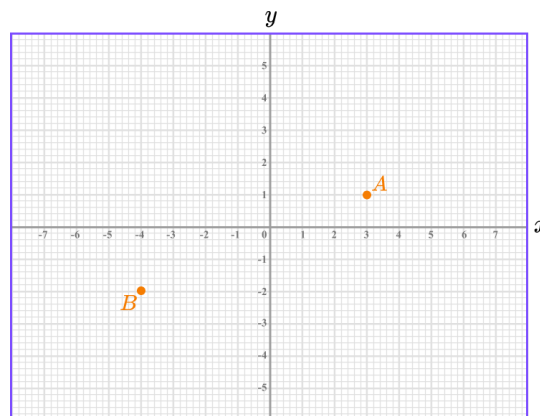
- 3 Find a rule for the  $n^{\text{th}}$  term:

$$2, 4, 6, 8, \dots \quad 2n$$

- 4) Plot and label:

A (3, 1)

B (-4, -2)



- 5) The cost to buy 5 bottles of water is £4.00.

How much does it cost to buy 3 bottles of water?

One bottle is £0.80

Three bottles cost £2.40

## Week 7: Day 2

- 1) Simplify by collecting like terms:

$$5x + 2y - x + 2y$$

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- 2) Express this fraction as a decimal:

$$\frac{2}{5} =$$

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- 3 Find a rule for the  $n^{\text{th}}$  term:

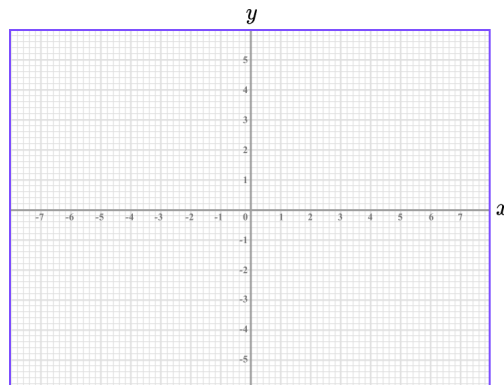
$$2, 5, 8, 11, 14, \dots$$

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- 4) Plot and label:

A (0, 4)

B (5, -3)



- 5) The exchange rate at a travel shop is \$1.52 per £ Sterling.

How much would you have in dollars and cents if you exchanged £60?

## Week 7: Day 2 Answers

- 1) Simplify by collecting like terms:

$$5x + 2y - x + 2y = 4x + 4y$$

- 2) Express this fraction as a decimal:

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

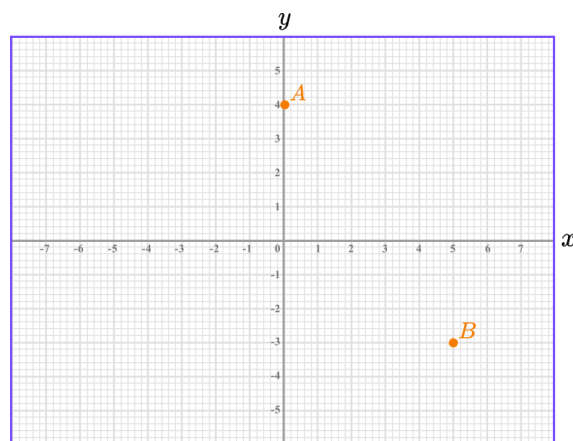
- 3 Find a rule for the  $n^{\text{th}}$  term:

$$2, 5, 8, 11, 14, \dots \quad 3n - 1$$

- 4) Plot and label:

A (0, 4)

B (5, -3)



- 5) The exchange rate at a travel shop is \$1.52 per £ Sterling.

How much would you have in dollars and cents if you exchanged £60?

\$91.20

## Week 7: Day 3

- 1) Simplify by collecting like terms:

$$7 + 2m + 3 - 7m$$

- 2) Express this fraction as a decimal:

$$\frac{7}{8} =$$

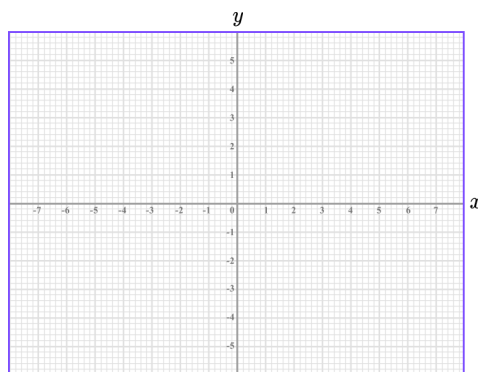
- 3) Find a rule for the  $n^{\text{th}}$  term:

$$24, 17, 10, 3, \dots$$

- 4) Plot and label:

A (3.5, 2.5)

B (-6, 0)



- 5) Packets of blue pens cost £1.20.

How many packets of blue pens can be bought with £20?

How much money would be left?

## Week 7: Day 3 Answers

- 1) Simplify by collecting like terms:

$$7 + 2m + 3 - 7m = 10 - 5m$$

- 2) Express this fraction as a decimal:

$$\frac{7}{8} = 0.875$$

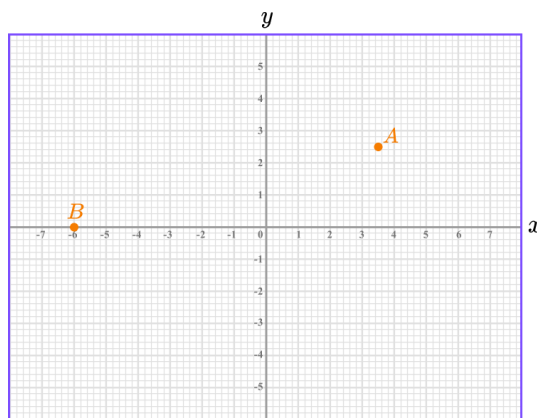
- 3) Find a rule for the  $n^{\text{th}}$  term:

$$24, 17, 10, 3, \dots \quad 31 - 7n$$

- 4) Plot and label:

A (3.5, 2.5)

B (-6, 0)



- 5) Packets of blue pens cost £1.20.

How many packets of blue pens can be bought with £20? 16

How much money would be left? 80p

## Week 7: Day 4

- 1) Simplify by collecting like terms:

$$7x + 9 - 9x - 9$$

- 2) Express this fraction as a decimal:

$$\frac{110}{200} =$$

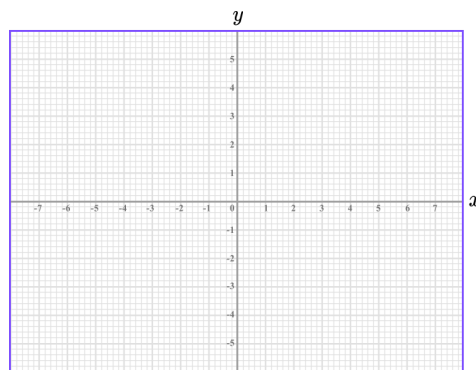
- 3) Find a rule for the  $n^{\text{th}}$  term:

$$1, 6, 11, 16, \dots$$

- 4) Plot and label:

A (-1, 1)

B (1, -1)



- 5) So far, 94 people have signed up as members for the seven-a-side league.

How many teams of seven can be formed out of the current number of members?



## Week 7: Day 4 Answers

- 1) Simplify by collecting like terms:

$$7x + 9 - 9x - 9 = -2x$$

- 2) Express this fraction as a decimal:

$$\frac{110}{200} = 0.55$$

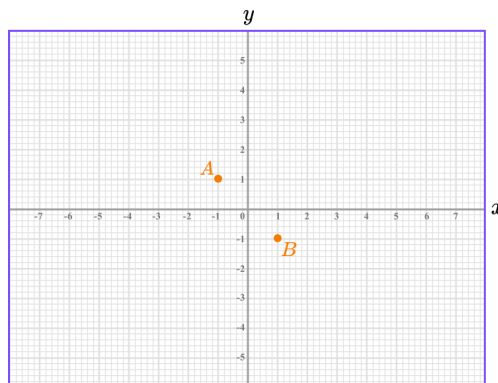
- 3) Find a rule for the  $n^{\text{th}}$  term:

$$1, 6, 11, 16, \dots \quad 5n - 4$$

- 4) Plot and label:

A (-1, 1)

B (1, -1)



- 5) So far, 94 people have signed up as members for the seven-a-side league.

How many teams of seven can be formed out of the current number of members?

13 teams of seven, with 3 people left to find team-mates

## Week 7: Day 5

- 1) Simplify by collecting like terms:

$$6y - 2y - y - 3y$$

- 2) Express this fraction as a decimal:

$$\frac{225}{400} =$$

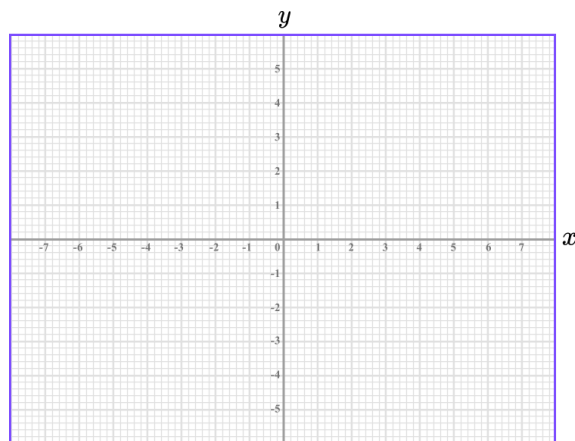
- 3) Find a rule for the  $n^{\text{th}}$  term:

$$3, 3.75, 4.5, 5.25, \dots$$

- 4) Plot and label:

A (-3, 1)

B (0, -3)



- 5) The cost to buy 25 textbooks is £425.

How much would it cost to buy 36 textbooks?

## Week 7: Day 5 Answers

- 1) Simplify by collecting like terms:

$$6y - 2y - y - 3y = 0$$

- 2) Express this fraction as a decimal:

$$\frac{225}{400} = 0.5625$$

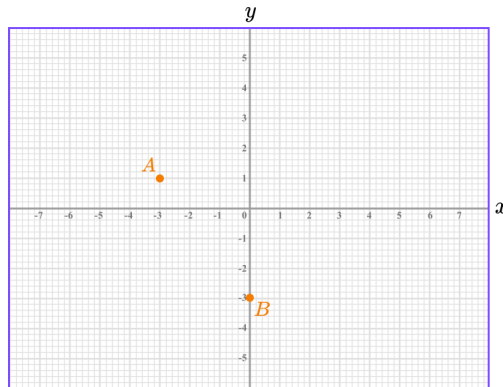
- 3) Find a rule for the  $n^{\text{th}}$  term:

$$3, 3.75, 4.5, 5.25, \dots \quad 0.75n + 2.25$$

- 4) Plot and label:

A (-3, 1)

B (0, -3)



- 5) The cost to buy 25 textbooks is £425.

How much would it cost to buy 36 textbooks?

One textbook costs £17, so 36 textbooks will cost £612

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