

Week 10

This week in a nutshell:

This week has familiar topics in question 1, 2 and 5, along with algebraic reasoning for questions 3 and 4. Again, fluency and conceptual understanding should be emphasised over speed of answer, so if students need extra time/support this should be allowed.

Question 1: Term to term rules

Question 2: Mixed numbers and improper fractions

Question 3: Linear equations (two steps)

Question 4: Coordinates and lines

Question 5: Sharing amounts in a given ratio

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: **Term to term rules**

- How has your confidence changed with this topic so far this year?

Question 2: **Mixed numbers and improper fractions**

- When might improper fractions be more useful than mixed numbers?

Question 3: **Linear equations (two steps)**

- Does the order of the steps matter?
- Can equations be solved in more than one way?

Question 4: **Coordinates and lines**

- Is a line a collection of points?
- What is the difference between a line and a line segment?

Question 5: **Sharing amounts in a given ratio**

- Why are ratios useful when quantities are not divided equally?

Week 10: Day 1

- 1) **State the term-to-term rule:**

7, 13, 19, 25, 31, ...

- 2) **Write as a mixed number:**

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

- 3 **Solve for x**

$$2x + 7 = 21$$

- 4) **Giving a reason, decide if the line with equation**

$$y = 2x + 1$$

passes through the point with coordinates (2, 5).

- 5) **Two friends are going to share 24 toffees in the ratio 1:3.**

Vic receives the largest amount. How many toffees does Vic receive?

Week 10: Day 1 Answers

- 1) State the term-to-term rule:

7, 13, 19, 25, 31, ... Add 6

- 2) Write as a mixed number:

$$\frac{5}{2} = 2\frac{1}{2}$$

- 3 Solve for x

$$2x + 7 = 21$$

$$x = 7$$

- 4) Giving a reason, decide if the line with equation

$$y = 2x + 1$$

passes through the point with coordinates (2, 5).

Yes, because $5 = 2 \times 2 + 1$

- 5) Two friends are going to share 24 toffees in the ratio 1:3.

Vic receives the largest amount. How many toffees does Vic receive?

18 toffees

Week 10: Day 2

- 1) **State the term-to-term rule:**

$$2, 1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \dots$$

- 2) **Write as a mixed number:**

$$\frac{11}{3}$$

- 3) **Solve for x**

$$3x - 8 = 19$$

- 4) **Giving a reason, decide if the line with equation**

$$y = 3x - 1$$

passes through the point with coordinates $(-1, -5)$.

- 5) **Two friends are going to share £45 in the ratio 3:7.**

What is the difference, in pounds, between the smaller and larger amounts?

Week 10: Day 2 Answers

- 1) State the term-to-term rule:

$$2, 1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \dots \quad \div 2$$

- 2) Write as a mixed number:

$$\frac{11}{3} = 3\frac{2}{3} \quad 3\frac{2}{3}$$

- 3) Solve for x

$$3x - 8 = 19 \quad x = 9$$

- 4) Giving a reason, decide if the line with equation

$$y = 3x - 1$$

passes through the point with coordinates (-1, -5).

No, because $3 \times (-1) - 1 = -4$, not (-5)

- 5) Two friends are going to share £45 in the ratio 3:7.

What is the difference, in pounds, between the smaller and larger amounts?

$$£31.50 - £13.50 = £18$$

Week 10: Day 3

- 1) **State the term-to-term rule:**

1, -6, -13, -20, -27, ...

- 2) **Write as an improper fraction**

$$4\frac{2}{3} =$$

- 3) **Solve for x**

$$5 + 7x = 19$$

- 4) **Giving a reason, decide if the line with equation**

$$x + y = 5$$

passes through the point with coordinates
(-1, 6).

- 5) **Two friends are going to share £72 in the ratio 3:5.**

What is the difference, in pounds, between the smaller and larger amounts?

Week 10: Day 3 Answers

- 1) State the term-to-term rule:

1, -6, -13, -20, -27, ... Subtract 7

- 2) Write as an improper fraction

$$4\frac{2}{3} = \frac{14}{3}$$

- 3) Solve for x

$$5 + 7x = 19 \quad x = 2$$

- 4) Giving a reason, decide if the line with equation

$$x + y = 5$$

passes through the point with coordinates $(-1, 6)$.

Yes, because $(-1) + (6) = 5$

- 5) Two friends are going to share £72 in the ratio 3:5.

What is the difference, in pounds, between the smaller and larger amounts?

$$45 - 27 = 18$$

Week 10: Day 4

- 1) **State the term-to-term rule:**

-7, -2, 3, 8, 13, ...

- 2) **Write as an improper fraction:**

$$2\frac{3}{4} =$$

- 3) **Solve for x**

$$\frac{x}{4} + 3 = 8$$

- 4) **Giving a reason, decide if the line with equation**

$$x + y - 7 = 0$$

passes through the point with coordinates
(4, 4).

- 5) **Three friends are going to share £161 in the ratio 1:2:4.**

Tami receives the largest amount. How much does Tami receive?

Week 10: Day 4 Answers

- 1) State the term-to-term rule:

-7, -2, 3, 8, 13, ... Add 5

- 2) Write as an improper fraction:

$$2\frac{3}{4} = \frac{11}{4}$$

- 3) Solve for x

$$\frac{x}{4} + 3 = 8 \quad x = 20$$

- 4) Giving a reason, decide if the line with equation

$$x + y - 7 = 0$$

passes through the point with coordinates (4, 4).

No, because $(4) + (4) - 7 = 1$

- 5) Three friends are going to share £161 in the ratio 1:2:4.

Tami receives the largest amount. How much does Tami receive?

£92

Week 10: Day 5

- 1) **State the term-to-term rule:**

243, 81, 27, 9, 3, ...

- 2) **Write as a mixed number:**

$$\frac{22}{5} =$$

- 3) **Solve for x**

$$23 - x = 17$$

- 4) **Giving a reason, decide if the line with equation**

$$y = 3 - 2x$$

passes through the point with coordinates
(-3, -9).

- 5) **Three friends are going to share £1360 in the ratio 2:3:5.**

Kai receives the smallest amount. How much does Kai receive?

Week 10: Day 5 Answers

- 1) State the term-to-term rule:

243, 81, 27, 9, 3, ... Divide by 3

- 2) Write as a mixed number:

$$\frac{22}{5} = 4\frac{2}{5}$$

- 3) Solve for x

$$23 - x = 17 \quad x = 6$$

- 4) Giving a reason, decide if the line with equation

$$y = 3 - 2x$$

passes through the point with coordinates
(-3, -9).

No, because $3 - 2 \times (-3) = 9$, not (-9)

- 5) Three friends are going to share £1360 in the ratio 2:3:5.

Kai receives the smallest amount. How much does Kai receive?

£272

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