

Week 4

This week in a nutshell:

Questions 1 & 5 aim to begin developing fluency in sequences, which will continue throughout the term. Questions 2 & 4 revisit skills dealt with in Year 7. For the questions on estimating calculations, solutions are given after rounding to one significant figure. You may wish to talk about whether estimating in this way results in an over or under estimate and what impact this could have on any practical applications.

Question 1: Term to term rules

Question 2: Expanding brackets

Question 3: Estimating calculations

Question 4: Adding and subtracting fractions

Question 5: Continuing sequences

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 can you work out the term-to-term rule?
- Is a term-to-term rule the only way of defining a sequence?

Question 2: **Expanding brackets**

- What do we mean by "expanding brackets"?

Question 3: **Estimating calculations**

- When do we estimate?

Question 4: **Adding and subtracting fractions**

- How do visuals help when working with fractions?

Question 5: **Continuing sequences**

- Maths is about spotting patterns. Discuss!

Week 4: Day 1

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

3, 6, 9, 12, 15, ...

2) **Expand:**

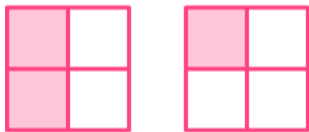
$$7(x + 3) =$$

3) **Estimate:**

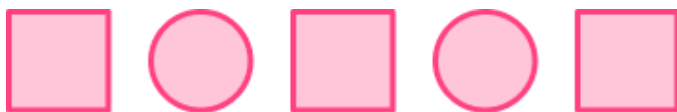
$$3.4 \times 6.93$$

4) **Add the fractions.**
(a diagram is provided as a reminder)

$$\frac{1}{2} + \frac{1}{4} = \frac{\boxed{}}{\boxed{}}$$



5) **Draw the next shape in the sequence:**



Week 4: Day 1 Answers

- 1) State the term to term rule:

3, 6, 9, 12, 15, ... Add 3

- 2) Expand:

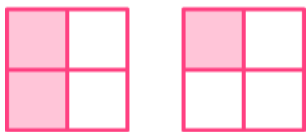
$$7(x + 3) = 7x + 21$$

- 3) Estimate:

$$3.4 \times 6.93 \approx 3 \times 7 \\ \approx 21$$

- 4) Add the fractions.
(a diagram is provided as a reminder)

$$\frac{1}{2} + \frac{1}{4} = \frac{3}{4}$$



- 5) Draw the next shape in the sequence:



Week 4: Day 2

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

32, 25, 18, 11, 4, ...

- 2) **Expand:**

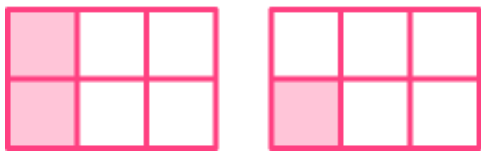
$$x(x - 4) =$$

- 3) **Estimate:**

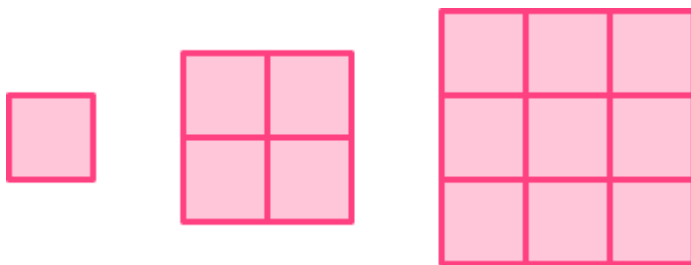
$$17.46 + 3.212$$

- 4) **Add the fractions.**
(a diagram is provided as a reminder)

$$\frac{1}{3} + \frac{1}{6} = \frac{\boxed{}}{\boxed{}}$$



- 5) **Draw the next shape in the sequence:**



Week 4: Day 2 Answers

- 1) State the term to term rule:

32, 25, 18, 11, 4, ... Subtract 7

- 2) Expand:

$$x(x - 4) = x^2 - 4x$$

- 3) Estimate:

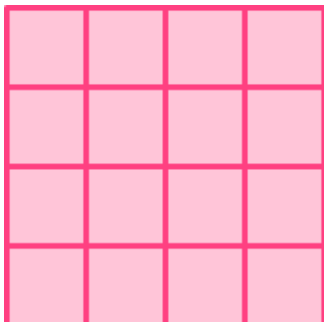
$$17.46 + 3.212 \approx 20 + 3 \\ \approx 23$$

- 4) Add the fractions.
(a diagram is provided as a reminder)

$$\frac{1}{3} + \frac{1}{6} = \frac{1}{2}$$



- 5) Draw the next shape in the sequence:



Week 4: Day 3

- 1) State the term to term rule:

$-7, -2, 3, 8, 13, \dots$

- 2) Write in figures:

$$5(a + 2b - 3c) =$$

- 3) Calculate:

$$12.4 \times 8.11$$

- 4) Add the fractions.

$$\frac{2}{5} + \frac{1}{3} = \begin{array}{c} \square \\ \hline \square \end{array}$$

- 5) Draw the next shape in the sequence:



Week 4: Day 3 Answers

1) State the term to term rule:

– 7, – 2, 3, 8, 13, ... Add 5

2) Write in figures:

$$5(a + 2b - 3c) = 5a + 10b - 15c$$

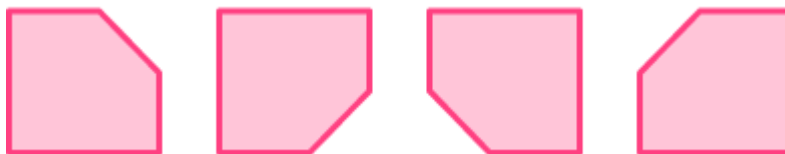
3) Calculate:

$$12.4 \times 8.11 \approx 10 \times 8 \\ \approx 80$$

4) Add the fractions.

$$\frac{2}{5} + \frac{1}{3} = \frac{11}{15}$$

5) Draw the next shape in the sequence:



Week 4: Day 4

- 1) State the term to term rule:

2, - 2, 2, - 2, 2, ...

- 2) Expand:

$$m(n + mp) =$$

- 3) Estimate:

$$38.9 \times 1.94 \div 5.03$$

- 4) Subtract the fractions.
Give your answer in its simplest form.

$$\frac{5}{6} - \frac{1}{3} = \frac{\boxed{}}{\boxed{}}$$

- 5) Draw the next shape in the sequence:



Week 4: Day 4 Answers

- 1) State the term to term rule:

2, - 2, 2, - 2, 2, ... Multiply by - 1

- 2) Expand:

$$m(n + mp) = mn + m^2p$$

- 3) Estimate:

$$38.9 \times 1.94 \div 5.03 \approx 40 \times 2 \div 5 \\ \approx 16$$

- 4) Subtract the fractions.
Give your answer in its simplest form.

$$\frac{5}{6} - \frac{1}{3} = \frac{1}{2}$$

- 5) Draw the next shape in the sequence:



Week 4: Day 5

- 1) State the term to term rule:

3, 6, 12, 24, 48, ...

- 2) Expand:

$$2x^2(3x - 5) =$$

- 3) Estimate:

$$152.55 \times 29.28$$

- 4) Subtract the fractions.

$$\frac{7}{8} - \frac{3}{4} = \begin{array}{|c|} \hline \square \\ \hline \square \\ \hline \end{array}$$

- 5) Draw the next shape in the sequence:



Week 4: Day 5 Answers

1) State the term to term rule:

3, 6, 12, 24, 48, ... Multiply by 2 (doubling)

2) Expand:

$$2x^2(3x - 5) = 6x^3 - 10x^2$$

3) Estimate:

$$152.55 \times 29.28 \approx 200 \times 30 \\ \approx 6000$$

4) Subtract the fractions.

$$\frac{7}{8} - \frac{3}{4} = \frac{1}{8}$$

5) Draw the next shape in the sequence:

An octagon (consider number of sides in each shape)



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