

## Week 3

### This week in a nutshell:

Again, questions 1, 2 and 3 are present to build and maintain fluency of previously seen material. Questions 4 and 5 do rely on newly taught material for many students so it is possible that students may need extra time and the presence of exemplar material or some form of scaffolding (depending on ability). For question 5 there are several methods that can be used to justify the answer, these can form the basis of a class discussion on which methods are the most efficient.

**Question 1:** Using products of primes

**Question 2:** Simplifying expressions

**Question 3:** Mental methods (+ and -)

**Question 4:** Plotting a straight line from a table of values

**Question 5:** Recognising linearity

### This week's ideas for class discussion include:

Question 1: **Using products of primes**

- Why do you think prime numbers are important?

Question 2: **Simplifying expressions**

- What methods have you found that help when simplifying algebra?

Question 3: **Mental methods (+ and -)**

- How would you describe your thought process when using mental methods?

Question 4: **Plotting a straight line from a table of values**

- How does the table of values help us plot in a systematic way?
- Do you think there are other ways of plotting a straight line?

Question 5: **Recognising linearity**

- What do you think linearity means?
- Could you define linearity in your own words?

## Week 3: Day 1

- 1) Which composite number is represented by this product of primes?

$$2 \times 3 \times 5 =$$

- 2) Simplify:

$$3a + 7a - 2a$$

- 3) Fill in the missing numbers:

$$63 + \underline{\quad} = 100$$

$$\underline{\quad} - 45 = 155$$

- 4) Plot the points from this table of values and draw a straight line through them. Label the line  $y = x + 1$

$x$	0	2	4	6
$y$	1	3	5	7

- 5) Is it possible to draw a straight line through these three points? Give a reason for your answer.

(1, 1),      (2, 2),      (3, 3)

## Week 3: Day 1 Answers

- 1) Which composite number is represented by this product of primes?

$$2 \times 3 \times 5 = 30$$

- 2) Simplify:

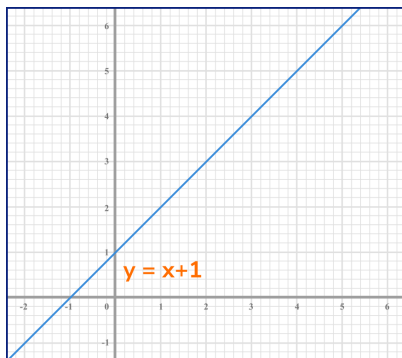
$$3a + 7a - 2a = 8a$$

- 3) Fill in the missing numbers:

$$63 + 37 = 100$$

$$200 - 45 = 155$$

- 4) Plot the points from this table of values and draw a straight line through them. Label the line  $y = x + 1$



- 5) Is it possible to draw a straight line through these three points? Give a reason for your answer.

(1, 1), (2, 2), (3, 3)

Yes, there is a constant difference between the  $x$  values and a constant difference between the  $y$  values.

## Week 3: Day 2

- 1) Which composite number is represented by this product of primes?

$$13 \times 17 =$$

- 2) Simplify:

$$4k + 5 - k + 1$$

- 3) Fill in the missing numbers:

$$37 + \underline{\quad} = 50$$

$$\underline{\quad} - 34 = 66$$

- 4) Plot the points from this table of values and draw a straight line through them. Label the line  $y = 3 - x$

$x$	0	1	2	3
$y$	3	2	1	0

- 5) Is it possible to draw a straight line through these three points? Give a reason for your answer.

(1, 2),      (2, 4),      (3, 6)

## Week 3: Day 2 Answers

- 1) Which composite number is represented by this product of primes?

$$13 \times 17 = 221$$

- 2) Simplify:

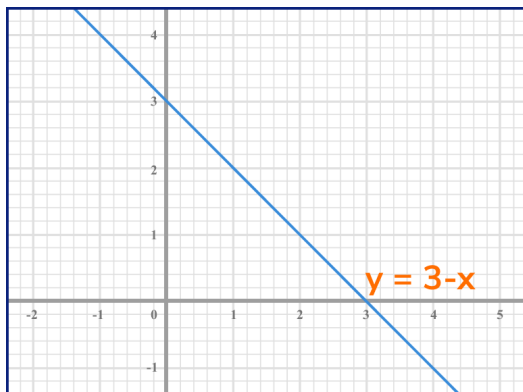
$$4k + 5 - k + 1 = 3k + 6$$

- 3) Fill in the missing numbers:

$$37 + 13 = 50$$

$$100 - 34 = 66$$

- 4) Plot the points from this table of values and draw a straight line through them. Label the line  $y = 3 - x$



- 5) Is it possible to draw a straight line through these three points? Give a reason for your answer.

(1, 2), (2, 4), (3, 6)

Yes, there is a constant difference between the  $x$  values and a constant difference between the  $y$  values.

## Week 3: Day 3

- 1) Which composite number is represented by this product of primes?

$$3 \times 5^2 =$$

- 2) Simplify:

$$3x - x^2 - x + 4x^2$$

- 3) Fill in the missing numbers:

$$10 + \underline{\quad} = 7.3$$

$$\underline{\quad} - 14.5 = 100$$

- 4) Plot the points from this table of values and draw a straight line through them. Label the line  $y = x/2$

$x$	-4	0	4	8
$y$	-2	0	2	4

- 5) Is it possible to draw a straight line through these three points? Give a reason for your answer.

(1, 1),      (2, -2),      (3, 3)

## Week 3: Day 3 Answers

- 1) Which composite number is represented by this product of primes?

$$3 \times 5^2 = 75$$

- 2) Simplify:

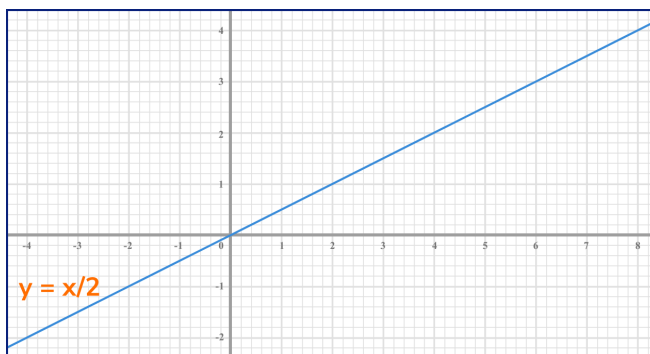
$$3x - x^2 - x + 4x^2 = 3x^2 + 2x$$

- 3) Fill in the missing numbers:

$$10 + 2.7 = 7.3$$

$$85.5 - 14.5 = 100$$

- 4) Plot the points from this table of values and draw a straight line through them. Label the line  $y = x/2$



- 5) Is it possible to draw a straight line through these three points? Give a reason for your answer.

(1, 1), (2, -2), (3, 3)

No, the  $y$  values are not all proportional to the  $x$  values.

## Week 3: Day 4

- 1) Which composite number is represented by this product of primes?

$$2^3 \times 3^2 =$$

- 2) Simplify:

$$y + 2y - 3y + 4y$$

- 3) Fill in the missing numbers:

$$11 + \underline{\quad} = 90$$

$$\underline{\quad} - 3.9 = 6.1$$

- 4) Plot the points from this table of values and draw a straight line through them. Label the line  $y = 2x$

$x$	-1	1	3	5
$y$	-2	2	6	10

- 5) Is it possible to draw a straight line through these three points? Give a reason for your answer.

$$(1, -1), \quad (2, -2), \quad (3, -3)$$



## Week 3: Day 4 Answers

- 1) Which composite number is represented by this product of primes?

$$2^3 \times 3^2 = 72$$

- 2) Simplify:

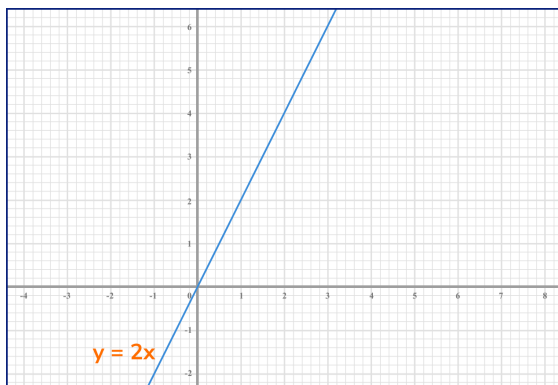
$$y + 2y - 3y + 4y = 4y$$

- 3) Fill in the missing numbers:

$$11 + 79 = 90$$

$$10 - 3.9 = 6.1$$

- 4) Plot the points from this table of values and draw a straight line through them. Label the line  $y = 2x$



- 5) Is it possible to draw a straight line through these three points? Give a reason for your answer.

(1, -1), (2, -2), (3, -3)

Yes, the  $y$  values are proportional to the  $x$  values.

## Week 3: Day 5

- 1) Which composite number is represented by this product of primes?

$$3^2 \times 7 \times 11 =$$

- 2) Simplify:

$$3 - a + 7 - ab$$

- 3) Fill in the missing numbers:

$$4.3 + \underline{\quad} = 5.5$$

$$\underline{\quad} - 1.11 = 1.49$$

- 4) Plot the points from this table of values and draw a straight line through them. Label the line  $y = 2x + 1$

$x$	-2	0	2	4
$y$	-3	1	5	9

- 5) Is it possible to draw a straight line through these three points? Give a reason for your answer.

(1, 1),      (2, 4),      (3, 9)

## Week 3: Day 5 Answers

- 1) Which composite number is represented by this product of primes?

$$3^2 \times 7 \times 11 = 693$$

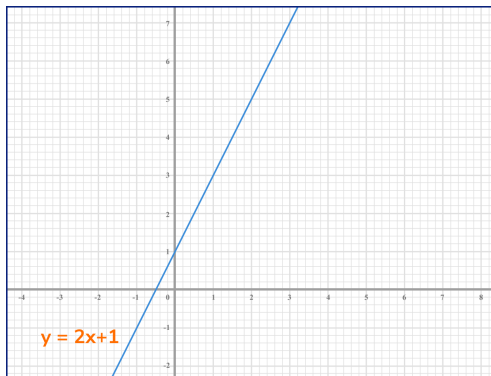
- 2) Simplify:  $3 - a + 7 - ab = 10 - a - ab$

- 3) Fill in the missing numbers:

$$4.3 + 1.2 = 5.5$$

$$2.6 - 1.11 = 1.49$$

- 4) Plot the points from this table of values and draw a straight line through them. Label the line  $y = 2x + 1$



- 5) Is it possible to draw a straight line through these three points? Give a reason for your answer.

(1, 1), (2, 4), (3, 9)

No, the difference between  $x$  values is constant but the difference between  $y$  values is not constant.

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