

Week 3

This week in a nutshell:

With the interleaving of many topics, some students may now be at a stage where they are not only required to find a solution, but also reason about and explain their methods and results. This is particularly useful for time management of the tasks in mixed ability groups. It is worth noting that “normal form” and “standard form” in this case are in relation to scientific notation for numbers.

Question 1: Product of binomials

Question 2: Simplifying ratio

Question 3: Converting normal form to standard form

Question 4: Probability

Question 5: Plotting coordinates

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: **Product of binomials**

- How could the method for multiplying binomials be extended to other cases?
- How do you check the result of expanding a product of binomials?

Question 2: **Simplifying ratio**

- How do you know for certain a ratio is in its simplest form?

Question 3: **Converting normal form to standard form**

- Is normal form or standard form “better”? Why do you think this?

Question 4: **Probability**

- Are probabilities the same as forecasts/predictions?

Question 5: **Plotting coordinates**

- Give a quick rule for plotting coordinates accurately.

Week 3: Day 1

- 1) **Expand and simplify:**

$$(x + 4)(x + 3)$$

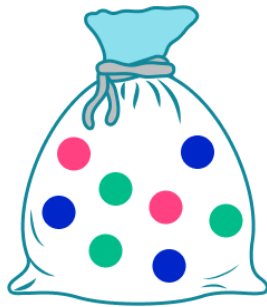
- 2) **Write the ratio in its simplest form:**

$$15:18$$

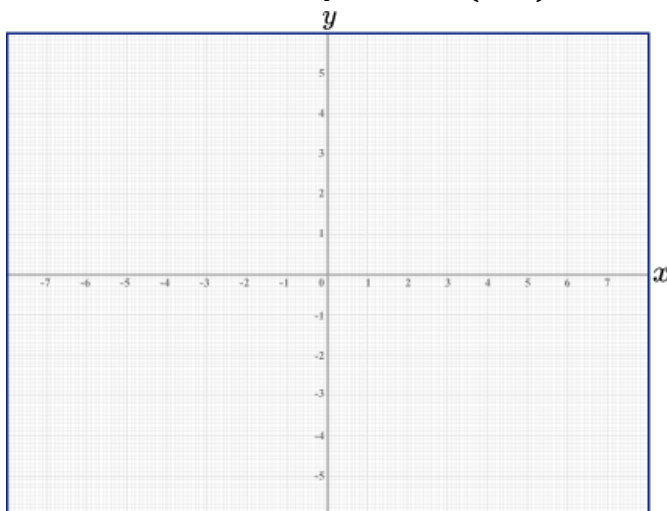
- 3) **Write in standard form:**

$$4000 =$$

- 4) A ball is drawn at random from the bag pictured. What is the probability of selecting a red ball?



- 5) **Plot and label the points $A(5, 1)$ and $B(0, 3)$.**



Week 3: Day 1 Answers

- 1) Expand and simplify:

$$(x + 4)(x + 3) = x^2 + 7x + 12$$

- 2) Write the ratio in its simplest form:

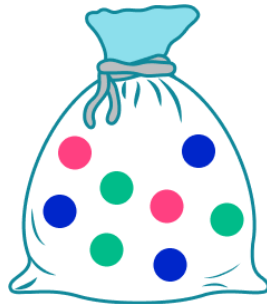
$$15:18 = 5:6$$

- 3) Write in standard form:

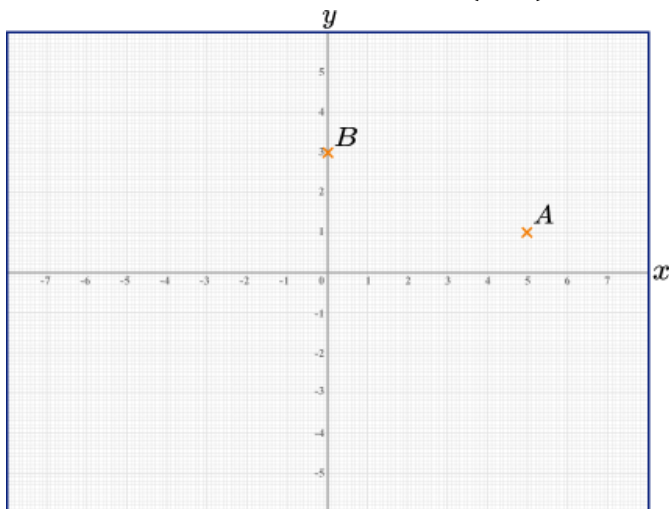
$$4000 = 4 \times 10^3$$

- 4) A ball is drawn at random from the bag pictured.
What is the probability of selecting a red ball?

$$\frac{2}{8} \text{ or } \frac{1}{4}$$



- 5) Plot and label the points $A(5, 1)$ and $B(0, 3)$.



Week 3: Day 2

- 1) **Expand and simplify:**

$$(x + 1)(x + 5)$$

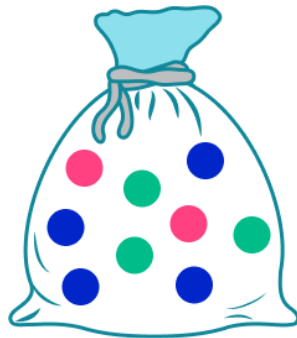
- 2) **Write the ratio in its simplest form:**

$$28:21$$

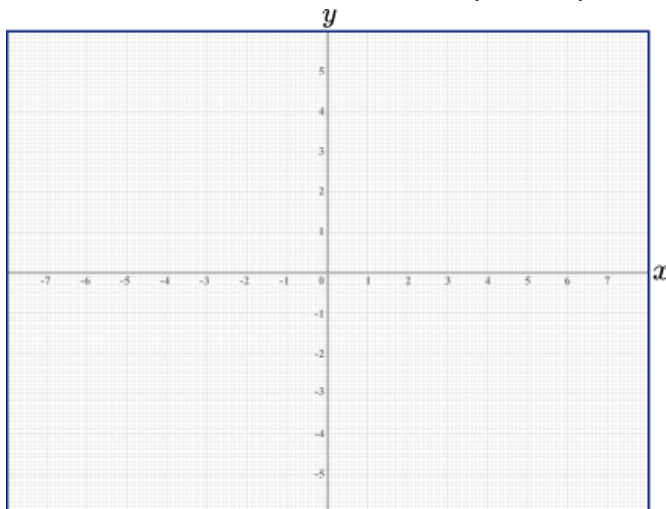
- 3) **Write in standard form:**

$$0.0085 =$$

- 4) **A ball is drawn at random from the bag pictured.
What is the probability of selecting a green ball?**



- 5) **Plot and label the points $A(-2, 1)$ and $B(4, -5)$.**



Week 3: Day 2 Answers

- 1) Expand and simplify:

$$(x + 1)(x + 5) = x^2 + 6x + 5$$

- 2) Write the ratio in its simplest form:

$$28:21 = 4:3$$

- 3) Write in standard form:

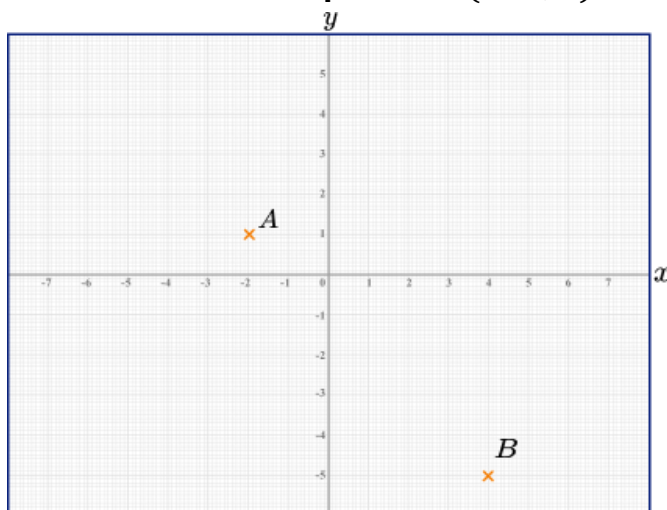
$$0.0085 = 8.5 \times 10^{-3}$$

- 4) A ball is drawn at random from the bag pictured.
What is the probability of selecting a green ball?

$$\frac{3}{9} \text{ or } \frac{1}{3}$$



- 5) Plot and label the points $A(-2, 1)$ and $B(4, -5)$.



Week 3: Day 3

- 1) Expand and simplify:

$$(x - 3)(x + 3)$$

- 2) Write the ratio in its simplest form:

$$8:18:28$$

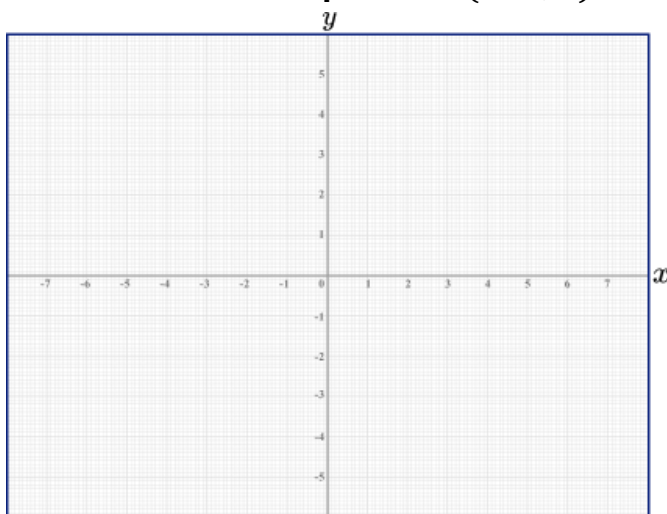
- 3) Write in standard form:

$$934000000 =$$

- 4) A ball is drawn at random from the bag pictured.
What is the probability of selecting a red or blue ball?



- 5) Plot and label the points $A(-1, 0)$ and $B(4, 1)$.



Week 3: Day 3 Answers

- 1) Expand and simplify:

$$(x - 3)(x + 3) = x^2 - 9$$

- 2) Write the ratio in its simplest form:

$$8: 18: 28 = 4: 9: 14$$

- 3) Write in standard form:

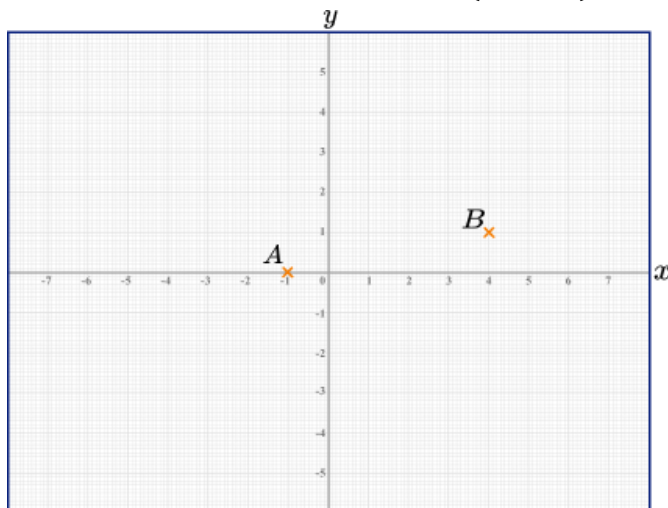
$$934000000 = 9.34 \times 10^8$$

- 4) A ball is drawn at random from the bag pictured.
What is the probability of selecting a red or blue ball?

$$\frac{6}{10} \text{ or } \frac{3}{5}$$



- 5) Plot and label the points $A(-1, 0)$ and $B(4, 1)$.



Week 3: Day 4

- 1) Expand and simplify:

$$(x - 7)^2$$

- 2) Write the ratio in its simplest form:

$$15:10:45$$

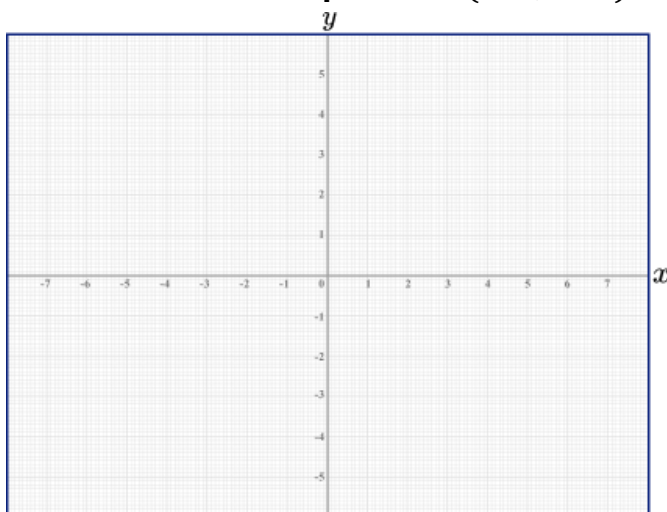
- 3) Write in standard form:

$$0.0702 =$$

- 4) A ball is drawn at random from the bag pictured.
What is the probability of selecting a yellow ball?



- 5) Plot and label the points $A(2.5, -1)$ and $B(-4, 0)$.



Week 3: Day 4 Answers

- 1) Expand and simplify:

$$(x - 7)^2 = x^2 - 14x + 49$$

- 2) Write the ratio in its simplest form:

$$15:10:45 = 3:2:9$$

- 3) Write in standard form:

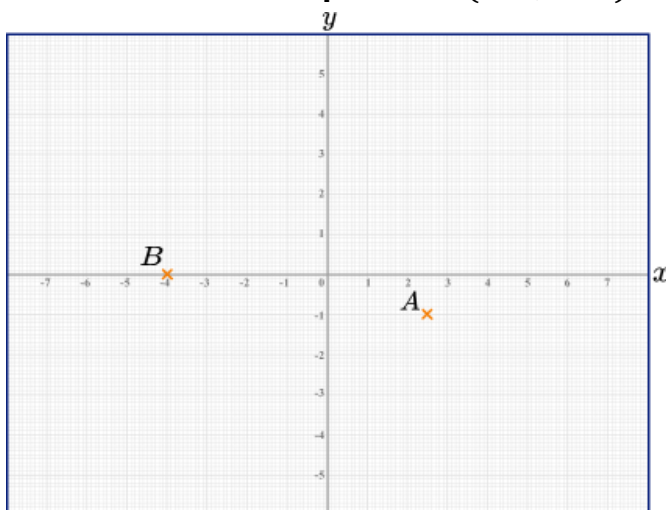
$$0.0702 = 7.02 \times 10^{-2}$$

- 4) A ball is drawn at random from the bag pictured.
What is the probability of selecting a yellow ball?

0



- 5) Plot and label the points $A(2.5, -1)$ and $B(-4, 0)$.



Week 3: Day 5

- 1) **Expand and simplify:**

$$(3x - 2)(x - 3)$$

- 2) **Write the ratio in its simplest form:**

$$24: 30: 42$$

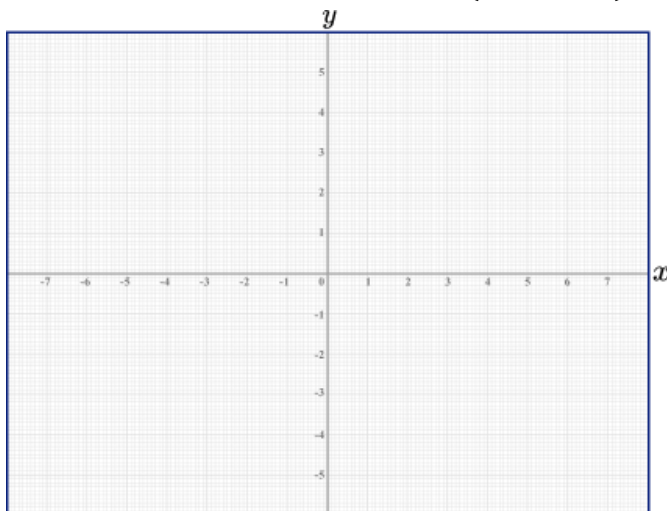
- 3) **Write in standard form:**

$$5\,480\,000 =$$

- 4) **A ball is drawn at random from the bag pictured.
What is the probability of selecting a ball that is not red?**



- 5) **Plot and label the points $A(0, -1.5)$ and $B(3.5, -2)$.**



Week 3: Day 5 Answers

- 1) **Expand and simplify:**

$$(3x - 2)(x - 3) = 3x^2 - 11x + 6$$

- 2) **Write the ratio in its simplest form:**

$$24:30:42 = 4:5:7$$

- 3) **Write in standard form:**

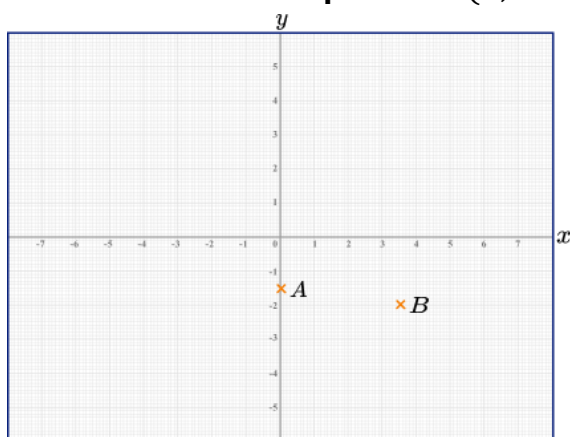
$$5\,480\,000 = 5.48 \times 10^6$$

- 4) **A ball is drawn at random from the bag pictured.
What is the probability of selecting a ball that is not red?**

$$\frac{9}{12} \text{ or } \frac{3}{4}$$



- 5) **Plot and label the points $A(0, -1.5)$ and $B(3.5, -2)$.**



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