

## Week 5

### This week in a nutshell:

Skills from previous weeks continue to be extended and developed. You may wish to explain the links on display here; ratio and fractions as proportions, and straight lines as visual representations of a linear sequence.

**Question 1:** Ratio and fractions

**Question 2:** Calculations with standard form

**Question 3:** Compound units

**Question 4:** Plotting a straight line

**Question 5:** Enlargements

Students may need plenty of time for some of the questions this week, depending on ability; encourage accuracy of results over speed initially. Explaining the use of dimensions in compound units is highly beneficial at this point.

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

Question 1: **Ratio and fractions**

- Ratios and fractions can be used to express the same information. Why do we choose one over the other?

Question 2: **Calculations with standard form**

- What are the advantages/disadvantages of calculating in standard form compared to using ordinary numbers?

Question 3: **Compound units**

- How do units indicate length, area, volume etc?
- Why might the dimension of a unit be important?

Question 4: **Plotting a straight line**

- What properties make straight lines useful/interesting/important?
- What disadvantages do straight lines have?

Question 5: **Enlargements**

- Does enlargement necessarily mean bigger? Why do you think this?

## Week 5: Day 1

1) The ratio of red marbles to blue marbles is 3:2. What fraction of the marbles are blue?

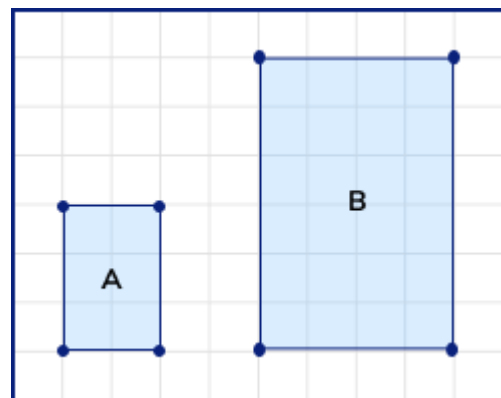
2) Calculate:  $(2 \times 10^2) \times (4 \times 10^3)$

3) What is  $\text{mm}^3$  a unit of measure for?

4) Complete the table of values for the given equation of a straight line  $y = 3x - 2$

|             |          |   |   |   |
|-------------|----------|---|---|---|
| $x$         | -2       | 0 | 2 | 4 |
| $y$         | -8       |   | 4 |   |
| coordinates | (-2, -8) |   |   |   |

5) Work out the scale factor of enlargement from  $A$  to  $B$ .



## Week 5: Day 1 Answers

- 1) The ratio of red marbles to blue marbles is 3:2. What fraction of the marbles are blue?  $\frac{2}{5}$

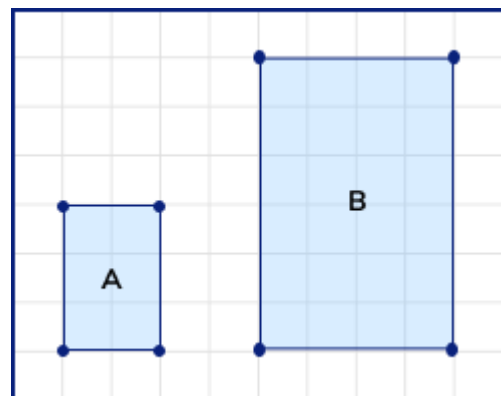
- 2) Calculate:  $(2 \times 10^2) \times (4 \times 10^3)$   
 $8 \times 10^5$

- 3) What is  $\text{mm}^3$  a unit of measure for?  
Volume

- 4) Complete the table of values for the given equation of a straight line  $y = 3x - 2$

|             |          |         |        |         |
|-------------|----------|---------|--------|---------|
| $x$         | -2       | 0       | 2      | 4       |
| $y$         | -8       | -2      | 4      | 10      |
| coordinates | (-2, -8) | (0, -2) | (2, 4) | (4, 10) |

- 5) Work out the scale factor of enlargement from  $A$  to  $B$ .  
2



## Week 5: Day 2

1) In a school, the ratio of girls to boys is 3:4. What fraction of the school are boys?

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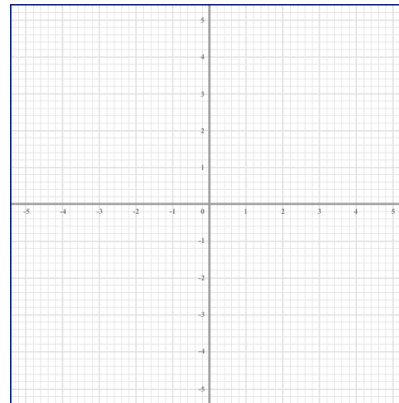
2) Calculate:  $(9 \times 10^7) \div (3 \times 10^2)$

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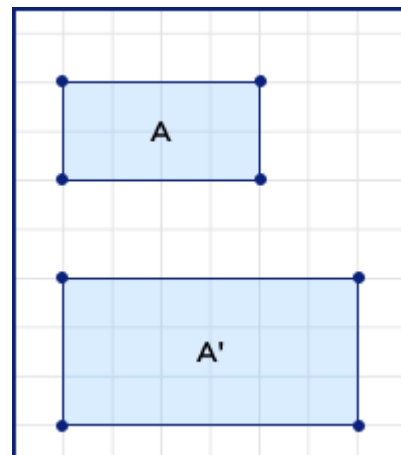
3) What is m/s a unit of measure for?

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4) Plot the graph of  $y = 2x - 1$



5) Work out the scale factor of enlargement from  $A$  to  $A'$ .



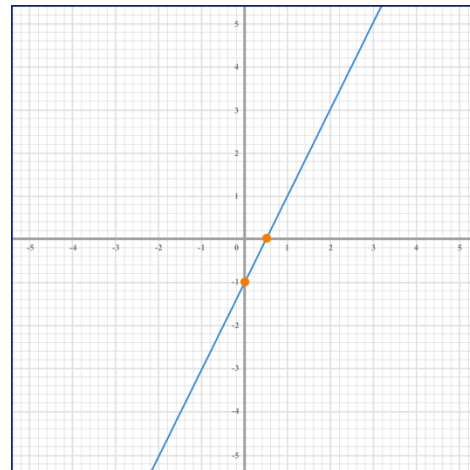
## Week 5: Day 2 Answers

- 1) In a school, the ratio of girls to boys is 3:4. What fraction of the school are boys?  $\frac{4}{7}$

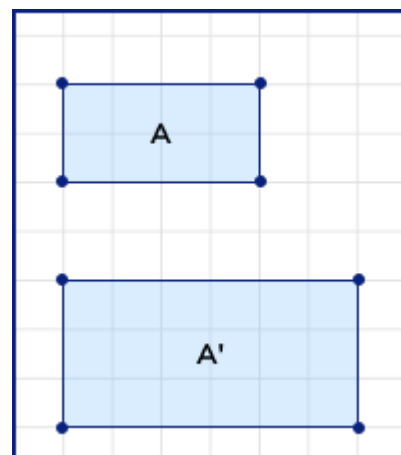
- 2) Calculate:  $(9 \times 10^7) \div (3 \times 10^2)$   
 $3 \times 10^5$

- 3) What is m/s a unit of measure for?  
Speed/Velocity

- 4) Plot the graph of  $y = 2x - 1$



- 5) Work out the scale factor of enlargement from  $A$  to  $A'$ .  
1.5



## Week 5: Day 3

- 1) Sand, cement, and water are mixed in the ratio 4:1:5. What fraction of the mixture is sand?

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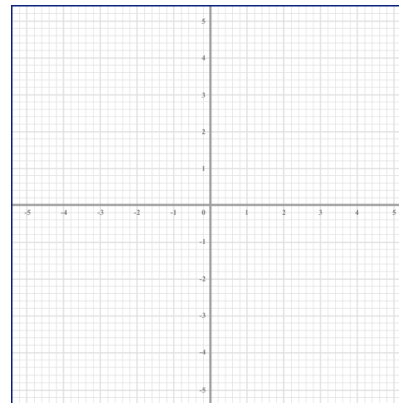
- 2) Calculate:  $(5.5 \times 10^6) + (3.2 \times 10^4)$

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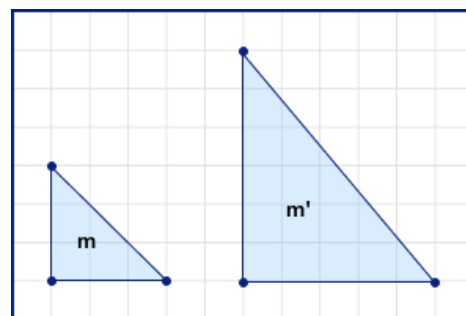
- 3) What is  $\text{kg/m}^3$  a unit of measure for?

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- 4) Plot the graph of  $2y = x + 3$



- 5) A student enlarged shape  $m$  by a scale factor of 2, giving  $m'$  as their answer. Explain their mistake.



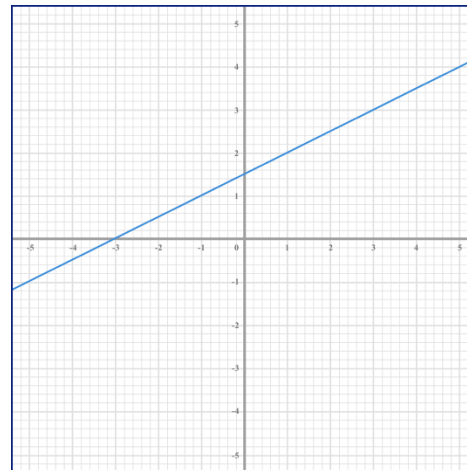
## Week 5: Day 3 Answers

- 1) Sand, cement, and water are mixed in the ratio 4:1:5. What fraction of the mixture is sand?  $\frac{4}{10}$  or  $\frac{2}{5}$

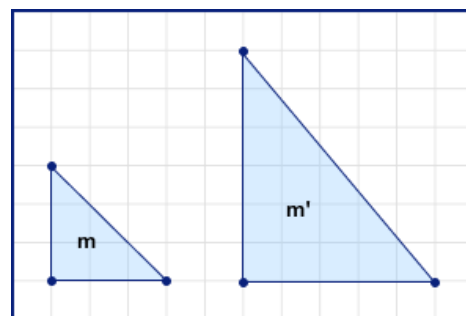
- 2) Calculate:  $(5.5 \times 10^6) + (3.2 \times 10^4)$   
 $5.532 \times 10^6$

- 3) What is  $\text{kg/m}^3$  a unit of measure for?  
Density

- 4) Plot the graph of  $2y = x + 3$



- 5) A student enlarged shape  $m$  by a scale factor of 2, giving  $m'$  as their answer. Explain their mistake.  
Horizontal length not multiplied by 2.



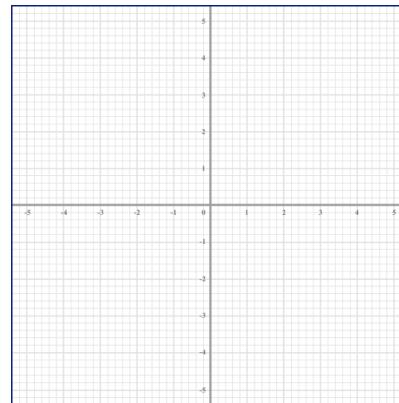
## Week 5: Day 4

1) In a juice, orange, lemon, and lime are mixed in the ratio 2:3:1. What fraction of the juice is lemon?

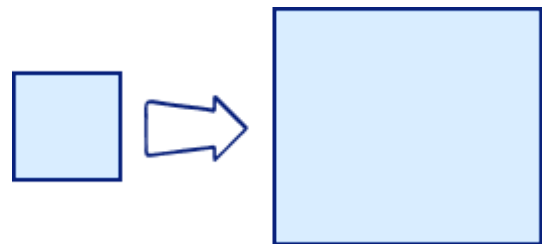
2) Calculate:  $(8.5 \times 10^5) - (2.2 \times 10^2)$

3) What is  $\text{km}^2$  a unit of measure for?

4) Plot the graph of  
 $4x - y + 1 = 0$



5) A square has an area of  $4\text{cm}^2$ . The square is enlarged by a scale factor of 3. What is the area of the enlarged square?





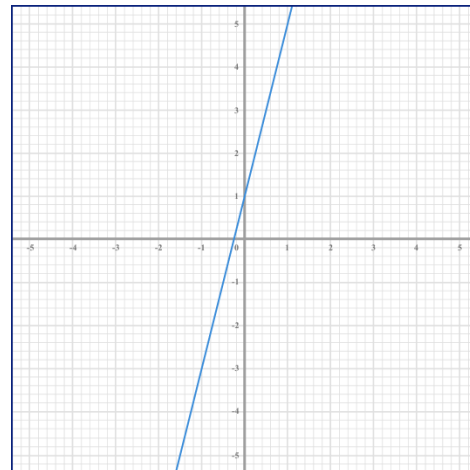
## Week 5: Day 4 Answers

- 1) In a juice, orange, lemon, and lime are mixed in the ratio 2:3:1. What fraction of the juice is lemon?  $\frac{3}{6}$  or  $\frac{1}{2}$

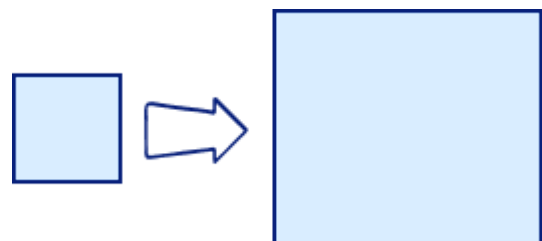
- 2) Calculate:  $(8.5 \times 10^5) - (2.2 \times 10^2)$   
 $8.4978 \times 10^5$

- 3) What is  $\text{km}^2$  a unit of measure for?  
Area

- 4) Plot the graph of  
 $4x - y + 1 = 0$



- 5) A square has an area of  $4\text{cm}^2$ . The square is enlarged by a scale factor of 3. What is the area of the enlarged square?  
 $36\text{cm}^2$



## Week 5: Day 5

- 1) Lemon, honey and hot water are mixed in the ratio 1:3:5. What fraction of the mixture is honey?

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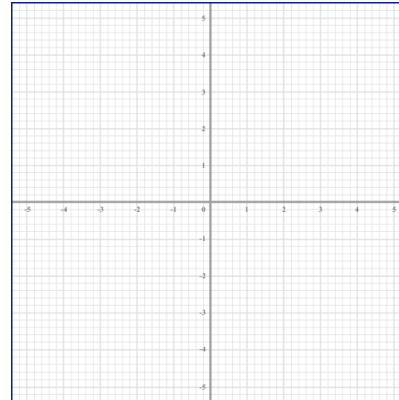
- 2) Calculate:  $(4 \times 10^{-4}) \times (3.2 \times 10^8)$

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- 3) What is  $\text{m/s}^2$  a unit of measure for?

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- 4) Plot the graph of  $x+y = 3$



- 5) A rectangle has been enlarged by a scale factor of 2. It now has an area of  $32\text{cm}^2$ . What was the area of the rectangle before it was enlarged?

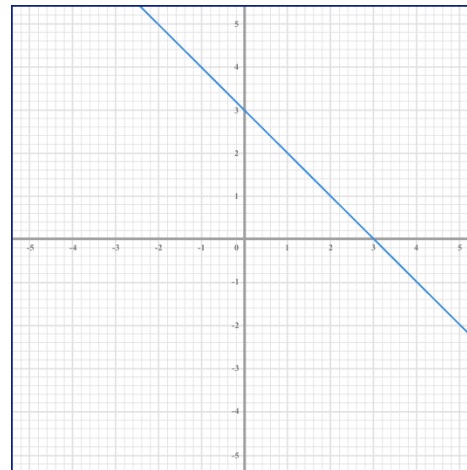
## Week 5: Day 5 Answers

- 1) Lemon, honey and hot water are mixed in the ratio 1:3:5. What fraction of the mixture is honey?  $\frac{3}{9}$  or  $\frac{1}{3}$

- 2) Calculate:  $(4 \times 10^{-4}) \times (3.2 \times 10^8)$   
 $1.28 \times 10^5$

- 3) What is  $\text{m/s}^2$  a unit of measure for?  
Acceleration

- 4) Plot the graph of  $x + y = 3$



- 5) A rectangle has been enlarged by a scale factor of 2. It now has an area of  $32\text{cm}^2$ . What was the area of the rectangle before it was enlarged?  
 $8\text{cm}^2$

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