

Week 10

This week in a nutshell:

Here we see topics that require use of definitions (statistical measures) so be sure to promote mathematical literacy for this. Further skills from proportion are covered.

Both use of calculator and handwritten method should be considered for the questions involving recurring decimals. It is your choice whether calculators should be used for question 5; feel free to ask for exact answers.

Question 1: Recurring decimals and fractions

Question 2: Mean and range

Question 3: Proportion

Question 4: Translations

Question 5: Cylinders, spheres, cones

This week's ideas for class discussion include:

Question 1: Recurring decimals and fractions

- When a fraction results in a recurring decimal, how many decimal places do we need to write down? Why?

Question 2: Mean and range

- What is the difference between measures of central tendency and measures of dispersion? (use the language your students are familiar with for this)

Question 3: Proportion

- How might the concepts of proportion be applied in different professional environments?

Question 4: Translations

- When translating an object, what changes and what stays the same?

Question 5: Cylinders, spheres, cones

- What other 3D objects are related to circles?

Week 10: Day 1

1) Express as a decimal to 3 decimal places:

a) $\frac{1}{3}$

b) $\frac{1}{6}$

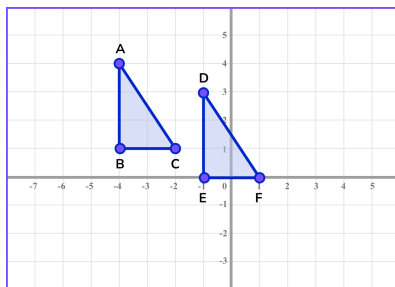
2) 2, 5, 6, 7, 10

a) Mean =

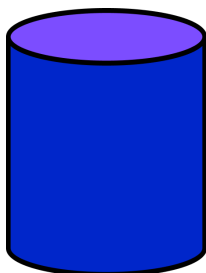
b) Range =

3) The cost of 2 pencils is £1.
How much does it cost for 5 pencils?

4) What column vector describes the translation of ABC to DEF?



5) Use the formula $V = \pi r^2 h$ to calculate the volume of this cylinder, where $r = 4$ cm and $h = 9$ cm.



Week 10: Day 1 Answers

1) Express as a decimal to 3 decimal places:

a) $\frac{1}{3}$ **0.333**

b) $\frac{1}{6}$ **0.167**

2) **2, 5, 6, 7, 10**

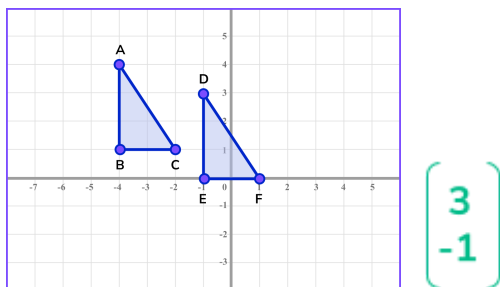
a) Mean = **6**

b) Range = **8**

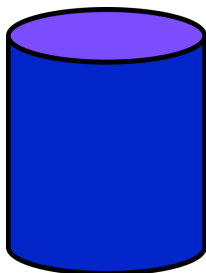
3) The cost of 2 pencils is £1.

How much does it cost for 5 pencils? **£2.50**

4) What column vector describes the translation of ABC to DEF?



5) Use the formula $V = \pi r^2 h$ to calculate the volume of this cylinder, where $r = 4$ cm and $h = 9$ cm.



452.4cm³ (1dp)

Week 10: Day 2

1) Express as a decimal to 3 decimal places:

a) $\frac{2}{3}$

b) $\frac{5}{6}$

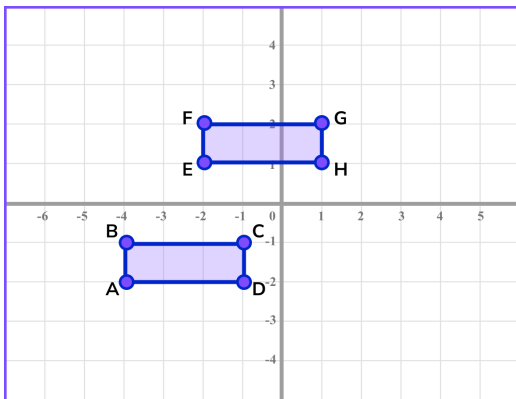
2) 7, 8, 15, 17, 23

a) Mean =

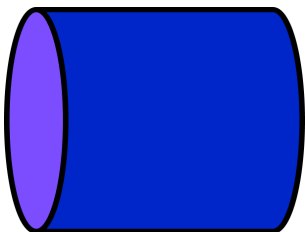
b) Range =

3) Four small bottles collectively hold 1L.
How many litres will 6 bottles hold?

4) What column vector describes the translation of ABCD to EFGH?



5) Use the formula $V = \pi r^2 h$ to calculate the volume of this cylinder, where the diameter of the cross section is 12cm and the height is 14 cm.



Week 10: Day 2 Answers

1) Express as a decimal to 3 decimal places:

a) $\frac{2}{3}$ **0.667**

b) $\frac{5}{6}$ **0.833**

2) **7, 8, 15, 17, 23**

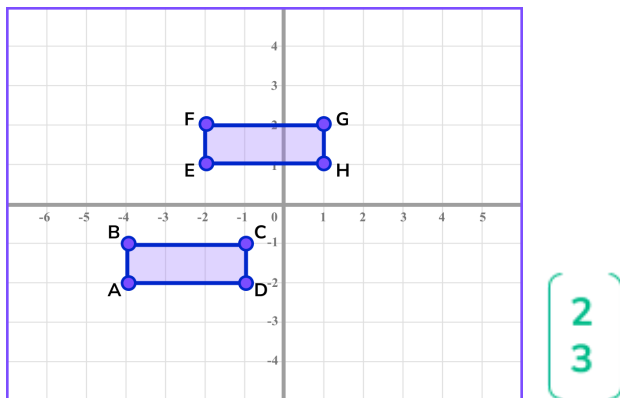
a) Mean = **14**

b) Range = **16**

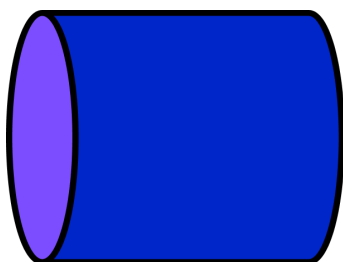
3) Four small bottles collectively hold 1L.

How many litres will 6 bottles hold? **1.5L**

4) What column vector describes the translation of ABCD to EFGH?



5) Use the formula $V = \pi r^2 h$ to calculate the volume of this cylinder, where the diameter of the cross section is 12cm and the height is 14 cm.



1583.36cm^3 (2dp)

Week 10: Day 3

1) Express as a decimal to 5 decimal places:

a) $\frac{1}{7}$

b) $\frac{1}{9}$

2) 7, 12, 13, 14

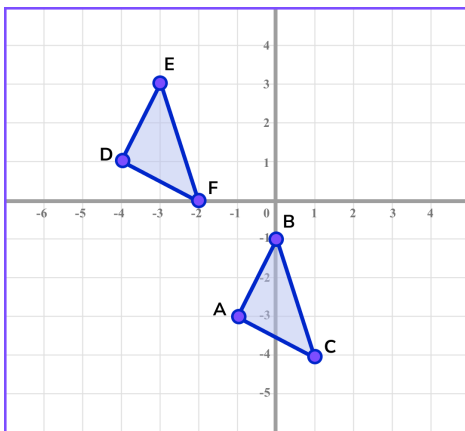
a) Mean =

b) Range =

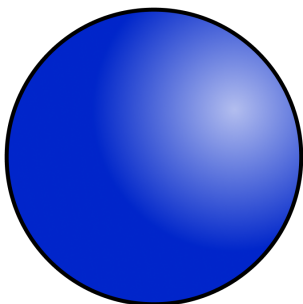
3) Altogether, 3 paint tins contain 12L of paint.

How many litres of paint is there in 2 tins?

4) What column vector describes the translation of ABC to DEF?



5) Calculate the volume of this sphere using the formula $V = \frac{4}{3} \pi r^3$, where $r = 3$ cm.



Week 10: Day 3 Answers

1) Express as a decimal to 5 decimal places:

a) $\frac{1}{7}$ **0.14286**

b) $\frac{1}{9}$ **0.11111**

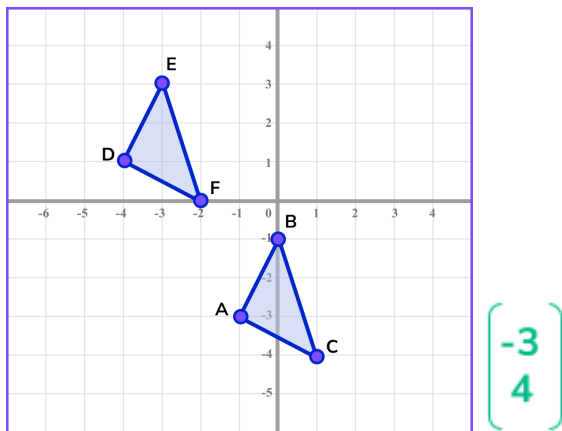
2) **7, 12, 13, 14**

a) Mean = **11.5**

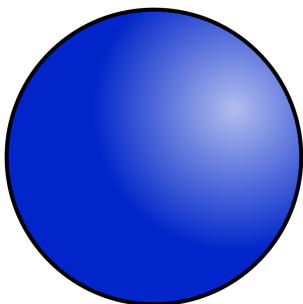
b) Range = **7**

3) Altogether, 3 paint tins contain 12L of paint.
How many litres of paint is there in 2 tins? **8L**

4) What column vector describes the translation of ABC to DEF?



5) Calculate the volume of this sphere using the formula $V = \frac{4}{3} \pi r^3$, where $r = 3$ cm.



113.10cm³ (2dp)

Week 10: Day 4

1) Express as a decimal to 4 decimal places:

a) $\frac{5}{7}$

b) $\frac{5}{9}$

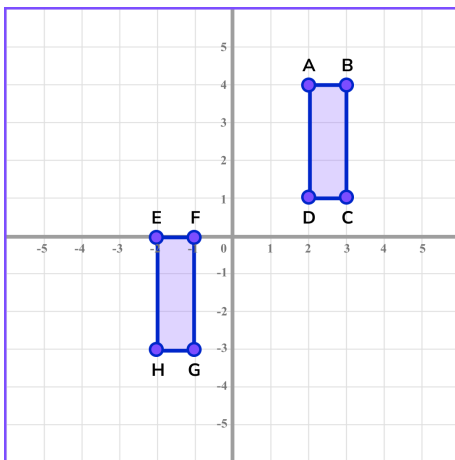
2) 2, 6, 10, 12, 14, 17

a) Mean =

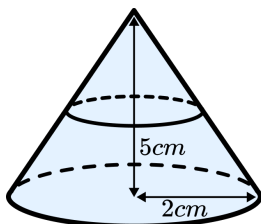
b) Range =

3) The cost of 5 bars of chocolate is £1.75.
How much does it cost to buy 14 bars of chocolate?

4) What column vector describes the translation of ABCD to EFGH?



5) The volume of a cone is calculated using the formula $V = \frac{1}{3} \pi r^2 h$, where r is the base radius and h is the perpendicular height from the base to the apex. Calculate the volume of this cone.



Week 10: Day 4 Answers

1) Express as a decimal to 4 decimal places:

a) $\frac{5}{7}$ **0.7143**

b) $\frac{5}{9}$ **0.5556**

2) 2, 6, 10, 12, 14, 17

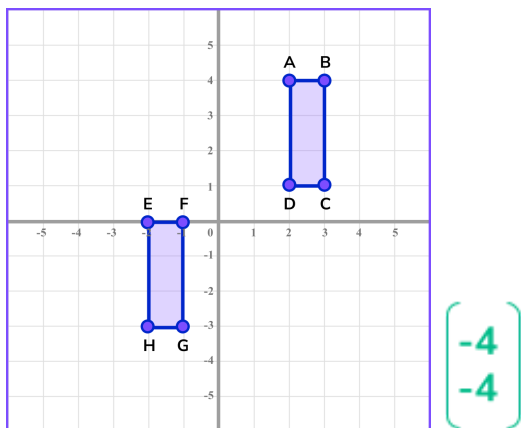
a) Mean = **10.17**

b) Range = **15**

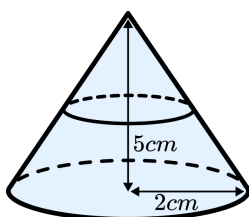
3) The cost of 5 bars of chocolate is £1.75.

How much does it cost to buy 14 bars of chocolate? **£4.90**

4) What column vector describes the translation of ABCD to EFGH?



5) The volume of a cone is calculated using the formula $V = \frac{1}{3} \pi r^2 h$, where r is the base radius and h is the perpendicular height from the base to the apex. Calculate the volume of this cone.



20.94cm^3 (2dp)

Week 10: Day 5

1) Express as a decimal to 4 decimal places:

a) $\frac{1}{11}$

b) $\frac{2}{13}$

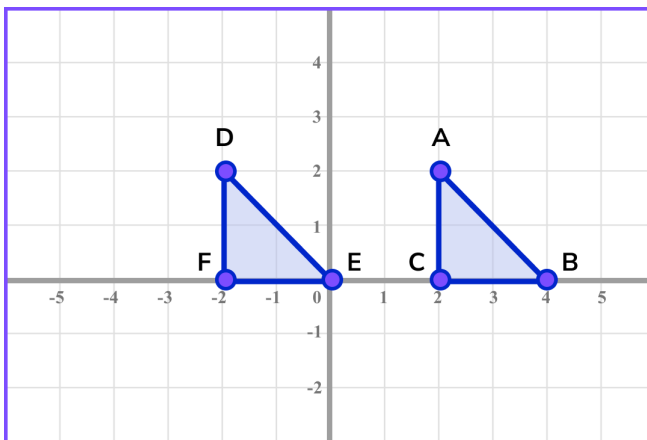
2) 2.5, 3, 4.2, 5.6, 7.1

a) Mean =

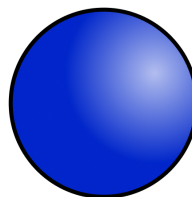
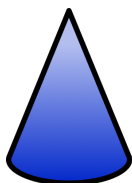
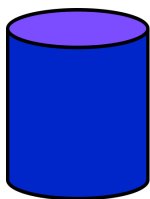
b) Range =

3) 18 bags of crisps costs £2.70. How much is it for 4 bags of crisps?

4) What column vector describes the translation of ABC to DEF?



5) From the objects pictured, which volume can be calculated using the information about one variable only?



Week 10: Day 5 Answers

1) Express as a decimal to 4 decimal places:

a) $\frac{1}{11}$ **0.0909**

b) $\frac{2}{13}$ **0.1538**

2) **2.5, 3, 4.2, 5.6, 7.1**

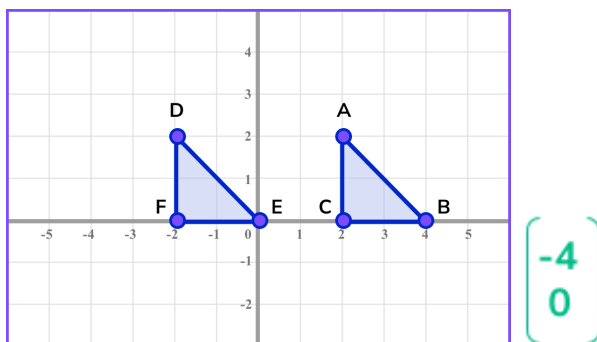
a) Mean = **4.48**

b) Range = **4.6**

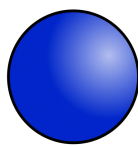
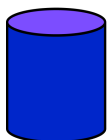
3) **18 bags of crisps costs £2.70. How much is it for 4 bags of crisps?**

60p

4) What column vector describes the translation of ABC to DEF?



5) From the objects pictured, which volume can be calculated using the information about one variable only?



Sphere

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