

Week 10

This week in a nutshell:

Consider letting students use calculators in Q1 so that they can focus on method. Ask students who finish quickly to calculate other measures of average for the datasets in Q1. Please note that Q2 involves units of time, centimetres to metres and pounds to pence. Q3 revisits the topic of percentage increase/decrease which was covered in week 5. Pie charts are covered in Q4 on an introductory level focusing on basic proportions. Q5 links back to week 6 when students were describing translations. Vectors may be a new concept at this stage for some students. Introduce vector notation and display a visual reminder for students to refer to while working independently. Students will need squared paper.

Question 1: Calculating the mean

Question 2: Converting between units

Question 3: Increase/decrease by a percentage

Question 4: Using pie charts

Question 5: Translation using a vector

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: Calculating the mean

- Each of these datasets has a mean of 5. Find the mode and discuss the merits of these two measures of average in each case. (a)3,4,5,5,5,6,7 (b)0,0,0,5,10,15 (c)0,1,1,2,21 (d)-10,-5,30 (e)1,1,1,1,1,1,1,33

Question 2: Converting between units

- Challenge:** Can you calculate how many seconds there are in '5 days, 5 hours and 5 minutes'?

Question 3: Increase/decrease by a percentage

- Simon says "Increasing by 25% and then increasing by 25% again, is the same as increasing by 50%". Is Simon correct? Use examples to justify your answer.

Question 4: Using pie charts

- Task:** Sections of a pie chart can be described as fractions and measured in degrees. Convert the following fractions into degrees for a pie chart: $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$, $\frac{1}{3}$, $\frac{2}{3}$, $\frac{1}{6}$, $\frac{1}{5}$, $\frac{3}{5}$, $\frac{1}{9}$, and $\frac{1}{10}$

Question 5: Translation using a vector

- Task:** Using 0 to 8 scale axes plot and join the coordinates (1,1), (1,3) and (4,1) to form a triangle. Translate this triangle 2 units right & 5 units up. Write these instructions as a vector. What do you notice about the coordinates of the new triangle? Is there a link between vectors and coordinates?

Week 10: Day 1

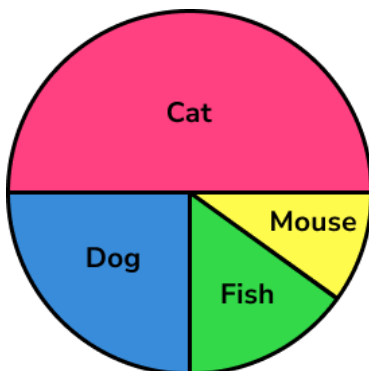
1) Calculate the mean:

2, 5, 6, 11

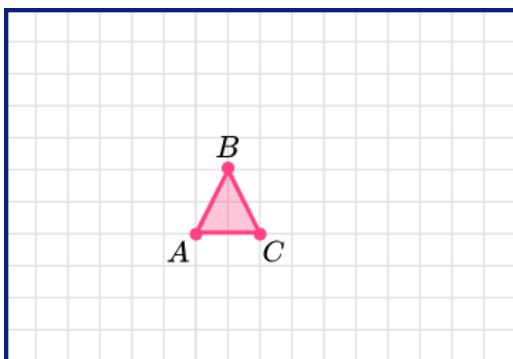
2) Write £12.87 as an amount in pence.

3) Increase 50 by 30%

4) Using the pie chart, determine the least popular pet.



5) Translate triangle ABC using the vector $\begin{pmatrix} 3 \\ 1 \end{pmatrix}$



Week 10: Day 1 Answers

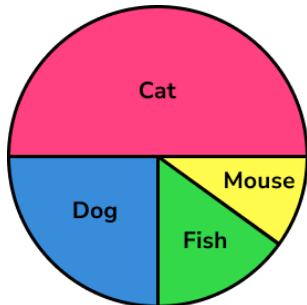
- 1) Calculate the mean: mean = 6

2, 5, 6, 11

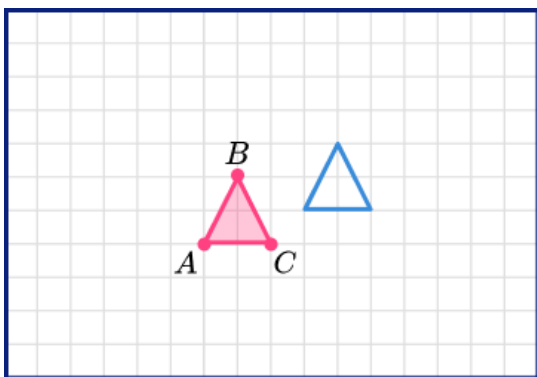
- 2) Write £12.87 as an amount in pence. 1287p

- 3) Increase 50 by 30% 65

- 4) Using the pie chart, determine the least popular pet. Mouse



- 5) Translate triangle ABC using the vector $\begin{pmatrix} 3 \\ 1 \end{pmatrix}$



Week 10: Day 2

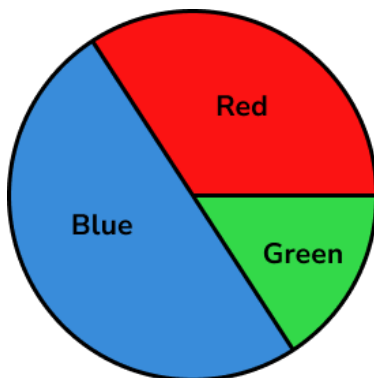
- 1) Calculate the mean:

10, 15, 25, 45, 50

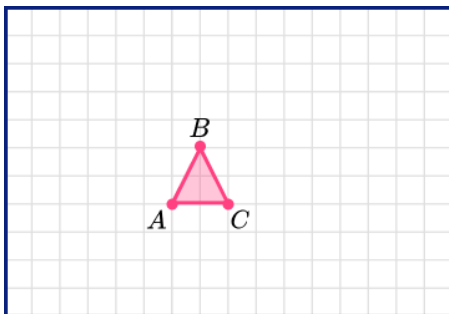
- 2) Write two minutes as an amount in seconds.

- 3) Decrease 70 by 40%

- 4) Using the pie chart, determine the proportion of respondents choosing blue.



- 5) Translate triangle ABC using the vector $\begin{pmatrix} -4 \\ -2 \end{pmatrix}$



Week 10: Day 2 Answers

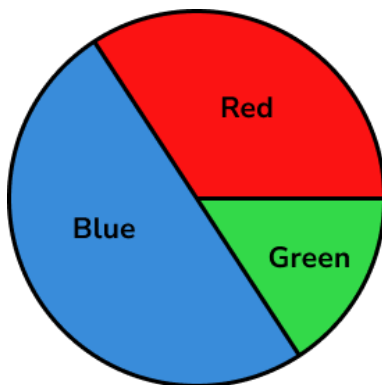
- 1) Calculate the mean: mean=29

10, 15, 25, 45, 50

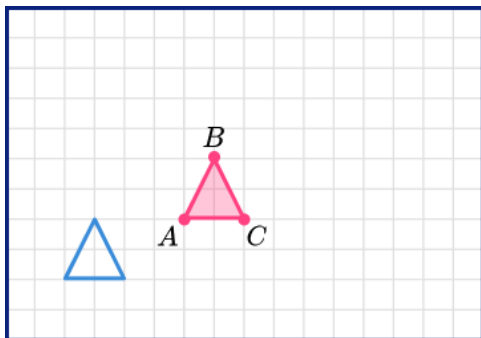
- 2) Write two minutes as an amount in seconds. 120 seconds

- 3) Decrease 70 by 40% 42

- 4) Using the pie chart, determine the proportion of respondents choosing blue. $\frac{1}{2}$



- 5) Translate triangle ABC using the vector $\begin{pmatrix} -4 \\ -2 \end{pmatrix}$



Week 10: Day 3

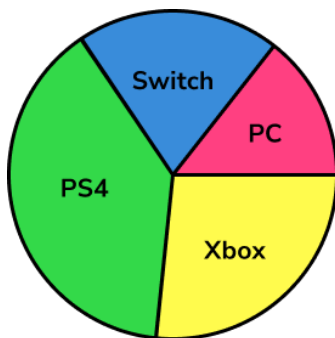
- 1) Calculate the mean:

8, 6, 1, 1, 12, 2

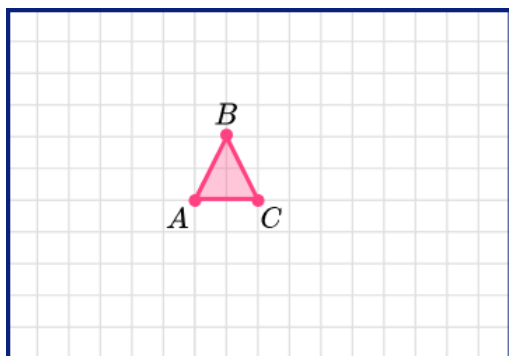
- 2) Write 375 cm as an amount in metres.

- 3) Increase 90 by 25%

- 4) Using the pie chart, determine the most popular video game platform.



- 5) Translate triangle ABC using the vector $\begin{pmatrix} 2 \\ -4 \end{pmatrix}$



Week 10: Day 3 Answers

- 1) Calculate the mean: mean=5

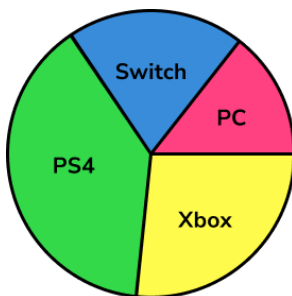
8, 6, 1, 1, 12, 2

- 2) Write 375 cm as an amount in metres. 3.75m

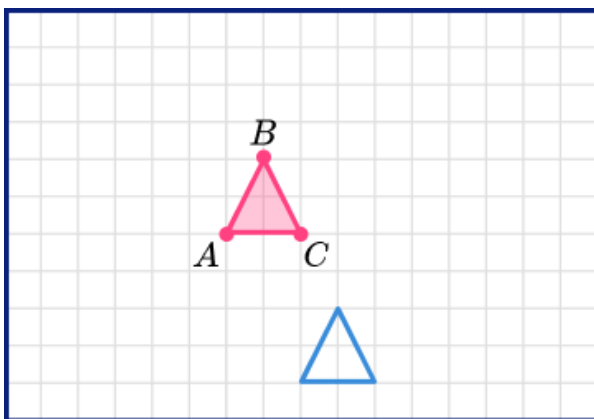
- 3) Increase 90 by 25% 112.5

- 4) Using the pie chart, determine the most popular video game platform.

PS4



- 5) Translate triangle ABC using the vector $\begin{pmatrix} 2 \\ -4 \end{pmatrix}$



Week 10: Day 4

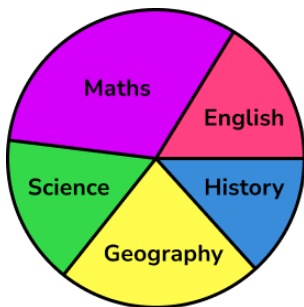
- 1) Calculate the mean:

82, 76, 71, 78, 83

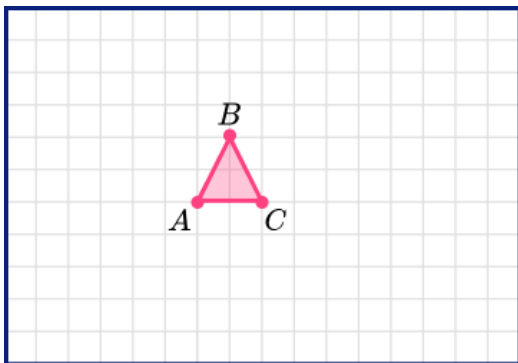
- 2) Write four weeks as an amount in days.

- 3) Decrease 30 by 15%

- 4) Using the pie chart, determine the least popular subject.



- 5) Translate triangle ABC using the vector $\begin{pmatrix} 1 \\ 0 \end{pmatrix}$



Week 10: Day 4 Answers

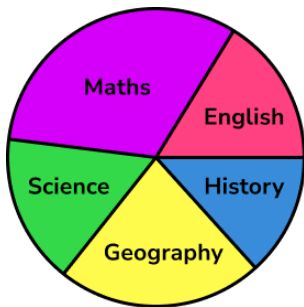
- 1) Calculate the mean: mean=78

82, 76, 71, 78, 83

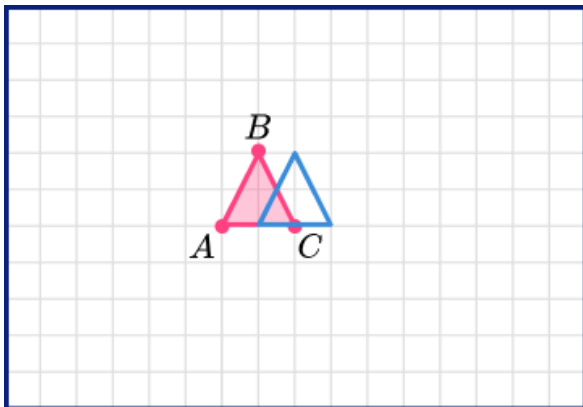
- 2) Write four weeks as an amount in days. 28 days

- 3) Decrease 30 by 15% 25.5

- 4) Using the pie chart, determine the least popular subject. History



- 5) Translate triangle ABC using the vector $\begin{pmatrix} 1 \\ 0 \end{pmatrix}$



Week 10: Day 5

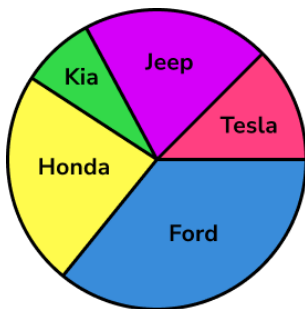
1) Calculate the mean:

7, 9, 5, 8, 5, 4, 4, 2

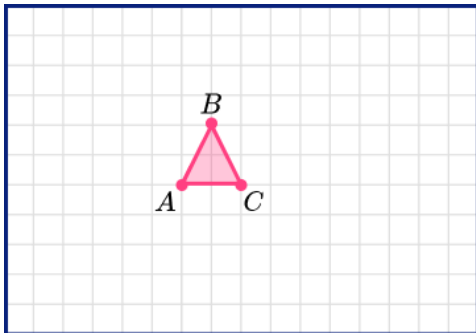
2) Write 60 months as an amount in years.

3) Increase 42 by 35%

4) Using the pie chart, determine the two makes of car which are of equal proportion.



5) Translate triangle ABC using the vector $\begin{pmatrix} 0 \\ -2 \end{pmatrix}$



Week 10: Day 5 Answers

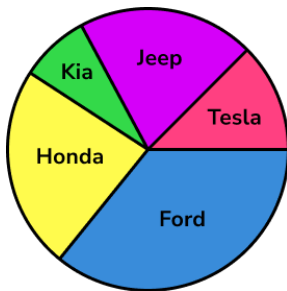
- 1) Calculate the mean: $\text{mean}=5.5$

7, 9, 5, 8, 5, 4, 4, 2

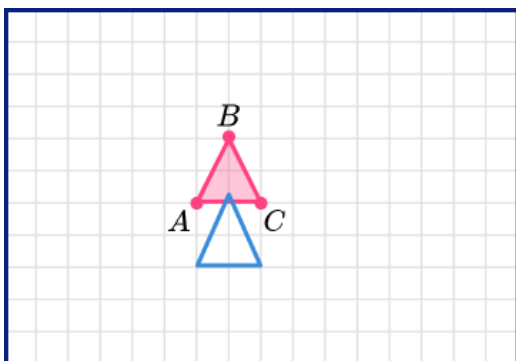
- 2) Write 60 months as an amount in years. 5 years

- 3) Increase 42 by 35% 56.7

- 4) Using the pie chart, determine the two makes of car which are of equal proportion. Jeep and Honda



- 5) Translate triangle ABC using the vector $\begin{pmatrix} 0 \\ -2 \end{pmatrix}$



Do you have KS4 students who need additional support in maths?

Our specialist tutors will help them develop the skills they need to succeed at GCSE in weekly one to one online revision lessons. Trusted by secondary schools across the UK. Visit thirdspacelearning.com to find out more.