Home-School Learning Collaboration – Mathematics

Topics in this cycle:	Taught: Autumn 2	Year Group: 8

Key knowledge/concepts to be learnt ('Tell me about….')	Websites/blogs/YouTube links and further reading to deepen and consolidate learning
Working in the Cartesian plane:	
• Coordinates	https://vimeo.com/468128782
• Draw horizontal and vertical lines	https://vimeo.com/468129042
• Recognise and use y= x line	https://vimeo.com/468129575
• Explore gradient of y= kx and link it to direct proportion	https://vimeo.com/474984412
• Explore graphs in form y= x + c and y= -x + c	
• Plot lines in form y= mx + c	
Representing data:	
• Scatter graphs	
• Scatter graphs	https://vimeo.com/477518878
• Identify different types of data	https://vimeo.com/478901964#
• Frequency tables (ungrouped data)	https://vimeo.com/481136693
• Frequency tables (grouped data)	https://vimeo.com/466558990
• Represent grouped discrete data	
• Represent continuous data grouped into equal classes	
• Two-way tables	
Tables and probability:	
• Sample space	https://vimeo.com/483973328
• Probabilities from two-way tables	https://vimeo.com/483973037
• Probabilities from Venn diagrams	https://vimeo.com/483972889

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Key Vocabulary and Definitions To Be Learnt	
Variable	A number we do not know and use an alphabetic letter for
Coordinates	A set of 2 numbers that denote a point on a coordinate grid
Correlation	Relation between two categories, i.e shoe size and height of a person
Line of best fit	A straight line drawn on a Scatter Graph to show correlation
Outlier	A piece of data that vary from the rest of data
Discrete data	Numerical data that takes particular values only. i.e. number of apples, shoe sizes
Continuous data	Numerical data that can take any values, i.e. height, distance
Qualitative data	Non-numerical data, i.e. eye colour, preferences
Quantitative data	Numerical data, i.e. number of students, time taken to get to school
Sample space	All the possible outcomes from an experiment
Gradient	Is the steepness of a line
Linear	A sequence is linear when its values are represented by a straight line graph
Axis	A numbered line
Origin	A point where x and y axes meet
Horizontal position	Is flat and levelled with the ground
Vertical position	Is along a vertical direction (the plumb line direction)

What Will The Assessment Look Like?

Please follow the link to a full breakdown of topics covered in November assessment.

Link:

You may also want to try some samples of questions:

Link:

Family Learning Opportunities

Support you child at busting XP levels on SPARX MATH HOMEWORK.

Test understanding by asking questions:

Working in the Cartesian plane:

- **Coordinates in all four quadrants:**
  What is the same and what is different about the points with coordinates (a, 0) and (-a, 0)?
  Why are coordinates (a, 0) and (0, a) different?
  Why do the order of the numbers in coordinate matter?
  Where is the origin?
- **Lines parallel to the axes:**
  Is the line 2 = x the same as x = 2? What about x – 2 = 0?
  Is x = 0 the same as y-axis? How do you know?
  Will the line x= … and y= … ever meet? Why or why not?
- **Recognise and use the line y = x:**
  Is the graph y = x the same as y = -x? Why?
  Why are the scales on axis important when plotting graphs?
- **Recognise and use lines y = kx:**

		What is the same and what is different about the lines y = kx and y = x? Do all lines in form y = kx form a straight line and go through the origin? Why or why not? • **Direct proportion using y = kx:** How would you know if a straight line or a table represent proportion? What are the key features? What is a conversion graph and how can information be obtained from it to answer questions? Why do direct proportion graphs always start from (0, 0)? • **Lines of the for y = x + a:** What is the gradient of a line y = a + x? Is a – x = y the same as x + y = a? Explain • **Graphs with negative gradients:** How can you identify whether a plotted straight line has a positive or negative gradient? • **Linking graphs and sequences:** What is the same and what is different about linear graphs and linear sequences? How could we label the x-axis on the graph to show the position of the n-th term in the sequence? Will the gradient of the straight line representing a descending linear sequence be positive or negative? Explain your answer. • **Plotting y= mx +c graphs:** Why is it a good idea to use three coordinates when plotting a straight line graph? Can you use non-integer x values in your table to generate sets of coordinates? **Representing data:** • **Draw and interpret scatter graph:** How do we use data to produce a scatter graph? How can you tell is a correlation is positive or negative? Can you give some real-life examples of positive and negative correlations? How are these same or different? What do you need to consider when drawing the line of best fit? • **Identify different types of data:**

		What types of data do you know? Give some examples of each. Why do we need to know about different types of data? • **Read and interpret frequency tables:** What does the frequency column represent in a table? Do you still need a row if frequency is 0? When would a grouped frequency table be more appropriate to use than an ungrouped? How can we work out how to group data? Why is it useful to have groups of equal size? Why do we have gaps between data in a discrete grouped frequency table? Why isn't there a gap for continuous data? • **Represent data in two-way tables:** Why do we use columns and rows in a two-way tables? Where does the overall total appear in a two-way table? **Tables and probability- stretch:** • **Product rule and total outcomes:** How can we find the total of arrangements without listing each one? Is commutativity important when working out the total number of arrangements? Why/Why not? How can factors help when finding lists that have a specific number of arrangements? **More:** You may want to look at a challenge on finding AVERAGES from frequency tables: https://youtu.be/X98Q4iK3IfA?si=l-vA0x3O633hTn8k Let's learn how to complete Venn Diagrams: https://youtu.be/qoT42mKVf6c?si=4M8iDHxCr2Z3h-0j