

# Maths Homework

Spring 1

Year 8

## Graphs and Networks

**Introduction:** Graphs and networks play vital roles in our everyday functions. The ability to create and read graphs (in finance, travel, health care, statistics, etc.) is an important skill.

This homework task is designed to help you get some understanding of this.

**Note:**

Your teacher will be judging your homework completion based on tasks from Week 1 to 5.

If you have not completed your tasks from Week 1 to 5, you will not have completed your homework and will need to complete it in a homework reflection on the last week of term

Week 1:	
1. Where is the city of Königsberg?	
2. What problem did the citizens of Königsberg encounter regarding their movement around the city? How many bridges were built to overcome this problem?	
3. In your own words, state the puzzle that was created based on their problem.	

Week 2	
1. Copy and paste a simplified diagram of a map showing the puzzle.  (You may want to practice on separate diagrams)	
2. Try to solve the puzzle i.e. can a path be found that can be used to visit <b>all parts</b> of the city without having to use a bridge <b>more than once</b> .	
3. What conclusion can you make about the solution of the problem. Explain.	

Week 3

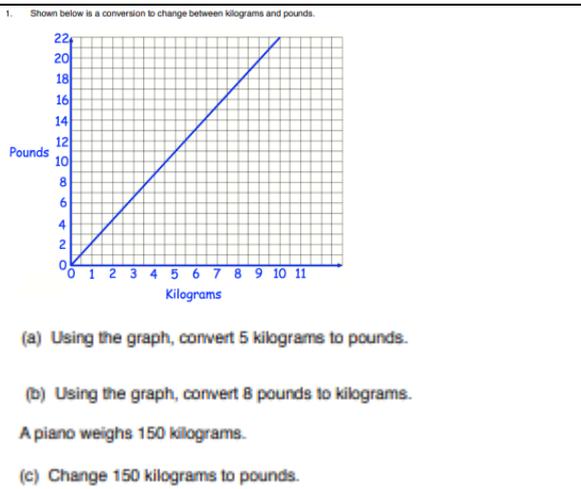
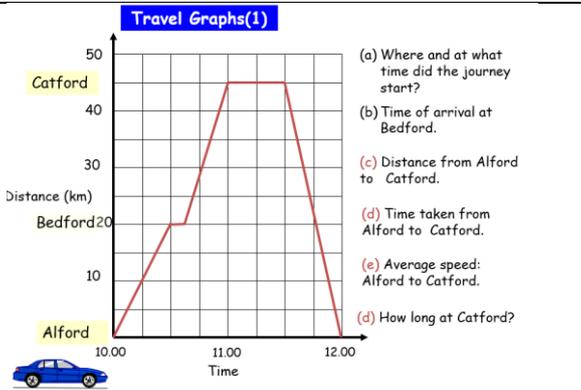
**You have invited friends to a party. At the end of the party, each person must shake hands with every other person at the party.**

1. If only one friend arrives to be with you because the others cannot make it, how many handshakes will there be?  
Using dots to represent people and lines to represent handshakes, draw a simplified diagram to show this.
2. If TWO friends attend the party, how many handshakes will there be altogether?  
Show this on a simplified diagram using dots and lines.
3. Continue this investigation for 3, 4, 5, 6, 7 or 8 friends attending.  
Draw a simplified diagram for each case.

Week 4:

1. Create a table of values showing the number of friends attending and the number of handshakes there will be.
2. Use your table to draw a graph of your results.  
Use the x-axis for the number of friends and the y-axis for the number of handshakes.
3. Describe your graph.

Week 5



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