Year 4

Select from the list below and complete one each day. Whilst completing each activity look for patterns and connections. Make sure you enjoy the activity and share it with your parents. Complete as much as you can but each activity should take no longer than an hour.

	Activity	Parent Comment
1	Roll a dice 4 times to generate 4 numbers. What 4-digit numbers can you make using each of your rolled numbers. Can you work systematically to find them all? What's the difference between the smallest 4-digit number that you made and the highest? Choose one of your 4-digit numbers. How many different ways can you partition this number?	
2	Did you know that at the end of a television program the date that it was filmed is shown in Roman Numerals? As you are watching some of you favourite television programmes make a note of the Roman Numeral date and convert this into our number system to find out when it was filmed.  Collect this information about a number of programmes. Which programme is the oldest? Which one is the newest?	

3

Practice your formal written addition by playing the 'nasty or nice game' from the nRich website.

Nice or Nasty

Age 7 to 14 ★

Find a partner and a $1-6$ dice, or even a $0-9$ dice if you have one. You could use the dice in *Dice and Spinners*.

Each of you draw a set of four boxes like this:

Or you can download and print off this scoring sheet.

Game 1

Take turns to roll the dice and decide which of your four boxes to fill. Do this four times each until all your boxes are full. Read the four digits as a whole number.

Whoever has the larger four-digit number wins.

There are two possible scoring systems:

- A point for a win. The first person to reach 10 wins the game
- Work out the difference between the two four-digit numbers after each round.
  The winner keeps this score. First to 10000 wins.

Now for some variations...

Game 2

Whoever makes the smaller four digit number wins. You'll probably want to change the scoring system.

Game 3

Set a target to aim for. Then throw the dice four times each and work out how far each of you is from the target number. Whoever is the closer wins.

Game 4

This game introduces a decimal point. The decimal point will take up one of the cells so this time the dice only needs to be thrown three times by each player. The winner is the one closer to the target. Choose a target.

Two possible versions:

- each player decides in advance where they want to put the decimal point before taking turns to throw the dice
- each player throws the dice three times and **then** decides where to place the digits and the decimal point.

Again, two different scoring systems are possible.

Game 5

This is the nasty version!

Play any of the games above. This time you can choose to keep your number and put it in one of your cells, **OR** give it to your partner and tell them which cell to put it in. You might lose a friend this way! It's really important to take turns to start each round if this game is going to be fair.

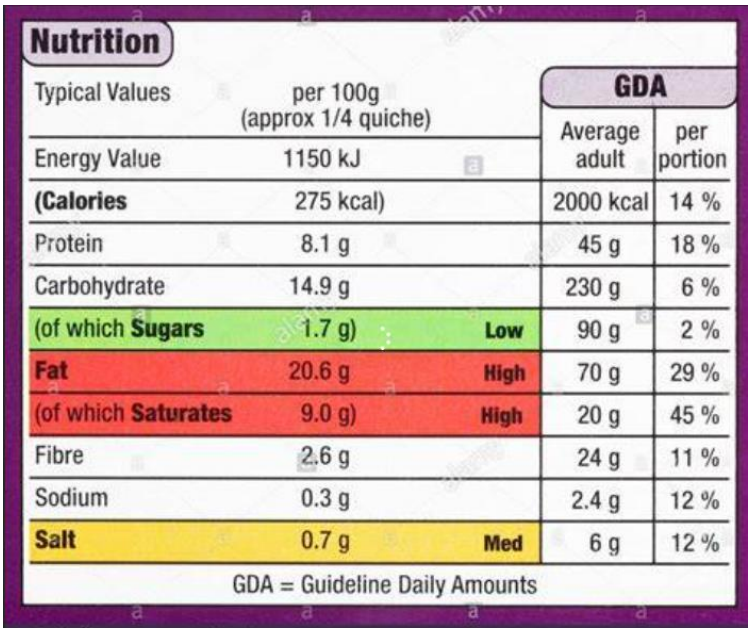
This becomes even nastier when you play the games above with more than two people.

Game 6

A cooperative game rather than a competitive one - for three or more people.

Choose any of the games above. Decide in advance which of you will get the closest to the target, who will be second closest, third, fourth etc. Now work together to decide in whose cells the numbers should be placed, and where.

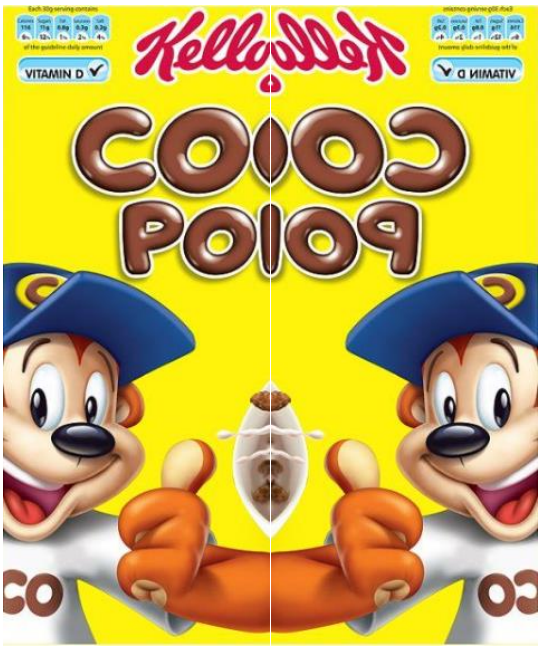
4	Be musical! If you don't have any musical instruments, then improvise by making percussion sounds with your body or use pans from the kitchen! Use your times tables to help you to work through this NRICH problem **Music to My Ears** **Age 7 to 11** ★ You could have a go at Clapping Times before trying this problem. This is a very practical activity - you might like to use some musical instruments, for example a drum or a triangle, rather than using your hands and parts of your body. Begin a rhythm: clap, clap, click (your fingers), clap, clap, click, clap, clap, click, clap, clap, click ... What will you be doing on the 15th beat? How do you know this without actually doing it? What will you be doing on the 20th beat? Again, explain how you can predict this. How about on the 99th beat? What would you be doing on the 100th beat? If there is someone else with you, ask them to come and join in. If you're on your own, it doesn't matter, you'll just have to imagine that someone else is there. You and your friend are going to both start a different rhythm at the same time. You will do clap, clap, click, clap, clap, click ... as you did before. Ask your friend to do click, clap, clap, click, clap, clap, click, clap, clap ... Have a go so that you get a steady rhythm going. If you both start at the same time, when will you both click your fingers at the same time? Why? Are there other ways that you could have clapped and clicked for this to be the case? How could you change your rhythms so that you do click at the same time? How could you predict when this was?	
5	Create a symmetrical pattern with items that you can find in your bedroom. This could have a horizontal or a vertical line of symmetry.	

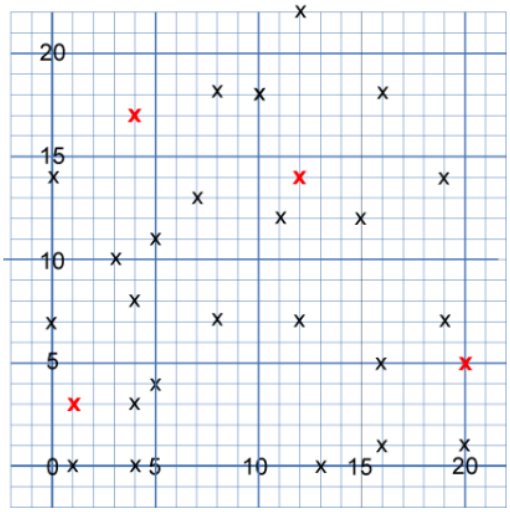
6	Investigate your food! Nutritional information on the back of a packet tells you details about the item per 100g  Choose one criteria e.g. protein and collect data from 6 different food packages. Draw yourself a 0-100 numberline and record the data that you have collected on this numberline. What is the difference between your highest value and your lowest value? Repeat for 2 different criteria.	

Nutrition

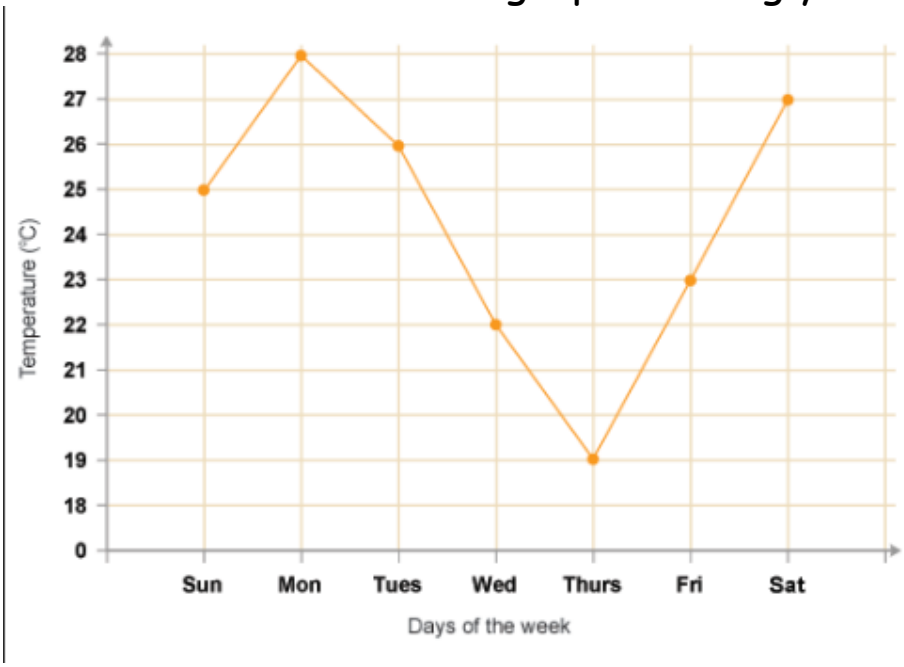
Typical Values	per 100g (approx 1/4 quiche)		GDA Average adult	GDA per portion
Energy Value	1150 kJ			
(Calories	275 kcal)		2000 kcal	14 %
Protein	8.1 g		45 g	18 %
Carbohydrate	14.9 g		230 g	6 %
(of which **Sugars**	1.7 g)	**Low**	90 g	2 %
Fat	20.6 g	**High**	70 g	29 %
(of which **Saturates**	9.0 g)	**High**	20 g	45 %
Fibre	2.6 g		24 g	11 %
Sodium	0.3 g		2.4 g	12 %
Salt	0.7 g	**Med**	6 g	12 %

GDA = Guideline Daily Amounts

7	Choose a picture from a magazine or from food packaging. Cut this picture in half. Complete the remainder of the picture as if it was symmetrical to the other side.  Maybe choose something that isn't symmetrical for a different effect. 	

8	Using a map that has grid coordinates, find interesting features or locations on your map and write down what grid coordinates these features are in. Plan a day out to visit a range of locations on your map. Write down the coordinates you will visit in the order you would like to visit them. See if your grown-up can get the same list of locations as you by reading your coordinates.	
9	Using the conventions of reading coordiantes have a go at finding the 8 squares in the nRich problem '8 Hidden Squares' Write the coordinates of the squares that you have found. **Eight Hidden Squares** **Age 7 to 14** ★★ On the graph below there are 28 marked points.  These points all mark the vertices (corners) of eight hidden squares. Each of the 4 red points is a vertex shared by two squares. The other 24 points are each a vertex of just one square. All of the squares share just one vertex with another square. All the squares are different sizes. There are no marked points on the sides of any square, only at the vertices. Can you find the eight hidden squares?	

10	Go on a capacity hunt! Using bottles in your kitchen and bathroom find the different capacities that are written on the packaging. Record all of these measures as both ml and litres. If ml is the unit of measure listed then convert this to litres, if litres are the unit of measure then convert this is ml. Order these capacities from smallest to largest.	
11	Collect 3 empty bottles together – ideally bottles of different sizes. Using just the 3 bottles that you have found can you investigate what different capacities can you measure? e.g – a 2000ml bottle and a 150ml bottle could measure out 2150ml by combining the two capacities or 1850ml by pouring out of the large bottle until the small bottle is full.	
12	Find a recipe for your favourite food. With the supervision of an adult make this dish as independently as you can. Weigh and measure the ingredients, follow the instructions systematically and make sure it is cooked for the correct amount of time and at the correct temperature.	

13	How far can you jump from a standing jump? How far can your grown-up jump from a standing jump? Collect data about standing jumps from as many people as you can. Record this data in a table and in a graph. Create some true or false statements about your data.	
14	What information is this graph showing you?  Using data about the average daily temperature for the next 7 days (BBC weather for example) create a line graph. What information can you tell from your graph?  Research different places around the world and what their average temperature will be over the next 7 days. Create line graphs to show this. What is the same and what is different about the graphs?	

15	Repeat one physical activity once a day for 7 days (eg – plank, running on the spot, skipping with a rope) time how long you can do this activity each day. Is there a change in your data? How could you clearly show this data?	
16	Research temperature at the north pole and temperature at the equator. Collect temperatures for each month of the year.  Calculate the difference in temperature between the two places each month. At what point is there the biggest temperature difference.	
17	Collect information about the sunrise and sunset times in your city on the 1st of each month. Record each time in 24-hour time as this will make the next task easier (sunset 6.34pm – 18.34)  Calculate how long the sun is up for each month of the year? What is the pattern that you can see?	

18	Find me 10 things that would round to 10,000 This could be population of towns, capacity of sports grounds, miles travelled to get to a location, number of items produced in a factory…) Tell me why it would round to 10,000. Is it because you are rounding your researched number to 10, 100 or 1000?	
19	Design a menu with 5 starters, 5 main courses and 5 deserts. What could someone come in and order? Can you work in a system to find all of the combinations of 3 course meals that could be served to customers?	
20	Choose a page in a book – ideally one that isn't too long. Count how many of the letters are consonants and how many of them are vowels. Express this as a fraction. Simplify this fraction using your multiplication knowledge. Choose one line of the book. What fraction on this line is the letter A, B, C, etc. Which is the largest fraction? Why do you think this is?	