

Maths and Art/Design (a mishmash)

Set W/C 18th May 2020

Your activity this week is to **design and make** a maths board game. If you like, you could also include science or English/grammar/spelling questions, but maths definitely must be a main focus.

This challenge is rather an open one so I am not going to give you specific instructions, but rather a few guidelines. Think about the following:

- Your game **must** include questions for your players to answer. As I already said, most of these should be maths, but you could mix it up with a little science and English too, if you wish. See below for ideas on maths topics that you could invent questions about. The best way to do this is probably on 'question cards' but you may have your own ideas for this instead.
- Maybe you could base your game on a game that you are familiar with already, with a few adaptations and maybe turn it into a 'maths version' of this game.
- Will you have a theme? For example, like games such as 'snakes and ladders'.
- What will your game look like? Will it be designed on a paper board or a cardboard one? Or a wooden one? Or something else entirely? How will you decorate it?
- What will your playing pieces look like and be made from?
- How will your players play?
- How does a player win?
- Will you have task/question cards?
- Will you have different squares on your game board that mean different things or belong to different categories?
- Are there any penalties or things to avoid (e.g. the snakes in Snakes and Ladders, jail in Monopoly, etc).

A good tip for getting started is to have a conversation with someone about possible ideas. Maybe someone at home could help you with ideas, or arrange a video call with someone else in our class or a different friend or family member.

You could use sketches and draw basic pictures to record your initial ideas, then talk to as many people as possible about it. It may be worth making a very rough and quick version of it all on paper (with no real design) and have a go at playing it with someone at home. This will show you any problems that you run into along the way and give you ideas for how to solve them in your 'real' final version.

Here are some basic and very general game ideas to get you started:

- If you do _____, move back one space.
- If you _____, move forwards 2 spaces.
- To get someone out, you must _____
- If you land on _____ then _____ happens.
- If you land on _____ then you have to answer a green/blue/red/purple category question.
- Play with one or two dice.
- Action cards.

Basic games work the best. Generally, the simpler you make your game, the more fun it is to play and the easier it is for your players to understand.

Maths topics that you can create questions on:

- Place value and the worth of digits.
- Rounding numbers to the nearest tenth, whole, ten, hundred, thousand, ten thousand, hundred thousand, million, ten million.
- Ordering numbers
- Negative numbers – find the difference, order them, calculate with them.
- Adding, subtracting, dividing and multiplying. These could be mental or written. If you plan to do written questions, you may need to provide your players with a piece of paper for calculating on.
- Common factors
- Common multiples
- Prime numbers
- Square numbers
- Word problems involving the 4 operations.
- Simplifying and equivalent fractions
- Compare and order fractions with the same and different denominators (bottom number).
- Mixed number and improper fractions conversions
- Adding and subtracting fractions with different denominators
- Multiplying and dividing proper fractions (not improper fractions)
- Fraction, decimal and percentage equivalents and conversions.
- Find percentages of a number
- Find fractions of a number
- Solve problems involving ratio
- Simple algebra
- Measurement conversions (mm/cm/m ; g/kg ; ml/l)
- Metric to imperial conversions (km to miles, cm to inches) and vice versa
- Area and perimeter of shapes
- Volume of shapes
- 2D and 3D shape name and properties
- Naming and identifying different parts of circles
- Interpret data on a chart/graph/table

Some of these things will be easier to put into a board game than others.

You may do your questions and designing by hand, or using a computer, or as a mixture of both.

One of your English tasks is to write a set of rules and instructions for your game.

You must ensure that your game looks good – it should be colourful and inviting.

This challenge is something that is designed for you to work on over the whole week – you will probably struggle to complete this task to a high-quality standard by doing it in a couple of hours.

Happy designing! 😊

