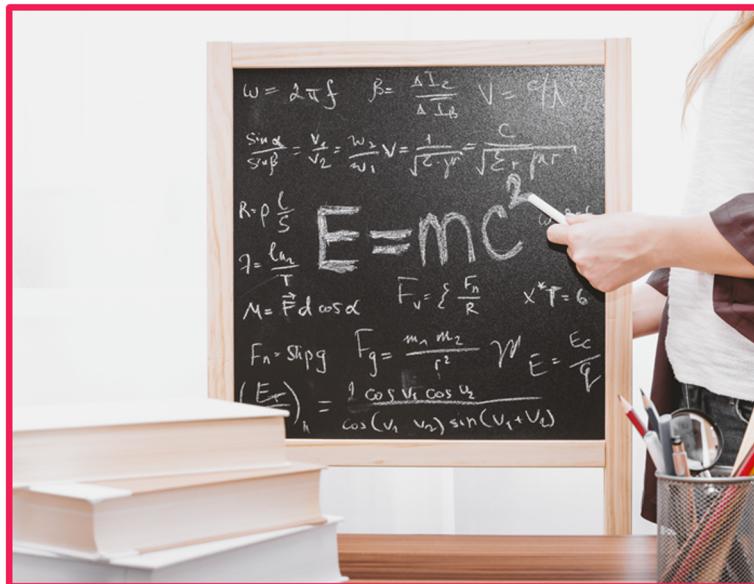


Mathematics Lesson



Note for the teacher

It is proven by many studies that we retain around 10% of what we read, yet 90% of what we experience ourselves. Despite that most of the mathematic lessons are based on repetition and memorization of disjointed theoretical facts. Most of the students hate 'the queen of science', consider it very hard, don't see how they will benefit from learning it and often leave school being committed to avoid it till the rest of their life.

The biggest challenge is to translate the abstraction of mathematics into real life examples. Such "translation" could be beneficial and fun for all the students, not only those with learning disorders. Therefore, what we propose here are some ideas, based on a multisensory approach that can be added to each lesson scenario.

1. Add some curiosity to the theory

Start each mathematic lesson with a question or a mathematic fun fact that could be an introduction to the topic – to spark curiosity and provide some real-life example.

For example, before the lesson about probability, you can use the BDay Paradox story.

If you put 23 people in a room, there is a 50% chance that 2 of them share the same birthday... The birthday paradox results from the probabilistic estimate of the number of people that must be gathered to have at least a one in two chance that two people in this group have their birthday on the same day. It so happens that this number is 23, which shocks the intuition a little. From a group of 57 people, the probability is greater than 99%.

This is a paradox not in the sense of a logical contradiction, but in the sense that it is a mathematical truth that contradicts intuition: most people believe that this probability is much lower than 50%. This study is by Richard von Mises.

You can also ask a question before the lesson about shapes: did you know that mathematics can be used to solve chips manufacture problem?

The particular shape of Pringles chips has been designed from a supercomputer. Why? Specially to keep the chips from flying.

Indeed, during their manufacture, the chips used a conveyor belt. To increase production, the speed of this conveyor had to be increased and the chips started to fly away. So, engineers looked into the issue, and using a supercomputer, a form of hyperbolic paraboloid was developed to solve the problem.

2. Multisensory activities

Practicing through experience is another important part of the path to understand mathematics. Here are some of the multisensory techniques that can be used in the classroom to strengthen mathematical skills.

Visualization

Present pictures of snowflakes as an example of symmetry, sunflower as an example of the Fibonacci sequence, Honeycombs as an example of wallpaper symmetry – these are just some of the thousands of examples of mathematics in nature that you can find with a quick internet research. Providing students with some visualization examples before every lesson would help them see that they are surrounded by mathematics.

Building

By using some inexpensive manipulatives (craft sticks, bean bags, matches) you can create a lot of activities that can allow your students to build different constructions in, for example, multiplications exercises.

Building 3D models is also an important part of learning geometry.

Note for the teacher

Some students with learning disorders might find holding scissors challenging as their grip is not very strong. If you plan to make an exercise that requires cutting, you can divide students in groups with specific roles like for example: cutter, builder, concept manager, presenter, etc.

Playing

You can write numbers on the outside of a large ball, these could be whole numbers, fractions or decimals – depending on the age of students. The ball is passed around the room, and when a student catches it, they must do a math operation with the two numbers his hands land on. This activity can be a form of warm-up before the math lesson.

Note for the teacher

We suggest passing the ball instead of throwing as coordination is not the strongest point of some students with learning disorders. You can also use dice. The older the students are the more dice you can use to create more complicated calculations.