MATHS IN MOTION

ALGEBRA GAMES

LEVEL

Level 7 – Level 8

THEME

Maths - Algebra

ACTIVITY DESCRIPTION

Students are introduced to Algebra through games. They learn how to use algebraic symbols, equations, and formulas. The games demonstrate how symbols take the place of numbers in simple formulas and how equations can be manipulated to solve problems.

MATERIALS REQUIRED

- Workbook
- Pencil/Pen
- Access to a whiteboard (teacher)
- Whiteboard markers (teacher)

INSTRUCTIONS

As a whole class activity, undertake the first few games together, calling on individual students to participate at the front of the class.

Let's play a Maths game together!

Instructions	**Game 1 Example**	**Game 2 Example**
1. Think of a number in your head, don't tell me what it is	8	17
2. Double it	16	34
3. Add ten	26	44
4. Divide by two	13	22
5. Subtract three	10	19
6. Ask the student what number they got?	10	19
Once the student has told you their number (example 10) The teacher subtracts two from the final number (10 – 2) Then tell the student, your original number was 8! Am I correct?		
Let's play again		
Teacher chooses another student from the class to participate		
1. Think of a Number in your head, don't tell me what it is (Game 2)		

Ask the students to pair up and undertake the game a couple of times with their partner.

Once the students have played the game a few times with a partner, the teacher asks the following questions. What is happening, what is the trick? Listen to the student responses.

The trick is called Algebra.

Now let's start to use symbols instead of numbers. Ask students to get their workbooks out and follow your instructions.

	Example
When I say, "Think of a Number in your head, don't tell me what it is". Write down x	**x**
Double it, write down 2x	**2x**
Add ten, write down 2x + 10	**2x + 10**
Divide by two, write down $\frac{2x+10}{2}$	**$\frac{2x+10}{2}$**
Subtract three, $\frac{2x+10}{2}$ -3	**$\frac{2x+10}{2}$ -3**
Ask the student answer they calculated?	
Let's call the answer Y	**= Y**
The answer, subtract 2 equals	**Y – 2 =**

Congratulations you have just completed your first algebraic equation. Did you notice that algebra is simply writing an unknown number as a letter. Usually in algebra we use x,y,z to represent the unknown numbers.

Puffing Billy Railway relies on careful and accurate calculations using algebraic equations every day. There are known and many unknown variables at the railway and each journey is different. Without algebra we can simply not operate.

KNOWN

- Distance between each station
- Capacity of each carriage

UNKNOWN

- Speed of the train
- Passenger numbers
- Departure and arrival times (can be predicted but differ slightly with each journey)
- Stopping time at each station
- Number of trains running per day

SUGGESTIONS FOR ASSESSMENT

Contribution to class discussion, ability to work effectively in a pair and to complete the number game successfully.

BACKGROUND INFORMATION

Algebra is the branch of mathematics that represents problems in the form of mathematical expressions. It involves variables like x, y, z, and mathematical operations like addition, subtraction, multiplication, and division to form a meaningful mathematical expression.

CURRICULUM LINKS

Mathematics

Level 7

Number and Algebra, Patterns and Algebra

Introduce the concept of variables as a way of representing numbers using letters (VCMNA251)

Create algebraic expressions and evaluate them by substituting a given value for each variable (VCMNA252)