

STEM from Home

Square Up!

Are you familiar with number pairs like 2 and 4, 3 and 9, 4 and 16, 5 and 25, 10 and 100?

You guessed it right. In each pair, the second number is the result of multiplying the first number with itself. For example, in the first pair, 4 is equal to the multiplication of 2 with 2. And so is the case with other pairs. In mathematics, when a number is multiplied with itself, the resultant number is called 'Square'.

'Square Root' is the opposite of the above. In the same pair, 2 is the Square Root of 4; 3 of 9; 4 of 16 and 5 is the Square Root of 25.

Go through the [reference material](#) to learn more about Squares and Square Roots.

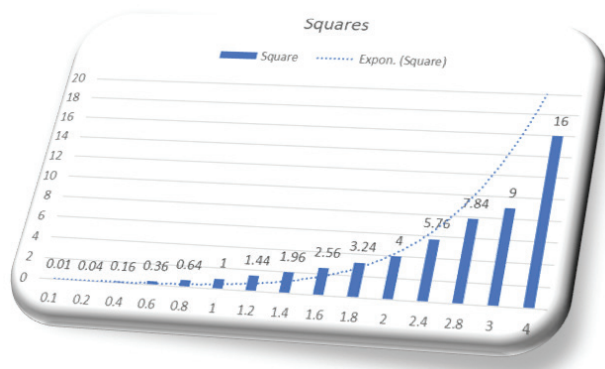
Whenever you square a number, you expect the resulting number to be larger than the original number. In the Main and Bonus activities, you are going to learn about some strange patterns of numbers when their square or square root is derived. You will then use your understanding of the concepts to create interesting and unique crossword puzzles in the Challenge activity.

Main Activity: The Curious Case of Diminishing Squares

Introduction

In this activity, you will create a spreadsheet to calculate and analyse the patterns found in Squares of Positive Numbers which are:

- Less than 1
- Greater than or equal to 1



Let's get started! Take a look at the completed activity [here](#). Click on the sheet named as Squares.

What You Will Need

Hardware

A computer connected to the internet.

Important Information

Carpenters, engineers, architects, construction workers, those who measure and mark land, artists, and designers- these are some of the people who use the concepts of Square and Square Root to help them do their work more effectively.

Software

A modern web browser like Microsoft Edge, Chrome, or Firefox.

An email account on Google.

What You Will Learn

- How to use a spreadsheet program for simple calculations?
- How to draw charts in a spreadsheet program?
- How to study patterns using the charts?
- Analyse the Trendline of Squares of numbers smaller than 1 and greater than 1

You can access the [guidelines for the activity](#) here.

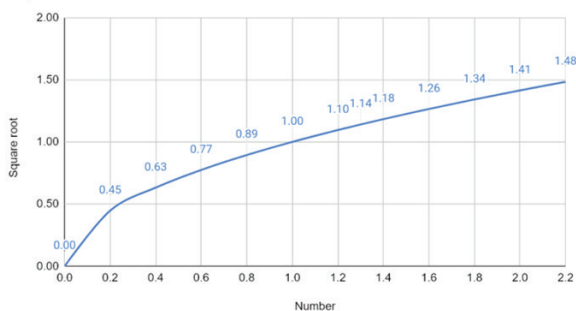
Bonus Activities

Activity 1: Getting to The Root of It!

Introduction

In this activity, you will create a spreadsheet to calculate and analyse patterns in Square Roots of Positive Numbers which are:

Square root vs. Number



1. Less than 1
2. Greater than or equal to 1

Take a look at the completed activity [here](#). Click on the sheet named as Square Roots.

What You Will Learn

Hardware

A computer connected to the internet.

Software

A modern web browser like Microsoft Edge, Chrome or Firefox.

An email account on Google.

What You Will Learn

- How to use a spreadsheet program for simple calculations?
- How to draw charts in a spreadsheet program?
- How to study patterns using the charts?
- Analyse the Trendline of Square Roots of numbers smaller than 1 and greater than 1

You can access [guidelines for the activity](#) here.

Activity 2: Comparing & Analysing

This is going to be very interesting. You will be comparing results of both the Main Activity and the first Bonus Activity.

You can access the [guidelines for the activity](#) here. Answer the questions in the [Comparing & Analysing Worksheet](#) at the end of the activity.

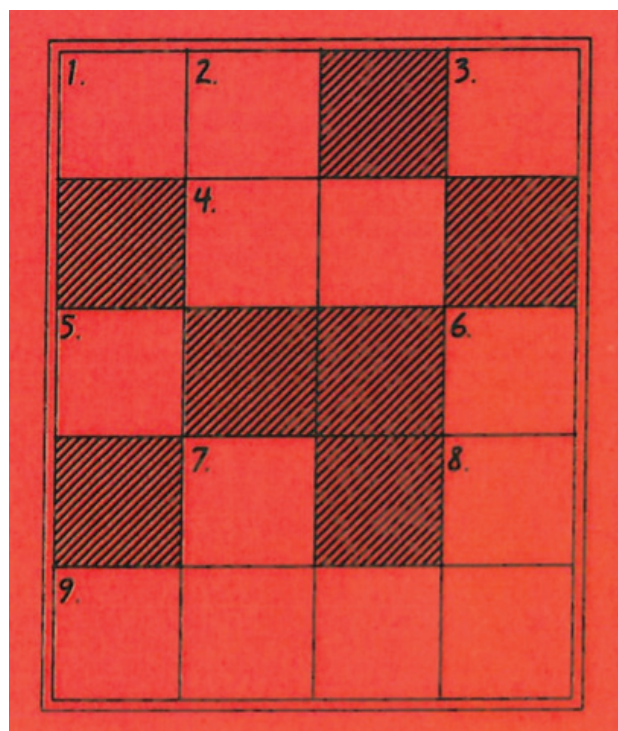
Hardware and software requirements are same as the first Bonus Activity.

Challenge Activity: Square & Cross!

This is an interesting challenge where Language and Math integrate to test your understanding of the concepts of Square and Square Roots as well as your creative and logical thinking skills.

Your Challenge

1. Design 2 crosswords using Squares and Square Roots.
2. Minimum 10 clues per crossword
3. Design your own grid. Ideally both grids should be different



Crossword Clues Example (Refer to The Image of the Grid Given Alongside)

Across

Down

Answers

Use the learning from the Main and Bonus Activities and use a spreadsheet to calculate a list of Squares & Square Root numbers you could choose from, for your crossword

Your Crossword Puzzles can be presented digitally using [Docs](#) or [Presentation](#) software