# Stage 9 – Number: Calculating

**Know it!**

| Knowledge | |
|---|---|
| I know… | How to calculate with positive indices, and roots. |
| I know… | How to calculate with negative indices (in standard form). |
| I know… | How to apply operations to numbers in standard form. |
| I know… | How to use a scientific calculator for powers, roots and numbers in standard form. |
| I know… | The difference between rounding and truncating. |
| I know… | How to identify the minimum and maximum values of a rounded amount, and use inequalities to describe them. |
| I know… | How to solve problems involving maximum and minimum values. |

**Link it!**

| Backward | Forward |
|---|---|
| Standard form. | Solve problems involving standard form. |
| Powers and roots. | |
| Laws of indices. | Solve problems involving bounds. |
| Rounding. | |

**Prove it!**

Kenny thinks this number is written in standard form: $23 \times 10^7$.
Do you agree with Kenny? Explain your answer.

When a number 'x' is rounded to 2 significant figures the result is 70.
Jenny writes '65 < x < 75'.
What is wrong with Jenny's statement?  How would you correct it?

Convince me that $4.5 \times 10^7 \times 3 \times 10^5 = 1.35 \times 10^{13}$

**Say it!**

| Vocabulary | Definition |
|---|---|
| Index Notation | Index notation is a method of representing numbers and letters that have been multiplied by themselves multiple times |
| Standard Form | A way of expressing very big or small numbers using powers of 10 |
| Round | The digits are rounded to a given degree of accuracy. |
| Truncate | Cut off a number at a given point rather than rounding. |
| Minimum | Smallest Value |
| Maximum | Largest Value |
| Interval | Gap between two numbers |
| Inequality | An inequality compares two values.  Uses the symbols <, >, ≤, ≥ |