NEO MATHEMATICS · FOUNDATIONS

LEARNER GUIDANCE

Lesson 1: Which Digits Matter?

A calm guide to rounding whole numbers and decimals to significant figures.

Welcome

This lesson is about deciding which digits carry the most useful information about a number. You may pause, return or complete the lesson across more than one sitting. Using support is part of learning; it is not cheating.

What we are exploring

The lesson's Driving Question is: How can we make a number easier to use while keeping it close to its original value?

You will develop your ability to:

- find the first significant digit in a whole number or decimal;
- count a stated number of significant figures from that point;
- use the next digit to decide whether to round up or stay;
- keep the correct place value when writing the rounded result;
- explain why a rounded answer is sensible.

Stepping Stone

Round positive integers and decimals to a stated number of significant figures.

Before you begin

Choose what will help today. You may use the lesson Scratchpad, paper, a calculator, spoken reasoning, colour, a place-value chart or a number line.

- Reduce screen brightness or visual distractions if useful.
- Choose whether to type, write, point, speak or sketch.
- Take a movement, sensory or drink break whenever one would help.
- Remember that suggested timings are invitations, not deadlines.

Possible Reconnection Route

If tenths, hundredths or place-value columns feel uncertain, open the Scratchpad and select the place-value background. Return to the live number when the columns feel clearer.

A possible route through the lesson

Connect

Compare an original number with a rounded version. Notice which leading digits preserve the sense of its size.

Move: use the Precision Lens

1. Choose a number and the required number of significant figures.
2. Find the first non-zero digit. This is where significant figures begin.
3. Move the lens across the number and keep the required digits.
4. Inspect the first digit outside the lens.
5. If it is 5 or more, increase the final kept digit by one. If it is 4 or less, leave that digit unchanged.
6. Replace later whole-number digits with zeros, or remove unneeded later decimal digits.

> **Leading zeros**
> Zeros before the first non-zero digit locate the decimal point. They are not significant. Once significant figures have begun, a zero between non-zero digits is significant.

Reflect: use the Boundary Explorer

The explorer places the number between two possible rounded landmarks. The halfway point explains the rounding decision: values below it go to the lower landmark; values on or above it go to the upper landmark.

Rest and nourish

Pause, look away or change position. When you return, retrieve the short pattern: find, keep, decide. This lesson nourishes attention to magnitude, confidence with crowded numbers and careful choices about precision.

Using the Scratchpad

The Scratchpad is optional. The place-value background can help you align digits; the number-line background can help you think about closeness. Erasing your own marks does not erase the mathematical background.

Using the Practice Companion

There are six carefully varied questions. Each question keeps its own support history.

Support pathway
Think and sketch → Socratic prompt → first try → Hint → second try → Worked solution

For each question, the Worked solution remains greyed out until you have:

- opened the Socratic prompt;
- opened the Hint; and
- entered and checked two non-empty attempts.

If you use a worked solution, compare it with your attempts rather than copying it. Ask what you understood already and which connection changed your route.

When you feel stuck

- Circle or point to the first non-zero digit.
- Cover the later digits temporarily.
- Say how many digits you need to keep.
- Mark the deciding digit in a different colour.
- Place the number between two possible rounded values.
- Use one support control, then pause before taking another step.

One small action is enough
Being stuck often means that one place-value connection has not yet become visible.

Showing what you understand

For the Precision Explainer task, choose one whole number and one decimal. For each, identify the first significant digit, chosen precision, deciding digit, rounded value and why the answer is sensible.

You may use typed reasoning, an annotated Scratchpad image, a spoken explanation, calculations or a combination.

- I can find where significant figures begin.
- I can use the next digit to decide.
- I preserve place value in my rounded answer.
- I can explain why the result is sensible.

A valid finishing point
Your self-review may identify something to reconnect with next time. You do not need to complete every screen or question in one sitting.

Optional notes or sketches

NEO Cornerstones: Connection | Movement | Creativity | Reflection | Rest | Nutrition

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