Engage (Elicit)

- Video clip/animation, perhaps from BBC Class Clips, BrainPOP or similar.
- Quick demo, ideally one with a surprising outcome.
- This is the equipment, what might we be doing today?
- This scientist did this experiment—why?
- Label the apparatus and identify the control variables.
- Two minute discussion: how does X idea link to Y application?
- Surprising statement to make them question an assumption.
- Unusual prop.
- Question and three answers for them to grade as Good, Okay and Wrong.

Explore

Set tasks which allow students to explore and discover the ideas for themselves, guiding them by using as many **'hands-on, minds-on'** activities as possible:

- Designing and carrying out their own investigations.
- Recording practical results.
- Taking part in demonstrations.
- Considering hypothetical situations (thought experiments).
- Discussing advantages and disadvantages of methods or technologies.
- Observing the natural world.
- Describing events and experimental results.
- Drawing own conclusions from recorded material, whether this is sample data, industrial processes or BBC documentary footage.

Explain

Our aim is to provide our classes with the **language** that describes what they've found out. This is **scaffolding**, supporting students to turn **facts** into **knowledge**.

- Provide scientific vocabulary.
- Describe relationships mathematically.
- Relate back to previous lesson or topics, ideally by questions.
- Reword their ideas to produce a 'class definition'.
- Have individual students share their (approved) explanations.

Extend/ Elaborate

Using their constructed understanding - a synthesis of all they have **explored**, in the context and language of our **explanations** - students check that they grasp the concepts by:

- Completing mathematical exercises.
- Answering open questions or writing their own.
- Explain the ideas in a new format (eg podcast, video, poster).
- Attempting further exercises as part of homework to consolidate progress.

To challenge them, include parallel examples which require them to base their work on the **concepts**, not just words or mathematical methods. Some will need further explanation.

Evaluate

- A 'split-screen' plenary lets them demonstrate understanding *and* assess progress.
- Use prompts for metacognition and learning to learn ideas to encourage reflection.
- Consider self-assessment of confidence and competence, compared to start of lesson.
- Considering progress and gaps automatically tells students what they need to do next.
- Set targets for further lessons and self-directed study.