Design, test and refine algorithms involving a sequence of steps...

design, test and refine algorithms involving a sequence of steps and decisions based on geometric constructions and theorems; discuss and evaluate refinements

Learning intention

- design, test and refine algorithms involving a sequence of steps and decisions based on geometric constructions and theorems; discuss and evaluate refinements

Teach and model

- creating an algorithm using pseudocode or flow charts to apply the triangle inequality, or an algorithm to generate Pythagorean triples
- creating and testing algorithms designed to construct or bisect angles, using pseudocode or flow charts
- developing an algorithm for an animation of a geometric construction, or a visual proof, evaluating the algorithm using test cases

Check understanding

- Explain the main idea in design, test and refine algorithms involving a sequence of steps... using an example.
- Show the idea in a second way: with words, a model, a diagram or symbols.
- Apply the idea to a short unfamiliar situation and justify the result.

Teaching cautions

- Ask the student to explain their choice, not only state an answer.
- Check that key vocabulary is understood in a new example.
- Mix representations so the skill is transferred rather than copied.

Quick lesson sequence

- Connect to prior knowledge and introduce the key vocabulary.
- Model one clear example, then solve a second example together.
- Finish with an independent check and a short student explanation.