

The constancy of the sine, cosine and tangent ratios for...

recognise the constancy of the sine, cosine and tangent ratios for a given angle in right-angled triangles using properties of similarity

Learning intention

- recognise the constancy of the sine, cosine and tangent ratios for a given angle in right-angled triangles using properties of similarity

Teach and model

- understanding the terms “base”, “altitude”, “hypotenuse”, and “adjacent” and “opposite” sides to an angle, in a right-angled triangle, and identifying these...
- investigating patterns to reason about nested similar triangles that are aligned on a coordinate plane, connecting ideas of parallel sides and identifying the constancy...
- establishing an understanding that the sine of an angle can be considered as the length of the altitude of a right-angled triangle with a hypotenuse of length one unit and similarly...

Check understanding

- Explain the main idea in the constancy of the sine, cosine and tangent ratios for... 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.