Right triangle trigonometry

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A sample from this topic. The complete topic collection contains three different resources and worked solutions.

Read the explanation and worked example. Show your working; use a calculator only where asked.

What you will practise

• Use similar triangles to explain and apply sine, cosine and tangent.

• Explain a method and check the reasonableness of a result.

Useful starting skills: Use the prerequisite operations and representations shown in the worked example.

For an acute angleθ in a right triangle, $\sin\theta$=opposite/hypotenuse, $\cos\theta$=adjacent/hypotenuse and $\tan\theta$=opposite/adjacent. Similar triangles keep these ratios constant.

Identify the sides relative to the chosen angle. Use degree mode for degree angles, and inverse trigonometric functions to recover an angle from a ratio.

Worked example

A right triangle has opposite 3 and adjacent 4 toθ. Findθ.

$\tan\theta=3/4$.

$\theta=\tan^{-1}(3/4)\approx36.87°$.

Answer: 36.87°

Try it yourself

Name: _____ Date: _____

1. For a 3–4–5 right triangle,θ is opposite 3. Find sinθ, cosθ, tanθ.

2. Find opposite side for hypotenuse 12 cm andθ=30°.

Answers and explanations

Check the method as well as the final answer. An alternative correct method is also valid.

1. 3/5,4/5,3/4

Match each side toθ.

2. 6 cm

12sin30°=6.

Curriculum reference: VC2M9M03; VC2M9SP01

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