Pyramids cones and spheres

Learn and practise | Free preview

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 formulas for pyramids, cones, spheres and related composites.

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

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

Pyramid and cone volume is one third of base area times perpendicular height. A sphere has volume $4\pi r^3/3$ and surface area $4\pi r^2$.

Cone curved area is πrl, where l is slant height, not vertical height. A closed cone adds its base; a hemisphere’s curved area and total area differ by one circular base.

Worked example

A cone has radius 3 cm, height 4 cm. Find volume and total area.

Volume$=\pi\times9\times4/3=12\pi$ cm³.

Slant height 5 cm; total area$=\pi\times3\times5+\pi\times9=24\pi$ cm².

Answer: 12π cm³; 24π cm²

Try it yourself

Name: _____ Date: _____

1. Find volume of a square pyramid with base side 6 m, height 9 m.

2. Find sphere volume for radius 3 cm.

Answers and explanations

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

1. 108 m³

(1/3)×36×9.

2. 36π cm³

4π×27/3.

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