

Name: _____

Exam Style Questions



3D Pythagoras

Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

You may use tracing paper if needed

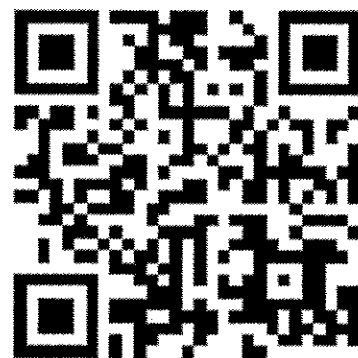
Guidance

1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

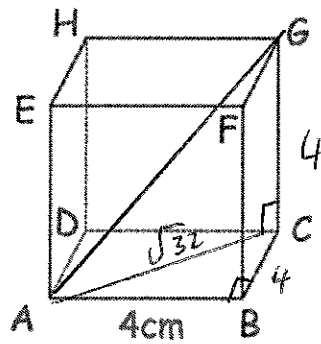
Revision for this topic

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Video 259



1. Shown is a cube with side length 4cm.



$$AC^2 = AB^2 + BC^2$$

$$AC^2 = 4^2 + 4^2$$

$$AC^2 = 16 + 16 = 32$$

$$AC^2 = 32$$

$$AC = \sqrt{32}$$

Calculate the length AG

$$AG^2 = AC^2 + CG^2$$

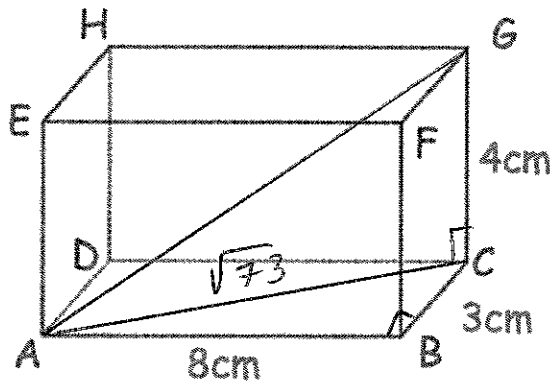
$$AG^2 = (\sqrt{32})^2 + 4^2$$

$$AG^2 = 32 + 16 = 48$$

$$AG = \sqrt{48}$$

.....cm
(3)

2. Shown below is a cuboid.
AB = 8cm, BC = 3cm and CG = 4cm



$$AC^2 = AB^2 + BC^2$$

$$AC^2 = 9 + 64$$

$$AC^2 = 73$$

$$AC = \sqrt{73}$$

Find the length AG

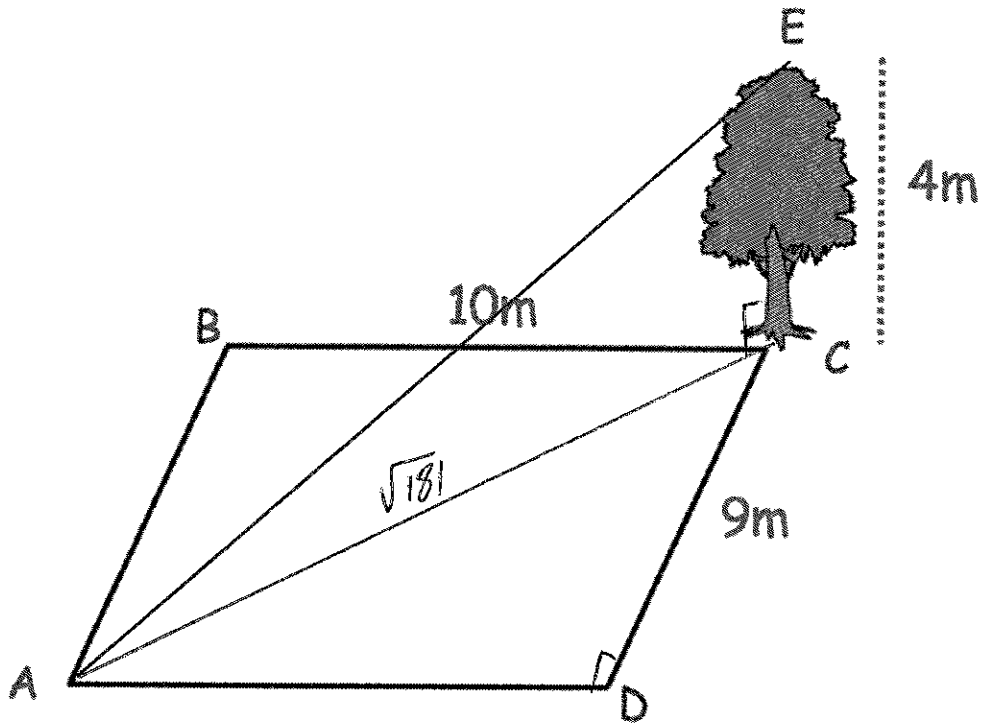
$$AG^2 = AC^2 + CG^2$$

$$AG^2 = 73 + 16 = 89$$

$$AG = \sqrt{89} =$$

.....cm
(3)

3. A tree is located in the corner of a rectangular field.



The field is 10 metres long and 9 metres wide.
The tree is 4 metres tall.

Calculate the length AE

$$AC^2 = 9^2 + 10^2$$

$$AC^2 = 81 + 100$$

$$AC^2 = 181$$

$$AC = \sqrt{181} = 13.45362405$$

$$AE^2 = 4^2 + (\sqrt{181})^2$$

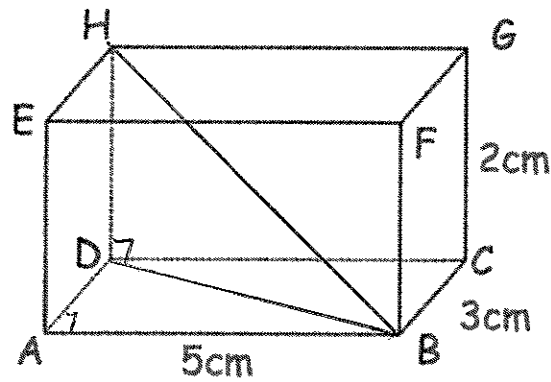
$$AE^2 = 16 + 181 = 197$$

$$AE = \sqrt{197} = 14.035...$$

$$\underline{\hspace{1cm}} 14.036 \text{ m}$$

(3)

4. Shown below is a cuboid



Calculate the length of diagonal BH.
Give your answer as a surd.

$$BD^2 = 3^2 + 5^2$$

$$BD^2 = 9 + 25 = 34$$

$$BD = \sqrt{34}$$

$$BH^2 = (\sqrt{34})^2 + 2^2$$

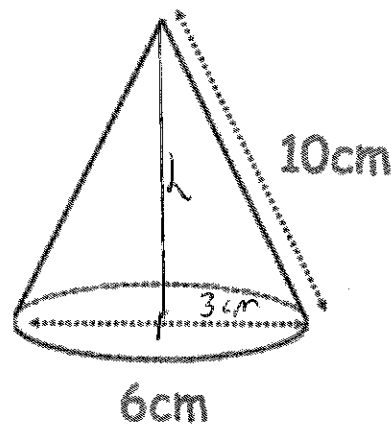
$$BH^2 = 34 + 4$$

$$BH = \sqrt{38}$$

$$\sqrt{38}$$

.....cm
(3)

5.



$$V = \frac{1}{3} \pi r^2 h$$

Calculate the volume of the cone.

$$3^2 + h^2 = 10^2$$

$$9 + h^2 = 100$$

$$h^2 = 91$$

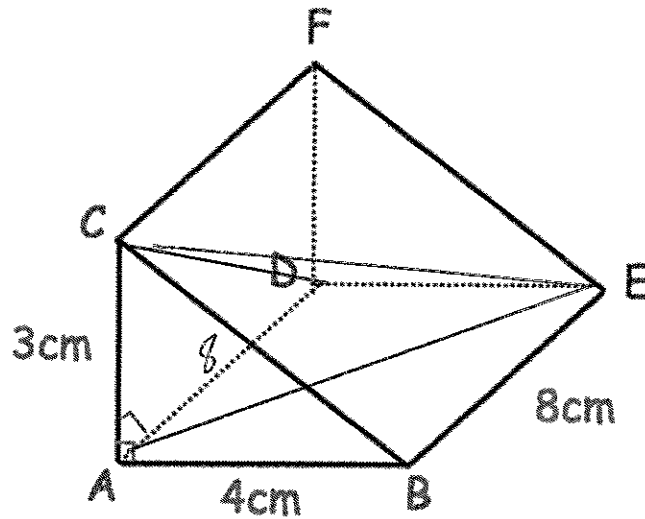
$$h = \sqrt{91}$$

$$V = \frac{1}{3} \times \pi \times 3^2 \times \sqrt{91}$$

$$= 89.90665161$$

89.9
.....cm³
(4)

6. Shown below is a triangular prism.
Triangle ABC is a right angled triangle.



Find the length of

- (a) BC

$$BC^2 = 3^2 + 4^2$$

$$BC^2 = 9 + 16 \quad \sqrt{25}$$

$$BC^2 = 25$$

.....5.....cm
(2)

- (b) CD

$$CD^2 = 3^2 + 8^2$$

$$CD^2 = 9 + 64 = 73$$

$$CD = \sqrt{73}$$

.....8.544.....cm
(2)

- (c) CE

$$CE^2 = 5^2 + 8^2$$

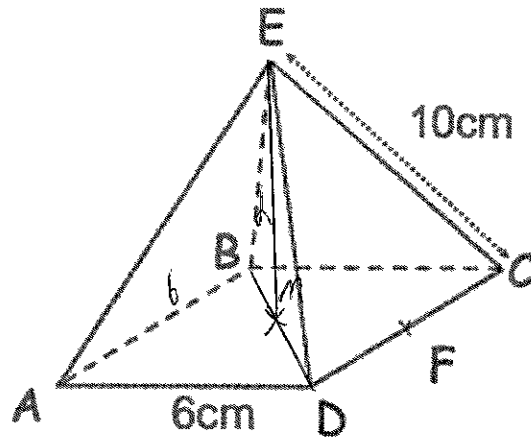
$$CE^2 = 25 + 64 = 89$$

$$CE = \sqrt{89} = 9.43398 \dots$$

.....9.43.....cm
(2)

* could find AE & AC and then CE.
 ↑ ↑
 √80 cm 3 cm

7. Shown is a square based pyramid, ABCDE.



F is the midpoint of CD
 AD = 6cm and CE = 10cm

Calculate the length of

(a) BD

$$BD^2 = 6^2 + 6^2$$

$$BD^2 = 36 + 36$$

$$BD^2 = 72 \quad BD = \sqrt{72}$$

8.485

.....cm
 (2)

(b) EF

height

$$ME^2 = 10^2 - (4.2426...)^2$$

$$ME^2 = 82$$

$$ME = 9.055...$$

$$MF = 3\text{cm}$$

$$EF^2 = MF^2 + ME^2$$

$$EF^2 = 9 + 82 = 91$$

$$EF = \sqrt{91} = 9.539...$$

9.539

.....cm
 (4)