FOUNDATION & HIGHER

HIGHER EXTENDS

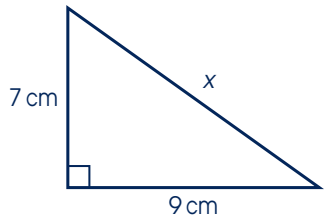
Name ..... Class .....

G20: Pythagoras and trigonometry

Pythagoras' theorem and trigonometric ratios in 2D and 3D

20 marks · 25 minutes · Calculator allowed

1) A right-angled triangle has shorter sides of 7 cm and 9 cm. Find the length of the hypotenuse. Give your answer to 3 significant figures.



..... cm

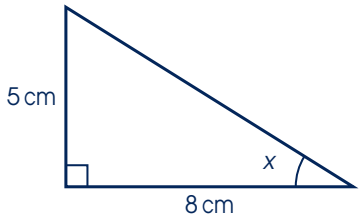
[Question 1: 2 marks]

2) A right-angled triangle has a hypotenuse of 15 cm and one side of 9 cm. Find the length of the third side.

..... cm

[Question 2: 2 marks]

3) Find the angle x. Give your answer to 1 decimal place.

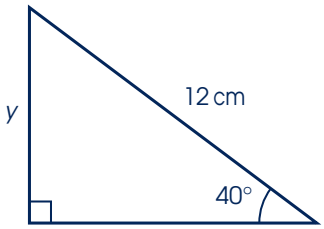


..... °

[Question 3: 2 marks]

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4) Find the length y. Give your answer to 3 significant figures.

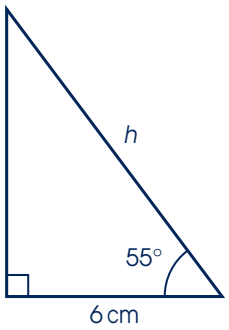


..... cm

[Question 4: 2 marks]

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5) Find the length of the hypotenuse h. Give your answer to 3 significant figures.



..... cm

[Question 5: 2 marks]

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6) A right-angled triangle has a hypotenuse of 10 cm. The side next to angle x is 7 cm. Find x. Give your answer to 1 decimal place.

..... °

[Question 6: 2 marks]

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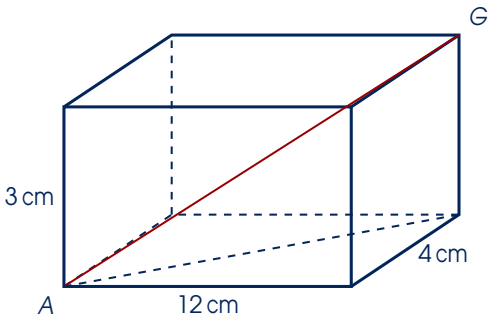
7) A 6 m ladder leans against a vertical wall. Its foot is 1.5 m from the wall on horizontal ground. How high up the wall does it reach? Give your answer to 3 significant figures.

..... m

[Question 7: 2 marks]

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8) The cuboid measures 12 cm by 4 cm by 3 cm.



(a) Find the length of the diagonal *AG*.

..... cm

(3)

(b) Find the angle between *AG* and the base of the cuboid. Give your answer to 1 decimal place.

..... °

(3)

[Question 8: 6 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	11.4	$7^2 + 9^2 = 130$ (M1); A1.
2	12	$225 - 81$ (M1); A1.
3	32.0	$\tan x = \frac{5}{8}$ (M1); A1.
4	7.71	$12 \sin 40°$ (M1); A1.
5	10.5	$\frac{6}{\cos 55°}$ (M1); A1.
6	45.6	$\cos x = 0.7$ (M1); A1.
7	5.81	$\sqrt{36 - 2.25}$ (M1); A1.
8	(a) 13 (b) 13.3	(a) Base diagonal $\sqrt{144 + 16}$ (M1); $\sqrt{160 + 9}$ (M1); 13 (A1). (b) $\sin\theta = \frac{3}{13}$ or $\tan\theta = \frac{3}{\sqrt{160}}$ (M1, M1); 13.3 (A1).