

Exact Trig Values - Higher

For Pearson Edexcel GCSE Mathematics (1MA1) • Higher tier

Name _____

Total marks: **29**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.
Do **not** use a calculator.

- 1** (a) Write down the exact value of $\sin 45^\circ$

.....
(1)

- (b) Write down the exact value of $\tan 60^\circ$

.....
(1)

- (c) x is an acute angle.

$$\cos x = \frac{\sqrt{3}}{2}$$

Write down the value of x .

$x =$
(1)

(Total for Question 1 is 3 marks)

- 2** Find the exact value of $\tan 60^\circ \times \cos 45^\circ$

Give your answer in the form $\frac{\sqrt{a}}{b}$ where a and b are integers.

.....
(2)

(Total for Question 2 is 2 marks)

- 3 Write $12 \div \sin 60^\circ$ in the form $a\sqrt{3}$ where a is an integer.

.....
(2)

(Total for Question 3 is 2 marks)

- 4 Write $(2 \sin 60^\circ - 3)^2$ in the form $a + b\sqrt{3}$ where a and b are integers.

.....
(2)

(Total for Question 4 is 2 marks)

- 5 ABC is a right-angled triangle.

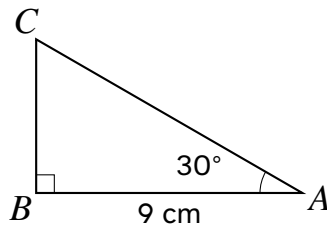


Diagram **NOT** accurately drawn

Work out the length of AC .

Give your answer in the form $k\sqrt{3}$ where k is an integer.

..... cm
(3)

(Total for Question 5 is 3 marks)

- 6 The diagram shows two right-angled triangles, ABC and ACD .

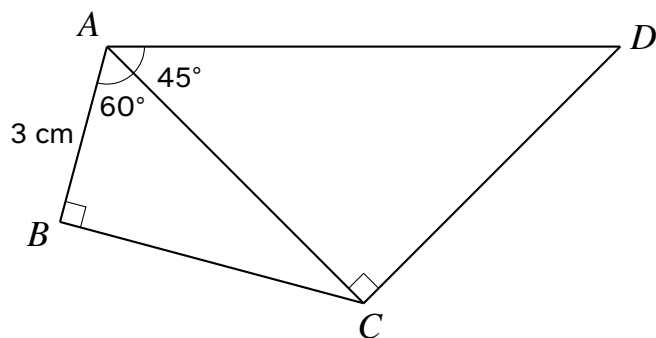


Diagram **NOT** accurately drawn

Work out the length of AD .
Give your answer as a surd in its simplest form.

..... cm
(3)

(Total for Question 6 is 3 marks)

- 7 Show that $\frac{1 + \tan 60^\circ}{\tan 60^\circ - 1} = 2 + \sqrt{3}$

(3)

(Total for Question 7 is 3 marks)

- 8 ABC is a right-angled triangle.
 D is the point on AB such that $AD = 4$ cm and $DB = 2$ cm.
 Angle $BAC = 60^\circ$

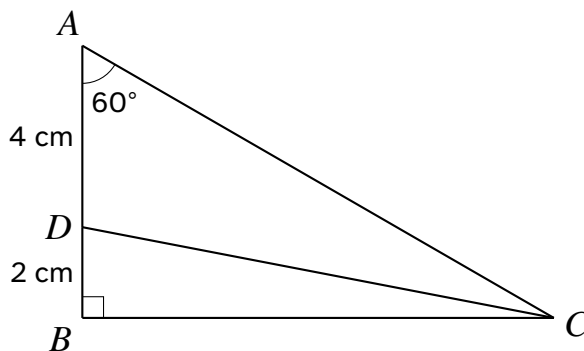


Diagram **NOT** accurately drawn

Work out the exact length of CD .
 Give your answer as a surd in its simplest form.
 You must show all your working.

..... cm
 (4)

(Total for Question 8 is 4 marks)

9 Here is triangle PQR .

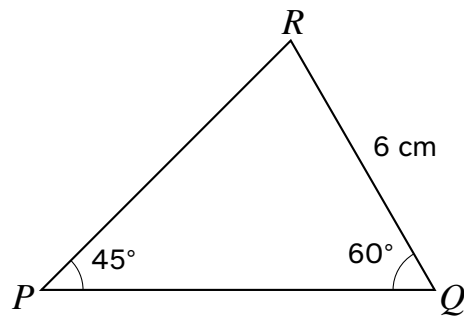


Diagram **NOT** accurately drawn

Work out the length of PR .

Give your answer as a surd in its simplest form.

..... cm
(3)

(Total for Question 9 is 3 marks)

- 10** The diagram shows a regular hexagon $ABCDEF$.
Each side of the hexagon is 6 cm long.

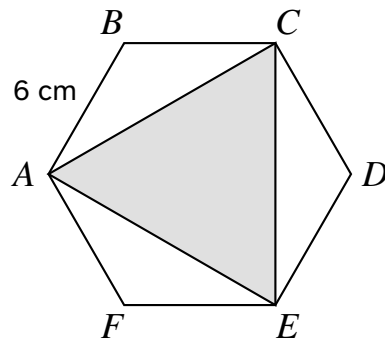


Diagram **NOT** accurately drawn

Work out the exact area of the shaded triangle ACE .
Give your answer in the form $k\sqrt{3}$
You must show all your working.

..... cm^2
(4)

(Total for Question 10 is 4 marks)