4.15 Introduction to Trigonometry: 30-minute Pack

Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Write down the exact value of tan 45°.

(1)

2 Write down the exact value of sin 90°.

(1)

3 Write down the exact value of tan 30°.

(1)

4 A ramp 18 m long makes an angle of 60° with the horizontal. Work out the horizontal distance the ramp covers. Give your answer correct to 1 decimal place.

(3)

5 Write down the exact value of tan 0°.

(1)

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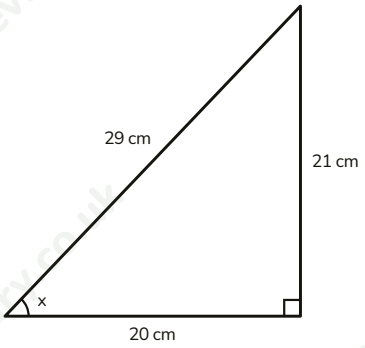
6 A ramp 22 m long makes an angle of 52° with the horizontal. Work out the horizontal distance the ramp covers. Give your answer correct to 1 decimal place.

(3)

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7 In a right-angled triangle the sides are 20 cm, 21 cm and 29 cm. The angle x is opposite the side of length 21.
Write down the value of sin x as a fraction.

Diagram NOT accurately drawn

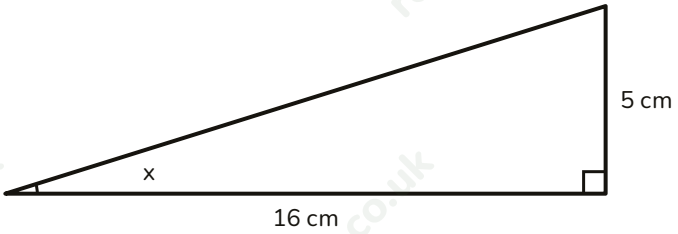


(1)

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8 In a right-angled triangle the side opposite angle x is 5 cm and the side adjacent to x is 16 cm. Work out the size of angle x. Give your answer correct to 1 decimal place.

Diagram NOT accurately drawn



(3)

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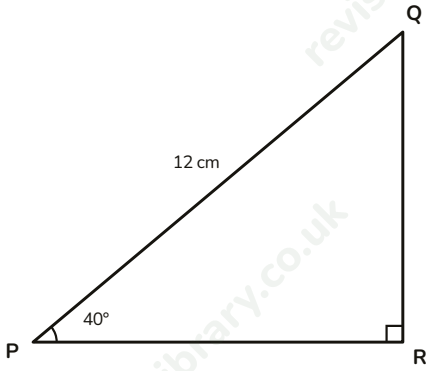
9 A ladder 31 m long leans against a vertical wall and makes an angle of 59° with the horizontal ground. How high up the wall does it reach? Give your answer correct to 1 decimal place.

(3)

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10 A right-angled triangle PQR has the right angle at R. Angle P = 40 degrees and the hypotenuse PQ = 12 cm.

Diagram NOT accurately drawn



(a) Name the side opposite angle P. **(1)**

(b) Name the side adjacent to angle P (not the hypotenuse). **(1)**

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11 In a right-angled triangle you know the length of the side opposite angle Y and the length of the hypotenuse, and you want to find angle Y. Which trigonometric ratio should you use?

(1)

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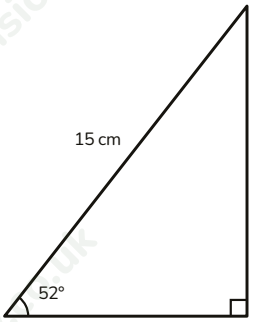
12 A ladder rests against a wall, making an angle of 68 degrees with the ground. The foot of the ladder is 3.2 m from the wall. Find the length of the ladder, to 1 decimal place.

(3)

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13 A right-angled triangle has an acute angle of 52 degrees and hypotenuse 15 cm. Calculate the length of the side adjacent to this angle, to 1 decimal place.

Diagram NOT accurately drawn



(2)

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Mark scheme · 4.15 Introduction to Trigonometry: 30-minute Pack

Question 1

1 cao **B1**

Answer: **1**

Question 2

1 cao **B1**

Answer: **1**

Question 3

$\sqrt{3}/3$ cao **B1**

Answer: **$\sqrt{3}/3$**

Question 4

cos 60 = x/18 **M1**

18 x cos 60 **M1**

9.0 m cao **A1**

Answer: **9.0 m**

Question 5

0 cao **B1**

Answer: **0**

Question 6

cos 52 = x/22 **M1**

22 x cos 52 **M1**

13.5 m cao **A1**

Answer: **13.5 m**

Question 7

21/29 cao **B1**

Answer: **21/29**

Question 8

correct ratio chosen: tan x = 5/16 **M1**

inverse tan used: $\tan^{-1}(5/16)$ **M1**

17.4° cao **A1**

Answer: **17.4°**

Question 9

sin 59 = h/31 **M1**

31 x sin 59 **M1**

26.6 m cao **A1**

Answer: **26.6 m**

Question 10

(a) QR named as the side opposite angle P **B1**

(a) Answer: **QR**

(b) PR named as the side adjacent to angle P **B1**

(b) Answer: **PR**

Question 11

sine cao **B1**

Answer: **Sine**

Question 12

method: ladder length = 3.2 / cos(68) **M1**

substitution shown: 3.2 / cos(68) **A1**

8.5 m to 1 dp cao **A1**

Answer: **8.5 m**

Question 13

method: adjacent = cos(52) x 15 **M1**

9.2 cm to 1 dp cao **A1**

Answer: **9.2 cm**

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