Edexcel GCSE
Mathematics (Linear) – 1MA0

TRIGONOMETRY

Materials required for examination
Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.
Tracing paper may be used.

Items included with question papers
Nil

Instructions

Use black ink or ball-point pen.
Fill in the boxes at the top of this page with your name, centre number and candidate number.
Answer all questions.
Answer the questions in the spaces provided – there may be more space than you need.
Calculators may be used.

Information

The marks for each question are shown in brackets – use this as a guide as to how much time to spend on **each** question.
Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed – you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.

Advice

Read each question carefully before you start to answer it.
Keep an eye on the time.
Try to answer every question.
Check your answers if you have time at the end.

1.

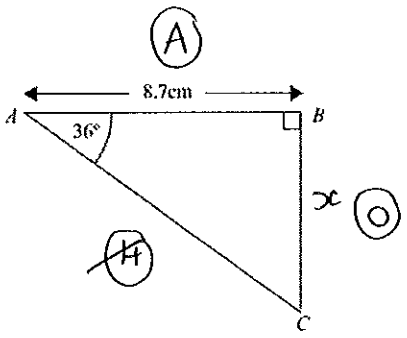


Diagram **NOT** accurately drawn

SOH ~~CAH~~ TOA

$\tan(36) = \frac{x}{8.7}$

$x = 8.7 \times \tan(36)$

ABC is a right-angled triangle.

Angle $B = 90°$.
Angle $A = 36°$.
$AB = 8.7$ cm.

Work out the length of *BC*.
Give your answer correct to 3 significant figures.

6.32 ..... cm

(3 marks)

2.

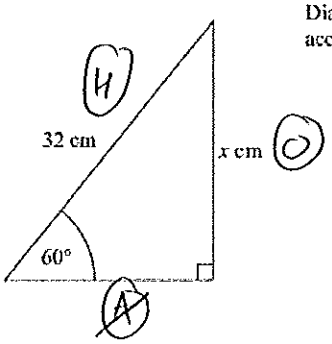


Diagram **NOT** accurately drawn

SOH ~~CAH~~ ~~TOA~~

$\sin(60) = \frac{x}{32}$

$x = 32 \times \sin(60)$

$x = 27.7$

Calculate the value of *x*.
Give your answer correct to 3 significant figures.

27.7 cm .....

(3 marks)

3.

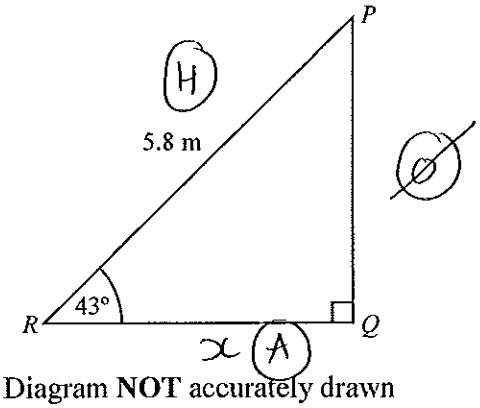


Diagram **NOT** accurately drawn

PQR is a triangle.
Angle $Q = 90°$.
Angle $R = 43°$.
$PR = 5.8$ m.

Calculate the length of QR.
Give your answer correct to 3 significant figures.

$\cos(43) = \frac{x}{5.8}$

$5.8\cos(43) = x$

4.24 ..... m

(3 marks)

4.

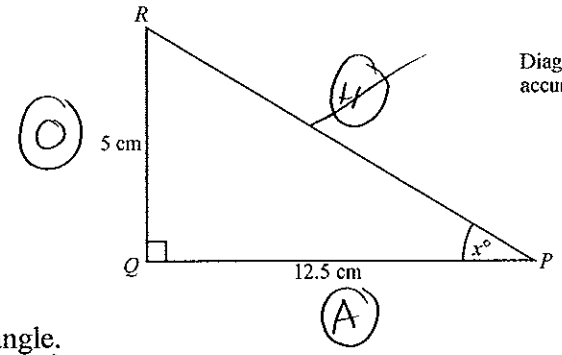


Diagram **NOT** accurately drawn

~~SOH CAH~~ TOA

PQR is a triangle.
Angle $PQR = 90^0$.
$PQ = 12.5$ cm.
$QR = 5$ cm.

$\tan(x) = \frac{5}{12.5}$

$x = 21.8°$

Calculate the value of x.
Give your answer correct to 1 decimal place.

21.8° .....

(3 marks)

5.

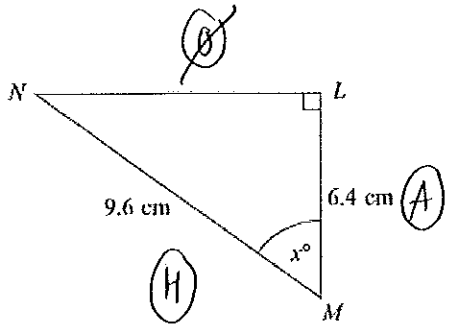


Diagram **NOT** accurately drawn

LMN is a right-angled triangle.
MN = 9.6 cm.
LM = 6.4 cm.

Calculate the size of the angle marked $x°$.
Give your answer correct to 1 decimal place.

SOH CAH ~~TOA~~

$\cos(x) = \frac{6.4}{9.6}$

$x = 48.2°$

48.2 .....°

(3 marks)

6.

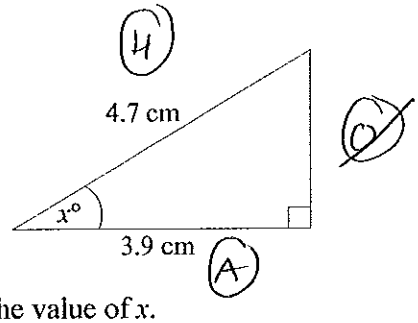


Diagram **NOT** accurately drawn

Work out the value of x.
Give your answer correct to 1 decimal place.

~~SOH~~ CAH ~~TOA~~

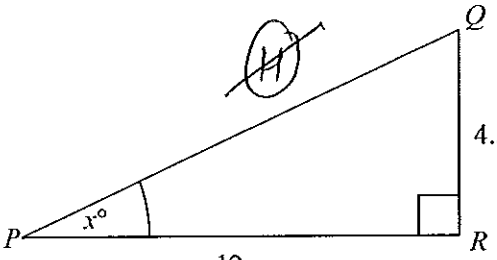
$\cos(x) = \frac{3.9}{4.7}$

$x = 33.9°$

$x =$ 33.9° .....

(3 marks)

7. Diagram **NOT** accurately drawn



PQR is a right-angled triangle.
PR = 12 cm.
QR = 4.5 cm.
Angle *PRQ* = 90°.

Work out the value of *x*.
Give your answer correct to one decimal place.

$\tan(x) = \frac{4.5}{12}$

$x = \tan^{-1}\left(\frac{4.5}{12}\right)$

$x = 20.6°$

$x =$ 20.6°

(3 marks)

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8. Calculate the size of angle *a* in this right-angled triangle.
Give your answer correct to 3 significant figures.

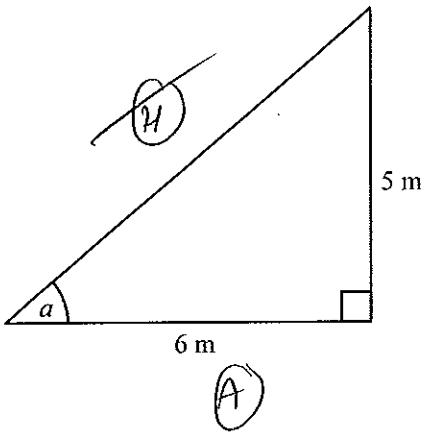

Diagram **NOT** accurately drawn

$\tan(a) = \frac{5}{6}$

$a = \tan^{-1}\left(\frac{5}{6}\right)$

39.8°

(3 marks)

9. PQR is a right-angled triangle.

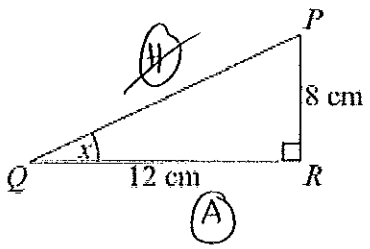

Diagram **NOT** accurately drawn

$PR = 8$ cm.
$QR = 12$ cm.

(a) Find the size of the angle marked x.
Give your answer correct to 1 decimal place.

SOH CAH TOA

$\tan(x) = \frac{8}{12}$

$x = \tan^{-1}\left(\frac{8}{12}\right)$

$x = 33.7°$

33.7 °

(3)

XYZ is a different right-angled triangle.

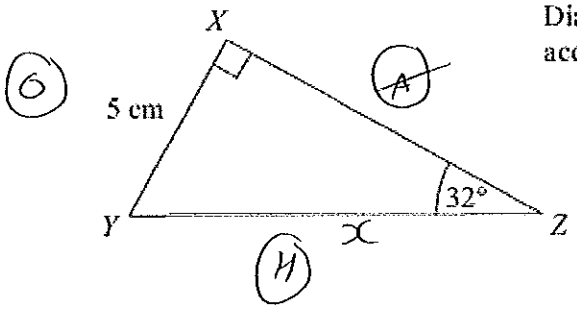

Diagram **NOT** accurately drawn

$XY = 5$ cm.
Angle $Z = 32°$.

(b) Calculate the length YZ.
Give your answer correct to 3 significant figures.

SOH

$\sin(32) = \frac{5}{x}$

$x = \frac{5}{\sin(32)}$

$x = 9.44$ cm

9.44 cm

(3)

(6 marks)

10. The diagram shows a quadrilateral $ABCD$.

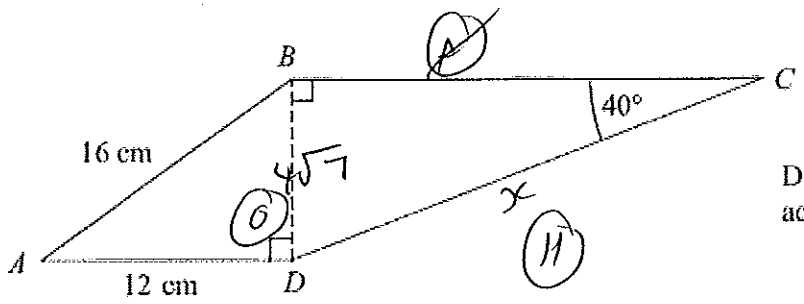

Diagram **NOT** accurately drawn

$AB = 16$ cm.
$AD = 12$ cm.
Angle $BCD = 40°$.
Angle ADB = angle $CBD = 90°$.

Calculate the length of CD.
Give your answer correct to 3 significant figures.

$BD = \sqrt{16^2 - 12^2}$

$= 4\sqrt{7}$

SOH ~~CAH~~ ~~TOA~~

$\sin(40) = \frac{4\sqrt{7}}{x}$

$x = \frac{4\sqrt{7}}{\sin(40)}$

$x = 16.5$

16.5 ..... cm

(5 marks)

11.

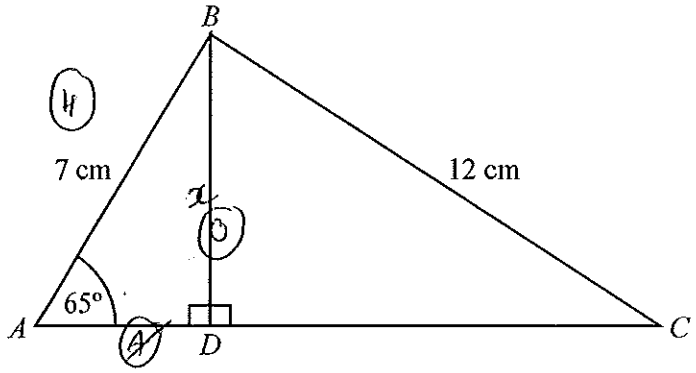

Diagram **NOT** accurately drawn

ABC is a triangle.
ADC is a straight line with *BD* perpendicular to *AC*.
AB = 7 cm.
BC = 12 cm.
Angle *BAD* = 65°.

Calculate the length of *AC*.
Give your answer correct to 3 significant figures.

SOHCAHTOA

$\sin(65) = \frac{x}{7}$

$x = 7 \times \sin(65)$

$= 6.344154509$

$7^2 = AD^2 + 6.344^2$

$AD^2 = 7^2 - 6.344^2$

$AD = \sqrt{7^2 - 6.344^2}$

$= 2.96...$ ~~cm~~

2.958327832 cm

$12^2 = CD^2 + 6.344...^2$

$CD = \sqrt{12^2 - 6.344...^2}$

$= 10.18585807$

$AC = AD + CD$

$= 13.14418585$

13.1 cm

(6 marks)