Name: ____________________________

GCSE (1 – 9)

SOHCAHTOA

Instructions

• Use black ink or ball-point pen.
• Answer all questions.
• Answer the questions in the spaces provided
  – there may be more space than you need.
• Diagrams are NOT accurately drawn, unless otherwise indicated.
• You must show all your working out.

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.

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

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1

Work out the value of $x$.

$$\sin(35) = \frac{20}{x}$$

$$x = \frac{20}{\sin(35)}$$

$$= 34.9 \ (1dp)$$

34.9

(Total for question 1 is 2 marks)

2

Work out the value of $x$.

$$\tan(42) = \frac{x}{11}$$

$$x = 11 \times \tan(42)$$

$$= 9.9 \ (1dp)$$

9.9

(Total for question 2 is 2 marks)
3

Work out the value of $x$.

\[
\cos x = \frac{16}{24}
\]

\[
\tan^{-1} \left( \frac{16}{24} \right)
\]

$= 48.2 \quad \text{(1dp)}$

(Total for question 3 is 2 marks)

4

Work out the value of $x$.

\[
\tan x = \frac{15}{11}
\]

\[
\tan^{-1} \left( \frac{15}{11} \right)
\]

$= 53.7 \quad \text{(1dp)}$

(Total for question 4 is 2 marks)
5

Calculate the length $AB$.

$$\tan(35) = \frac{x}{20}$$

$$x = 20 \times \tan(35)$$

$$= 14.0 \text{ (1dp)}$$

$$14.0 \text{ cm}$$

(Total for question 5 is 2 marks)

6

Calculate the length $AB$.

$$\cos(42) = \frac{x}{15}$$

$$x = 15 \times \cos(42)$$

$$= 11.1 \text{ (1dp)}$$

$$11.1 \text{ cm}$$

(Total for question 6 is 2 marks)
7

Calculate the size of angle $ACB$.

\[
\sin x = \frac{5}{16}
\]

\[
x = \sin^{-1} \left( \frac{5}{16} \right)
\]

\[
= 18.2 \text{ (1dp)}
\]

8

Calculate the size of angle $BAC$.

\[
\tan x = \frac{9}{5}
\]

\[
x = \tan^{-1} \left( \frac{9}{5} \right)
\]

\[
= 60.9 \text{ (1dp)}
\]
Work out the size of angle BAD.
Give your answer to 1 decimal place.

\[
\begin{align*}
\tan y &= \frac{2}{15} \\
y &= \tan^{-1} \left( \frac{2}{15} \right) \\
&= 7.6^\circ \quad (1\, \text{dp})
\end{align*}
\]

BAD = 90 + 7.6
= 97.6°
Work out the value of $x$.
Give your answer to 1 decimal place.

\[ \begin{align*}
y^2 + 16^2 &= 20^2 \\
y^2 &= 20^2 - 16^2 \\
y^2 &= 144 \\
y &= 12
\end{align*} \]

\[ \begin{align*}
\sin(25^\circ) &= \frac{12}{x} \\
x &= \frac{12}{\sin(25^\circ)} \\
&= 28.4 \quad (1 dp)
\end{align*} \]
Work out the size of angle $BCD$.
Give your answer to 1 decimal place.

$$\tan (37^\circ) = \frac{9}{y}$$

$$y = \frac{9}{\tan (37^\circ)}$$

$$= 11.9434...$$

$$CP = 22 - 11.9434$$

$$= 10.05657...$$

$$\tan x = \frac{9}{10.05...}$$

$$x = \tan^{-1} \left( \frac{9}{10.05...} \right)$$

$$= 41.8 \ deg$$

(Total for question 11 is 4 marks)