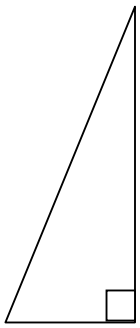
Trigonometry #3

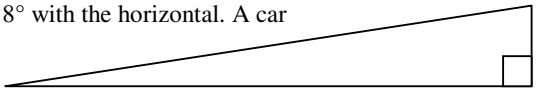
Draw diagrams, or label the diagrams given, for these problems. Write all answers to 2 decimal places. REMEMBER TO INCLUDE UNITS IN YOUR ANSWER.

1. A 15m flagpole is supported by some guy wires (supporting wires) attached to the top of the pole and anchored to the ground. If a wire makes a 27° angle with the pole,
   a) how long is the wire? REMEMBER UNITS!



   b) how far out from the pole is it anchored (use a trigonometric function to calculate this)? REMEMBER UNITS!

2. A stretch of road has an incline (slope) that makes an angle of 8° with the horizontal. A car travels 520m up the road. How far has it gone up in altitude?

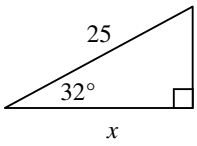


3. A 0.8m high retaining wall separates the lower end of a garden from the upper end. As well as steps, there is a ramp built for wheelchair access, making an angle of 11° from the horizontal. How long is the ramp?

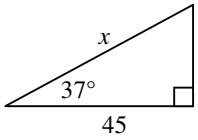
FOR QUESTIONS 1 – 3: Do you have labelled diagrams? Have you included units in the answer? Are your answers to 2 decimal places?

4. Find the value of x in the following. Make sure you write the formula first, with x as the subject, then calculate your answer to 2 decimal places.

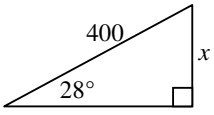
a)



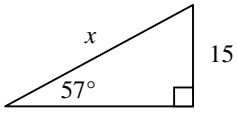
b)



c)



d)



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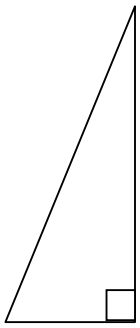
Trigonometry #3 - Answers

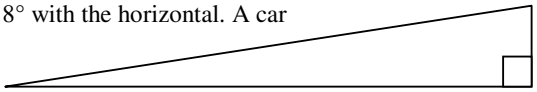
Draw diagrams, or label the diagrams given, for these problems. Write all answers to 2 decimal places. REMEMBER TO INCLUDE UNITS IN YOUR ANSWER.

1. A 15m flagpole is supported by some guy wires (supporting wires) attached to the top of the pole and anchored to the ground. If a wire makes a 27° angle with the pole,
   a) how long is the wire? REMEMBER UNITS!
   Length of wire is the Hypotenuse, H. Cos27° = 15/H; H = 15/Cos27° = 16.83m

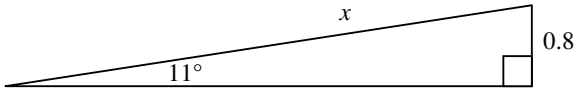


   b) how far out from the pole is it anchored (use a trigonometric function to calculate this)? REMEMBER UNITS!
   Distance from pole is side opposite 27° angle.
   Sin27° = Opposite/16.83; Opposite = 16.83 Cos27° = 7.64m
   Better method, avoiding approximation of H:Tan27°= O/A=O/15;O=15Tan27°=7.64m

2. A stretch of road has an incline (slope) that makes an angle of 8° with the horizontal. A car travels 520m up the road. How far has it gone up in altitude?
   Distance a travelled vertically (altitude) is opposite to the angle. Sin8°= a / 520; a = 520 Sin8° = 72.37m



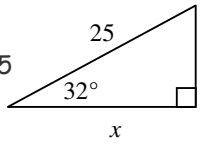
3. A 0.8m high retaining wall separates the lower end of a garden from the upper end. As well as steps, there is a ramp built for wheelchair access, making an angle of 11° from the horizontal. How long is the ramp?
   Length of ramp is Hypotenuse. Sin11° = 0.8/x
   x = 0.8/Sin11° = 4.19m



FOR QUESTIONS 1 – 3: Do you have labelled diagrams? Have you included units in the answer? Are your answers to 2 decimal places?

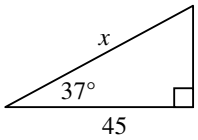
4. Find the value of x in the following. Make sure you write the formula first, with x as the subject, then calculate your answer to 2 decimal places.

a)



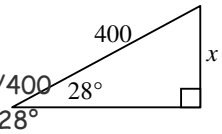
Cos32°=x/25
x=25Cos32°
x=21.2

b)



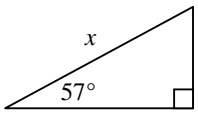
Cos37°=45/x
x=45/Cos37°
x=56.35

c)



Sin28°=x/400
x=400Sin28°
x=187.79

d)



Sin57°=15/x
x=15/Sin57°
x=17.89

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