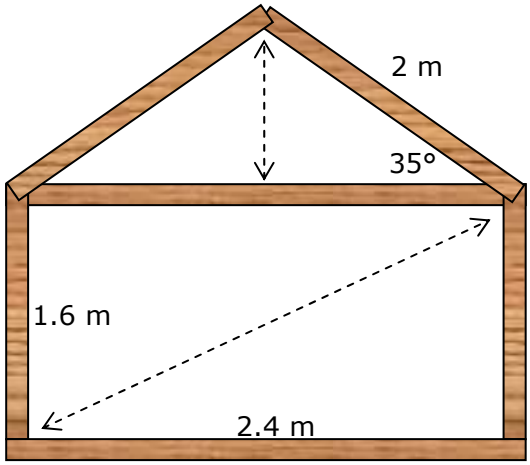
Achieved Trigonometry Practice #1

1. Amy wants to build a playhouse for her daughter. She wants it to be 2.4 metres wide and 1.6 metres high.

   How long will she need to make any bracing that goes diagonally across the structure? (Shown dotted)



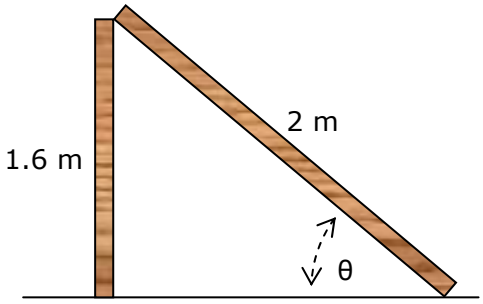
2. The roof for the playhouse is two metres long on each side. It is at an angle of 35° with the ceiling.

   How high is the roof from the ceiling? (Dotted)

3. The playhouse needs a support brace on the outside.

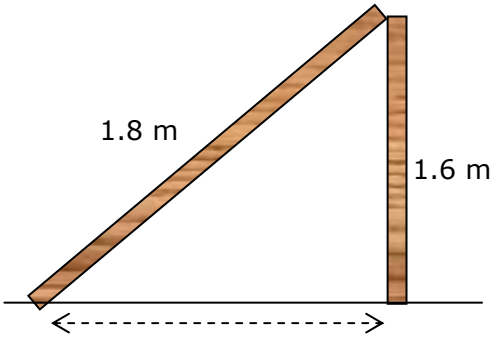
   The brace is 2 metres long, and goes to the top of the 1.6 metre high wall.

   What is the angle it forms with the ground? (Angle θ)



4. On the other wall the brace is a bit shorter, at only 1.8 metres long (the wall is still 1.6 m high).

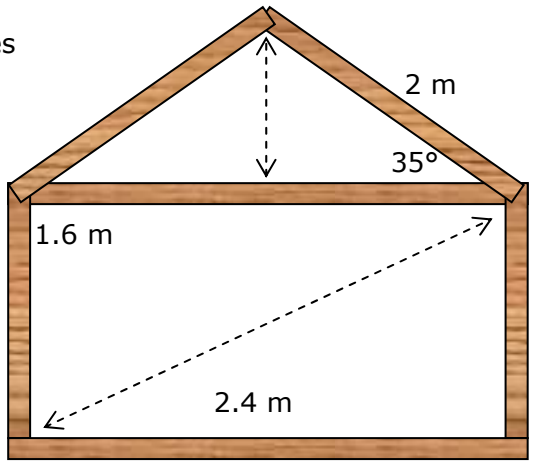
   How far out from the wall does the brace reach? (Dotted)



Answers: Achieved Trigonometry Practice #1

1. Amy wants to build a playhouse for her daughter. She wants it to be 2.4 metres wide and 1.6 metres high.

   How long will she need to make any bracing that goes diagonally across the structure? (Shown dotted)



   We need a long side, so we use $h^2 = a^2 + b^2$

   $h^2 = 2.4^2 + 1.6^2 = 8.32$.

   $h = \sqrt{8.32}$ = **2.88 m**

2. The roof for the playhouse is two metres long on each side. It is at an angle of 35° with the ceiling.

   How high is the roof from the ceiling? (Dotted)

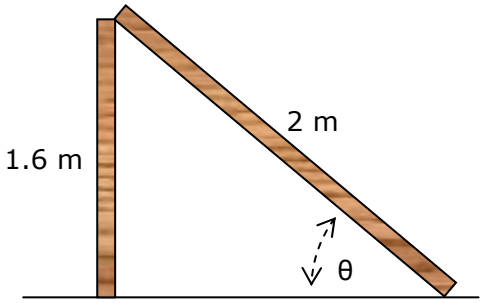
   There is an angle, so we use S^{O}_{H} C^{A}_{H} T^{O}_{A}.

   We have the H and want the O, so we use S^{O}_{H}.

   O = S × H = Sin 35° × 2 = **1.147 m**

3. The playhouse needs a support brace on the outside.

   The brace is 2 metres long, and goes to the top of the 1.6 metre high wall.



   What is the angle it forms with the ground? (Angle θ)

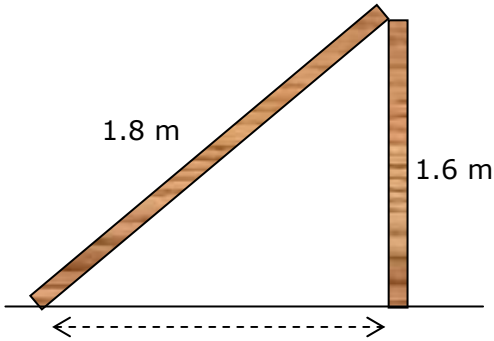
   There is an angle, so we use S^{O}_{H} C^{A}_{H} T^{O}_{A}.

   We have the H = 2 and O = 1.6, so we use S^{O}_{H}.

   $\theta = \text{Sin}^{-1}(O \div H) = \text{Sin}^{-1}(1.6 \div 2)$ = **53.13°**

4. On the other wall the brace is a bit shorter, at only 1.8 metres long (the wall is still 1.6 m high).

   How far out from the wall does the brace reach? (Dotted)



   We need a short side, so we use $a^2 = h^2 - b^2$

   $a^2 = 1.8^2 - 1.6^2 = 0.68$.

   distance = $\sqrt{0.68}$ = **0.82 m**