More Applications of the Primary Trigonometric Ratios

Example 1

$\triangle ABC$ has $\angle B = 90°$.

a) At what measure of $\angle A$ will sin A = cos A?

b) What are the exact values of sine ratio and cosine ratio, in lowest terms, in this situation?

Opportunity to Learn

1. In $\triangle ABC$, $a = 12$ cm, $b = 10$ cm, and $\angle A = 45°$.

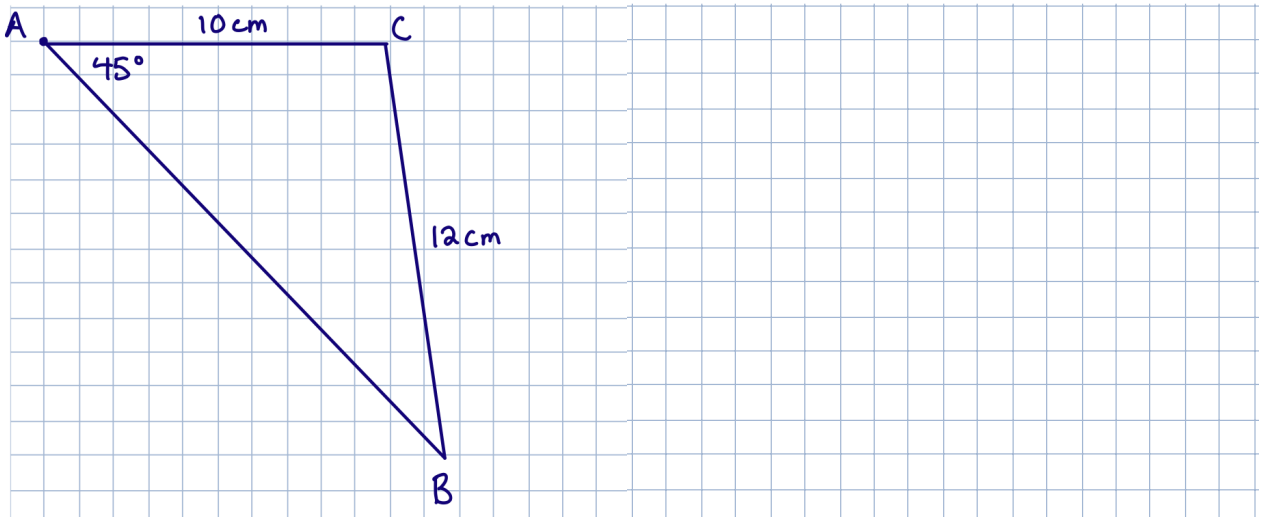
   a) Determine the exact length of side c.

   HINTS:

   Consider adding something to the diagram so that you can use primary trig ratios.

   Think about using a proportion (see your answer to example 1 above).

   b) Determine the measure of $\angle C$, to the nearest whole degree.

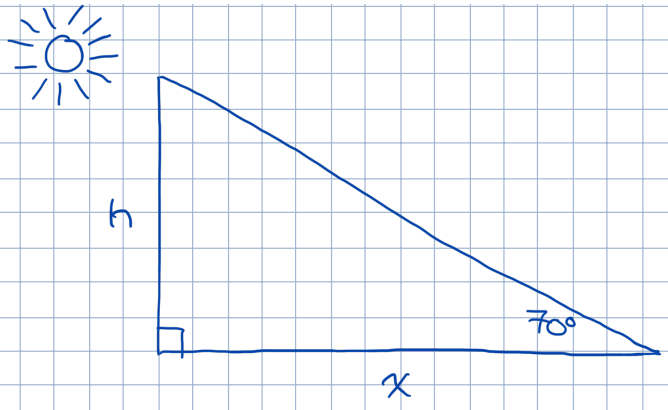


2. If the shadow of a building increases by 10 meters when the angle of elevation of the sun rays decreases from 70° to 60°, what is the height of the building?

   HINTS:

   The start of this solution is given below; add something to the diagram given.

   What equations can you set up? Can you combine equations to find unknown values?



Let h be the height of the building, in metres.

Let x be the initial length of the shadow, in metres.