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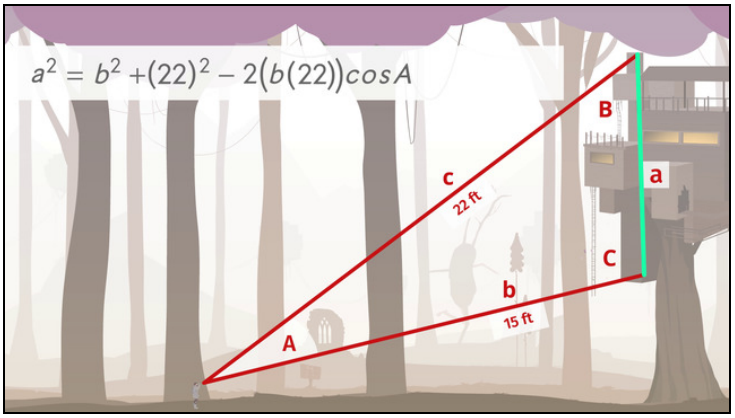
Using Trig. Ratios to Find Distances



1. **Clarify the law of sines.**
2. Explain the law of cosines.
3. Determine the height of the tree house.
4. Calculate the height of the tree house.
5. Figure out the length of the side x.
6. Examine the height of the tower.

\+ with lots of tips, answer keys, and detailed answer explanations for all of the problems.

Clarify the law of sines.

Choose the right statements or formulas.

- [ ] **A** The law of sines states the ratio of any side and sine of the opposite angle is always 1.
- [ ] **B** The law of sines states that the ratio of any side and the opposite angle is the same as any other side and the corresponding opposite angle.
- [ ] **C** The law of sines states that the ratio of any side and the sine of the opposite angle is the same as any other side and the sine of the regarding opposite angle.
- [ ] **D** $\frac{a}{\sin A} = \frac{\sin B}{b} = \frac{c}{\sin C}$
- [ ] **E** $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{\sin C}{c}$
- [ ] **F** $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Hints for solving these problems

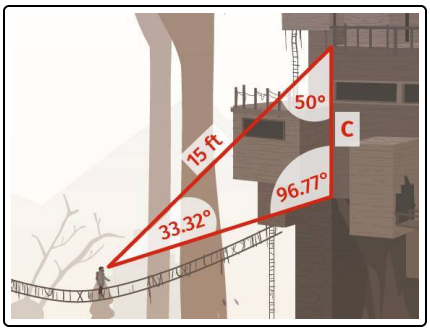
1 of 6

Clarify the law of sines.

Hint #1

If you know two angles and the length of one of the sides opposite one of these angles, then you can determine the length of the side opposite to the other angle.

Hint #2



For the given pictured situation you can conclude

$$\frac{15}{\sin(96.77^\circ)} = \frac{c}{\sin(33.23^\circ)}.$$

Hint #3

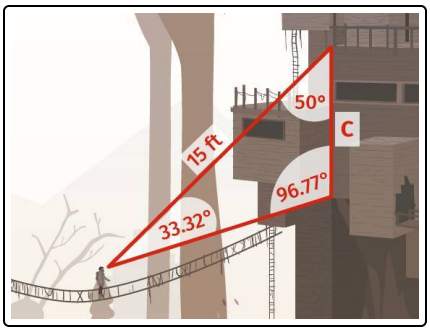
Each time the side is written in the numerator.

Answers and detailed answer explanations for these problems

1 of 6

Clarify the law of sines.

Answer key: C, F



The law of sines states that the ratio of any side and the sine of the opposite angle is the same as the ratio of any of the other side and the sine of its opposite angle.

We can write it is as follows

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}.$$

Pictured beside we have an example; the law of sines tells us that

$$\frac{15}{\sin(96.77^\circ)} = \frac{c}{\sin(33.23^\circ)}.$$