1. The diagram shows a right triangle with the altitude drawn to the hypotenuse. Find the values of x, y, and z (in simplest radical form).

\[ x = \quad \quad y = \quad \quad z = \quad \quad \]

For right triangle ABC and altitude \( BD \), find the value of AD.

2. 

\[ AD = \quad \quad \]

Decide if the side lengths given can form a triangle. If a triangle cannot be formed, write **not possible**. If it can, then classify the triangle: **acute**, **right**, or **obtuse**.

3. 1, 4, 9 \[ \quad \quad \quad \]

4. 5, 6, 10 \[ \quad \quad \quad \]

Find the value of the variable(s) Leave answers in simplest radical form.

5. 

\[ x = \quad \quad \quad \]

6. 

\[ x = \quad \quad \quad \]

7. 

\[ x = \quad \quad y = \quad \quad \quad \quad \]

8. 

\[ v = \quad \quad w = \quad \quad \quad \quad \]

9. 

\[ r = \quad \quad s = \quad \quad \]

\[ x = \quad \quad y = \quad \quad v = \quad \quad w = \quad \quad r = \quad \quad s = \quad \quad \]
10. Solve for \( x \) to the nearest tenth.

\[
\sin \theta = \frac{opp}{hyp} = \frac{7}{\sqrt{2}} \\
\cos \theta = \frac{adj}{hyp} = \frac{4}{\sqrt{2}} \\
\tan \theta = \frac{opp}{adj} = \frac{7}{4}
\]

\[
x = \frac{7}{\sqrt{2}} \approx 4.95 \\
m = \frac{4}{\sqrt{2}} \approx 2.83 \\
n = \frac{7}{4} = 1.75 \\
x = \frac{14}{\sqrt{2}} \approx 10.00
\]

13. Solve for \( x \) to the nearest tenth.

\[
x = \frac{25}{\sin \theta} \approx 51.0 \\
x = \frac{10}{\tan \theta} \approx 22.9 \\
x = \frac{9}{\sin \theta} \approx 18.4 \\
x = \frac{14}{\sin \theta} \approx 25.6
\]

17. Use the picture to express the following as fractions in the simplest form.

\[
\sin A = \frac{opp}{hyp} = \frac{4}{5} \\
\cos A = \frac{adj}{hyp} = \frac{3}{5} \\
\tan A = \frac{opp}{adj} = \frac{4}{3}
\]

18. Use your calculator to find the following. Give ratios to 4 decimal places and angles to the nearest tenth.

\[
\sin 70^\circ \approx 0.9462, \quad \cos 32^\circ \approx 0.8480, \quad \tan 14^\circ \approx 0.2511
\]

26. In #29-30, solve the right triangle. Round to the nearest tenth.
31. A support wire is attached to the top of a 150 meter radio tower. The wire is 190 meters long. Find the measure to the nearest tenth of the angle of elevation of the wire from the ground. __________

32. Mrs. Marsh is standing on a cliff at the edge of the ocean and she spots a raft. The cliff is 18m above sea level and the angle of depression is $70^\circ$.
   a) Make a sketch.
   b) To the nearest 10 m, find the distance from the raft to the base of the cliff. __________

33. A carpenter is building a flight of stairs as pictured in the drawing. What is the horizontal distance from the foot of the stairs to the wall?
   A 14.1 ft
   B 17.3 ft
   C 20.0 ft
   D 28.3 ft

34. The top of a ladder is leaning on a building at a point 12 feet above the ground; the bottom of the ladder is 5 feet from the base of the building. What is the length of the ladder?
   A 19 ft
   B 17 ft
   C 13 ft
   D 7 ft

35. To determine the distance across a pond, Mr. Neuser made the measurements shown in the diagram. Which is closest to the distance from R to S?
   F 3.48 m
   G 19.7 m
   H 20.3 m
   J 113.4 m