# Solutions and Applications of Right Triangles
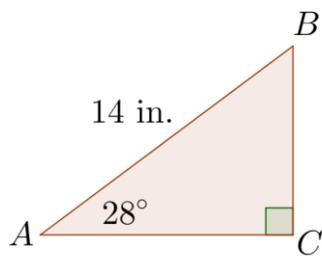
**Significant digits** tell you how precise a number is.

| Number | 408 | 21.5 | 18.00 | 6.700 | 0.0025 | 0.09810 | 7300 |
|---|---|---|---|---|---|---|---|
| # of sig digits | | | | | | | |

In general, when you approximate your answer, it should have no more significant digits than the least accurate number in your calculation.

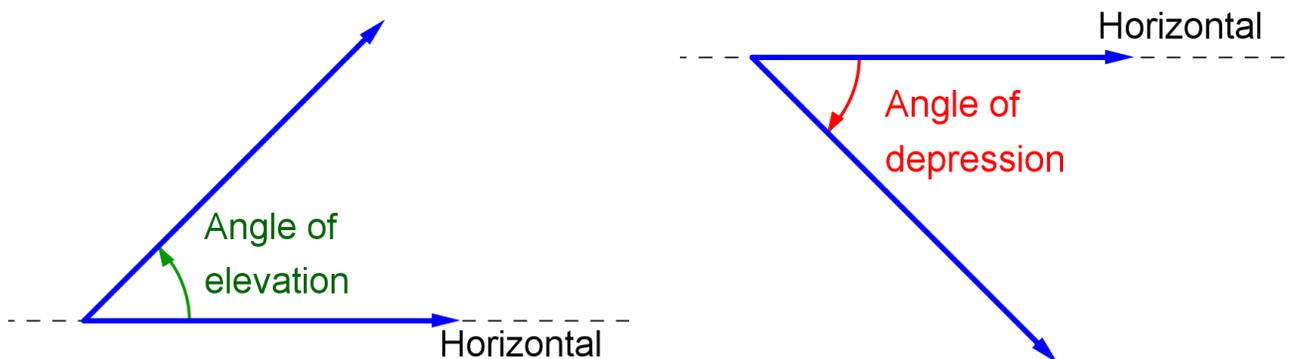**Ex 1.**
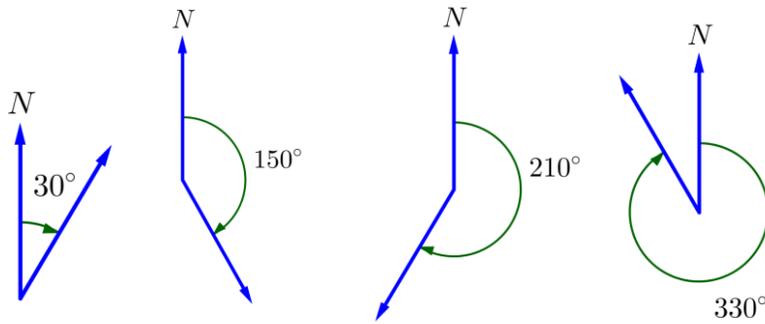Solve right triangle $ABC$.



**Ex 2.**
Solve right triangle $ABC$, if $a = 29.43$ cm and $c = 53.58$ cm. (Assume $C = 90°$.)

Horizontal

Angle of
depression

Angle of
elevation

Horizontal

**Ex 3.**
The angle of elevation from a point on the ground 15.5 m from the base of a tree to the top of the tree is 60.4°.  Find the height of the tree.

**Ex 4.**
From a lighthouse 50.0 ft above the water, you see two boats directly in front of you.  The angle of depression to one boat is 46°, and the angle of depression to the other boat is 25°.  What is the distance between the boats?

**Bearing**



**Ex 5.**

Two docks are located on an east-west line 1562 ft apart.  From dock A, the bearing of a buoy is 56°.
From dock B, the bearing of the buoy is 326°.  Find the distance from dock A to the buoy.

## Practice

1. Solve right triangle $ABC$, if $b = 14.26$ ft and $c = 71.32$ ft.  (Assume $C = 90°$.)

2. The angle of depression from the top of a building to a point on the ground is $32°$. How far is the point on the ground from the top of the building if the building is 252 m high?

3. From a window 50.0 ft above the street, the angle of elevation to the top of the building across the street is $60.0°$ and the angle of depression to the base of this building is $10.0°$. Find the height of the building across the street.

4. Radar stations $A$ and $B$ are on an east-west line, 8.6 km apart.  Station $A$ detects a plane at $C$, on a bearing of $53°$.  Station $B$ simultaneously detects the same plane, on a bearing of $323°$.  Find the distance from $B$ to $C$.

5. You need to find the height of a building.  From a given point on the ground, you find that the angle of elevation to the top of the building is $74.2°$.  You then walk back 35 ft.  From the second point, the angle of elevation to the top of the building is $51.8°$.  Find the height of the building.