Section 5.2: Finding Sides and Word Problems

MATH 130 · Friday, November 6 · Quiz 10 on Wednesday, November 11 Name _____

Pick the ratio that uses the side you know and the side you want. Write the equation, then solve. If the unknown ends up in the denominator, divide. Degree mode on, and round to two decimal places at the end.

1 · A missing side

Model (a) The angle is 32° and the hypotenuse is 18. Find the side opposite the angle.
(b) The angle is 54° and the adjacent side is 11. Find the hypotenuse.

1–2
1. The angle is 41° and the hypotenuse is 25. Find the adjacent side.
2. The angle is 27° and the opposite side is 8. Find the adjacent side.

2 · One right triangle in a word problem

Sketch it, label the angle and the known side, mark the side you want, then choose sin, cos or tan.

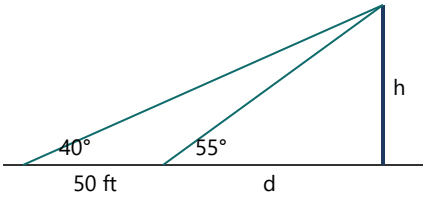
Model From a point 60 ft from the base of a tree, the angle of elevation to the top is 38°. How tall is the tree?

3 A kite string 120 ft long makes a 52° angle with the ground. How high is the kite?

3 · Two right triangles

Write one equation for each triangle using the same height h, then solve them together.

Model



From one point the angle of elevation to the top of a tower is 40°. From a point 50 ft closer it is 55°. Find the tower's height h.

4 From one point the angle of elevation to the top of a building is 30°. From a point 100 ft closer it is 45°. Find the building's height.

Common errors: using the hypotenuse with tan; a calculator in radian mode; rounding the first equation before solving the second; leaving off units.