LESSON MAKER PRO

Angles in Action

Use right triangles to find heights and lengths.

HIGH SCHOOL · A2S.GM.B

A2S.GM.B "Recognizing congruence, similarity, symmetry, measurement opportunities, and other geometric ideas, including right triangle trigonometry in real-world contexts..."

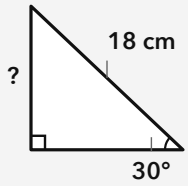
NAME _____ DATE _____

CHOOSE A RATIO

In a right triangle, match the sides you know to a trigonometric ratio. Use sin 30° = opposite/hypotenuse = 1/2, cos 60° = adjacent/hypotenuse = 1/2, or tan 45° = opposite/adjacent = 1.

WORKED EXAMPLE

Find the missing side in the figure.



1. sin 30° = x/18 = 1/2.
2. x = 18 × 1/2 = 9.

Answer: 9 cm

PRACTICE 4 problems

1 A right triangle has a 30° angle and an opposite leg of 7 cm. Find the hypotenuse.

ANSWER _____

2 A right triangle has a 60° angle and a 24 cm hypotenuse. Find the adjacent leg.

ANSWER _____

3 A right triangle has a 45° angle and an adjacent leg of 9 m. Find the opposite leg.

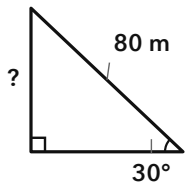
ANSWER _____

4 A right triangle has a 30° angle and a 42 ft hypotenuse. Find the opposite leg.

ANSWER _____

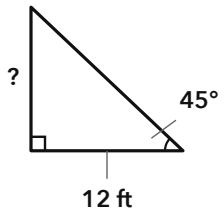
APPLY IT Show your work

1 A person on the ground spots a drone. Find the drone's height above the ground.



ANSWER _____

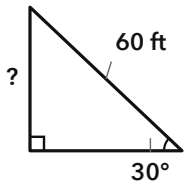
2 A concert light hangs above a level floor. Find its height.



ANSWER _____

CHALLENGE One step up

Your eyes are 5 ft above the ground. You sight a roof as shown. How high is the roof above the ground?



WORK SPACE AND ANSWER

ANSWER KEY

Angles in Action

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A right triangle has a 30° angle and an opposite leg of 7 cm. Find the hypotenuse.	**14 cm**
2	A right triangle has a 60° angle and a 24 cm hypotenuse. Find the adjacent leg.	**12 cm**
3	A right triangle has a 45° angle and an adjacent leg of 9 m. Find the opposite leg.	**9 m**
4	A right triangle has a 30° angle and a 42 ft hypotenuse. Find the opposite leg.	**21 ft**

PART 2 · APPLY IT

1. **40 m** The height is opposite the 30° angle. Multiply the 80 m sight line by sin 30° = 1/2.
2. **12 ft** The height is opposite the 45° angle. Since tan 45° = 1, it equals the 12 ft adjacent leg.

CHALLENGE

35 ft

For the challenge, the rise from eye level is 60 × 1/2 = 30 ft. Add the 5 ft eye height to get 35 ft above the ground.