

## Section 5.7 Applications and Models

**Objective:** In this lesson you learned how to use trigonometric functions to solve real-life problems.

Course Number

Instructor

Date

### I. Applications Involving Right Triangles (Pages 433–434)

**Example 1:** A ladder leaning against a house reaches 24 feet up the side of the house. The ladder makes a  $60^\circ$  angle with the ground. How far is the base of the ladder from the house? Round your answer to two decimal places.

***What you should learn***

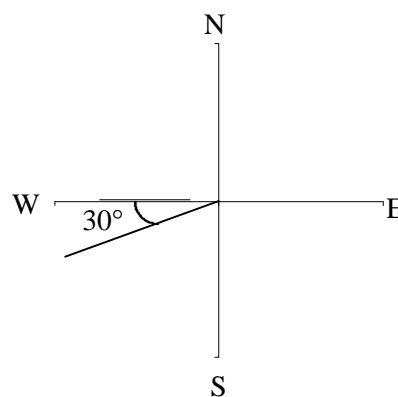
How to solve real-life problems involving right triangles

### II. Trigonometry and Bearings (Page 435)

Used to give directions in surveying and navigation, a **bearing** measures . . .

The bearing N  $70^\circ$  E means . . .

**Example 2:** Write the bearing for the path shown in the diagram at the right.



***What you should learn***

How to solve real-life problems involving directional bearings

### III. Harmonic Motion (Pages 436–438)

The vibration, oscillation, or rotation of an object under ideal conditions such that the object's uniform and regular motion can be described by a sine or cosine function is called \_\_\_\_\_.

***What you should learn***

How to solve real-life problems involving harmonic motion

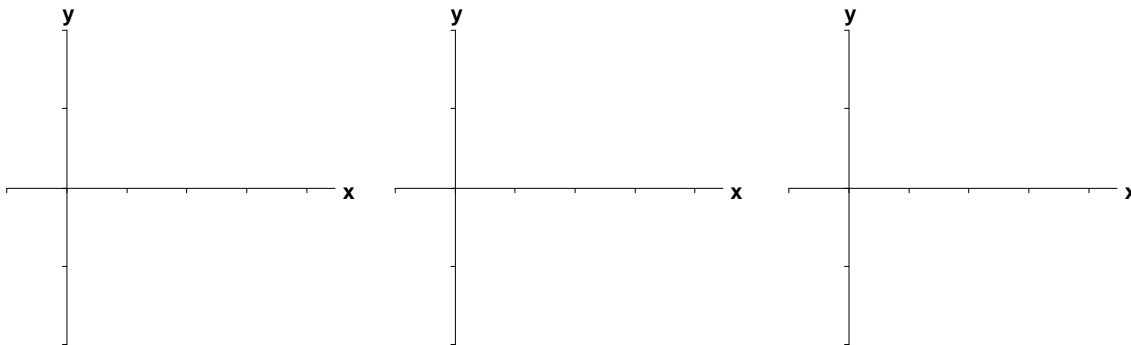
A point that moves on a coordinate line is said to be in simple harmonic motion if . . .

The simple harmonic motion has amplitude \_\_\_\_\_, period \_\_\_\_\_, and frequency \_\_\_\_\_.

**Example 3:** Given the equation for simple harmonic motion

$$d = 3 \sin \frac{t}{2}, \text{ find:}$$

- the maximum displacement,
- the frequency of the simple harmonic motion,  
and
- the period of the simple harmonic motion.



### Homework Assignment

Page(s)

Exercises