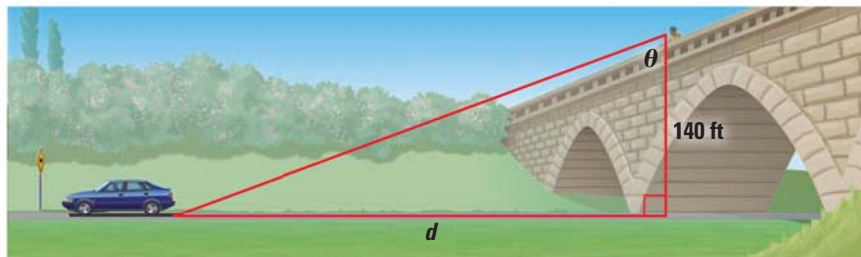


31. **TAKS REASONING** A buoy oscillates up and down as waves go past. The buoy moves a total of 3.5 feet from its low point to its high point, and then returns to its high point every 6 seconds.
- Write an equation that gives the buoy's vertical position y at time t if the buoy is at its highest point when $t = 0$.
 - Explain why you chose $y = a \sin bt$ or $y = a \cos bt$ for part (a).
32. **MULTIPLE REPRESENTATIONS** You are standing on a bridge, 140 feet above the ground. You look down at a car traveling away from the underpass.



- Writing an Equation** Write an equation that gives the car's distance d from the base of the bridge as a function of the angle θ .
 - Drawing a Graph** Graph the function found in part (a). Explain how the graph relates to the given situation.
 - Making a Table** Make a table of values for the function. Use the table to find the car's distance from the bridge when $\theta = 20^\circ$, 40° , and 60° .
33. **CHALLENGE** The motion of a spring can be modeled by $y = A \cos kt$ where y is the spring's vertical displacement (in feet) relative to its position at rest, A is the initial displacement (in feet), k is a constant that measures the elasticity of the spring, and t is the time (in seconds).
- Suppose you have a spring whose motion can be modeled by the function $y = 0.2 \cos 6t$. Find the initial displacement and the period of the spring. Then graph the given function.
 - Graphing Calculator** If a damping force is applied to the spring, the motion of the spring can be modeled by the function $y = 0.2e^{-4.5t} \cos 4t$. Graph this function. What effect does damping have on the motion?



MIXED REVIEW FOR TAKS

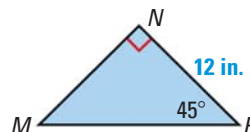
TAKS PRACTICE at classzone.com

REVIEW

Lesson 13.1;
TAKS Workbook

34. **TAKS PRACTICE** What is the area of $\triangle MNP$? **TAKS Obj. 6**

- (A) 36 in.^2 (B) 72 in.^2
(C) 109 in.^2 (D) 144 in.^2



REVIEW

Lesson 9.1;
TAKS Workbook

35. **TAKS PRACTICE** The length of \overline{ST} is $7\sqrt{5}$ and the coordinates of its endpoints are $(x, -10)$ and $(-8, 4)$. What are the possible values of x ? **TAKS Obj. 7**

- (F) -15 (G) 1
(H) $-15, -1$ (J) $15, -1$