EXAMPLE 3 TAKS PRACTICE: Multiple Choice

What is the measure of the angle θ in the triangle shown?

Ⓐ 28.6° Ⓑ 33.1°

Ⓒ 56.9° Ⓓ 61.4°

AVOID ERRORS
All the answer choices are in degrees. Therefore, check that your calculator is set in degree mode, not radian mode.

Solution

In the right triangle, you are given the lengths of the side adjacent to θ and the hypotenuse, so use the inverse cosine function to solve for θ.

$$\cos\theta = \frac{\text{adj}}{\text{hyp}} = \frac{5}{14} \quad \longrightarrow \quad \theta = \cos^{-1}\frac{5}{14} \approx 69.1°$$

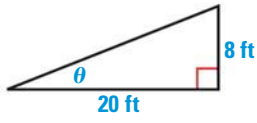
▶ The correct answer is C. Ⓐ Ⓑ Ⓒ Ⓓ

EXAMPLE 4 Write and solve a trigonometric equation

MONSTER TRUCKS A monster truck drives off a ramp in order to jump onto a row of cars. The ramp has a height of 8 feet and a horizontal length of 20 feet. What is the angle θ of the ramp?

Solution

STEP 1 **Draw** a triangle that represents the ramp.



STEP 2 **Write** a trigonometric equation that involves the ratio of the ramp's height and horizontal length.

$$\tan\theta = \frac{\text{opp}}{\text{adj}} = \frac{8}{20}$$

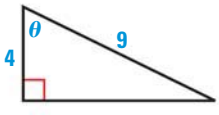
STEP 3 **Use** a calculator to find the measure of θ.

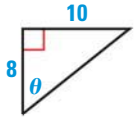
$$\theta = \tan^{-1}\frac{8}{20} \approx 21.8°$$

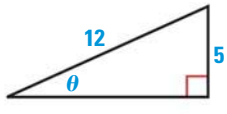
▶ The angle of the ramp is about 22°.

GUIDED PRACTICE for Examples 3 and 4

Find the measure of the angle θ.

11. 

12. 

13. 

14. **WHAT IF?** In Example 4, suppose a monster truck drives 26 feet on a ramp before jumping onto a row of cars. If the ramp is 10 feet high, what is the angle θ of the ramp?