MIXED REVIEW of Problem Solving

STATE TEST PRACTICE
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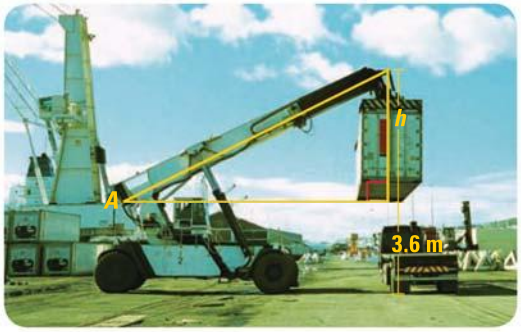
Lessons 7.5–7.7

1. MULTI-STEP PROBLEM A *reach stacker* is a vehicle used to lift objects and move them between ships and land.



a. The vehicle's arm is 10.9 meters long. The maximum measure of $\angle A$ is 60°. What is the greatest height h the arm can reach if the vehicle is 3.6 meters tall?

b. The vehicle's arm can extend to be 16.4 meters long. What is the greatest height its extended arm can reach?

c. What is the difference between the two heights the arm can reach above the ground?

2. EXTENDED RESPONSE You and a friend are standing the same distance from the edge of a canyon. Your friend looks directly across the canyon at a rock. You stand 10 meters from your friend and estimate the angle between your friend and the rock to be 85°.

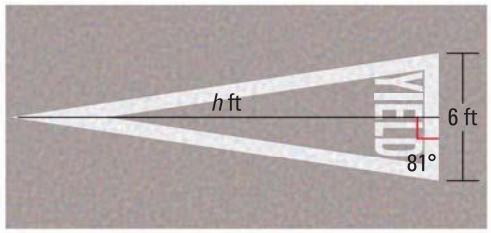
a. Sketch the situation.

b. *Explain* how to find the distance across the canyon.

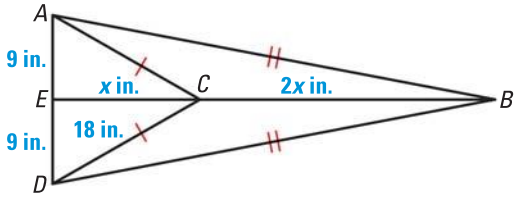
c. Suppose the actual angle measure is 87°. How far off is your estimate of the distance?

3. SHORT RESPONSE The international rules of basketball state the rim of the net should be 3.05 meters above the ground. If your line of sight to the rim is 34° and you are 1.7 meters tall, what is the distance from you to the rim? *Explain* your reasoning.

4. GRIDDED ANSWER The specifications for a *yield ahead* pavement marking are shown. Find the height h in feet of this isosceles triangle.



5. EXTENDED RESPONSE Use the diagram to answer the questions.

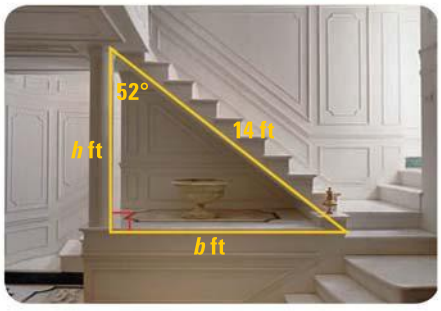


a. Solve for x. *Explain* the method you chose.

b. Find $m\angle ABC$. *Explain* the method you chose.

c. *Explain* a different method for finding each of your answers in parts (a) and (b).

6. SHORT RESPONSE The triangle on the staircase below has a 52° angle and the distance along the stairs is 14 feet. What is the height h of the staircase? What is the length b of the base of the staircase?



7. GRIDDED ANSWER The base of an isosceles triangle is 70 centimeters long. The altitude to the base is 75 centimeters long. Find the measure of a base angle to the nearest degree.