

8.3 + 8.4 : Finding Missing Angles in Right Δ 's

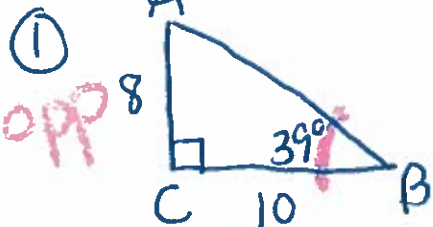
Day 58

If you know at Least 2 sides, you can use Inverse buttons to find the measures of the acute angles in the right Δ .

$$\sin^{-1}, \cos^{-1}, \tan^{-1}$$

P.7

Find $m\angle B$ to the nearest degree.
(Whole #)



*work

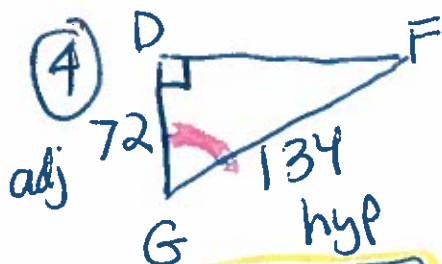
$$m\angle B = \tan^{-1}\left(\frac{8}{10}\right)$$

$$m\angle B = 39^\circ$$

$$m\angle A = 180 - 90 - 39$$

$$\text{or } 90 - 39 = 51^\circ$$

$$\text{tangent} = \frac{\text{opp}}{\text{adj}}$$



Find $m\angle G$

$$m\angle G = \cos^{-1}\left(\frac{72}{134}\right)$$

$$m\angle G = 57^\circ$$

$$\text{cosine} = \frac{\text{adj}}{\text{hyp}}$$

Find $m\angle H$

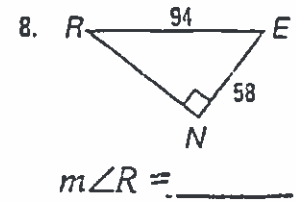
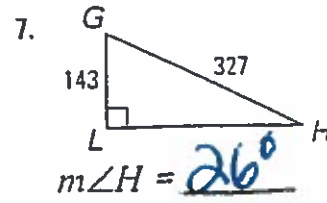
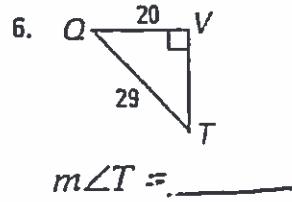
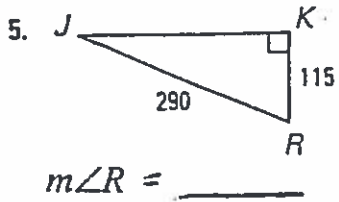
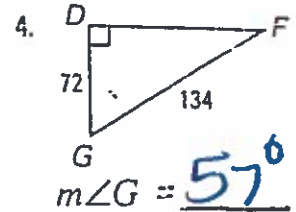
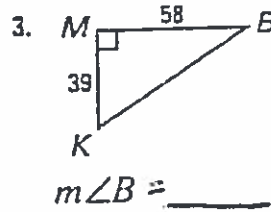
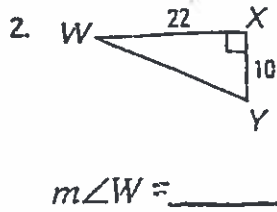
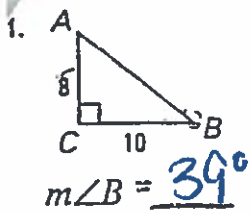


$$m\angle H = \sin^{-1}\left(\frac{143}{327}\right)$$

$$m\angle H = 26^\circ$$

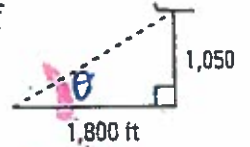
$$\text{sine} = \frac{\text{opp}}{\text{h.b}}$$

Each measure to the nearest whole degree.



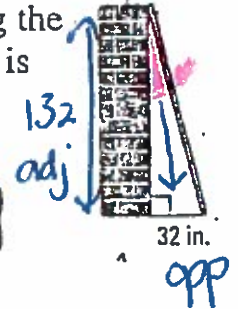
9. When a certain airplane has reached a ground distance of 1,800 ft from its lift-off point, it is 1,050 ft above the ground. To the nearest whole degree, what angle does the plane's path make with the ground?

$$\tan^{-1}\left(\frac{1050}{1800}\right) = 30^\circ$$

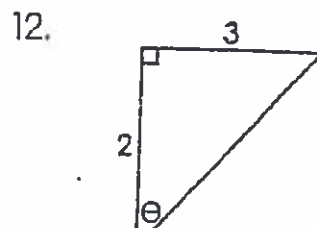
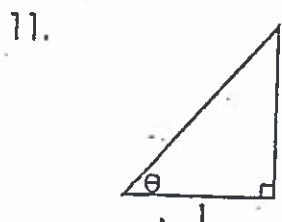
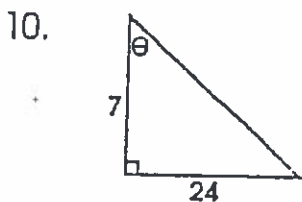
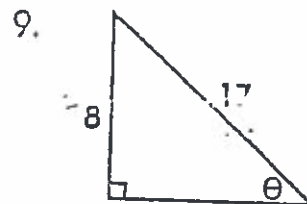
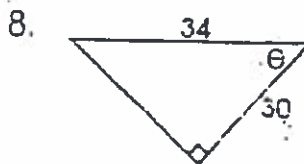
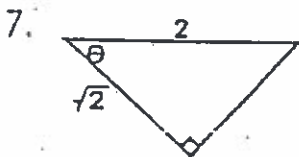
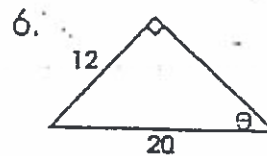
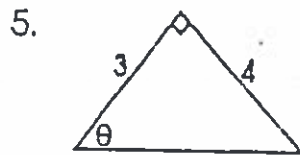
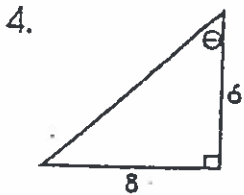
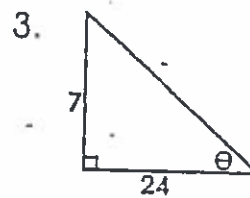
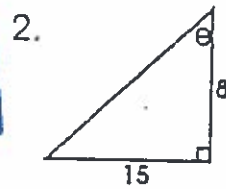
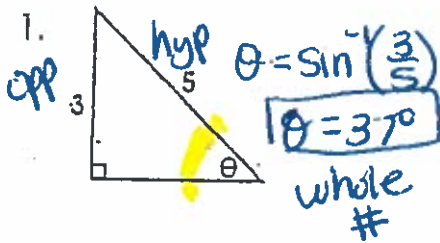


10. The base of a ladder is 32 inches from a wall. The top of the ladder is touching the wall at a place that is 132 inches from the ground. To the nearest degree, what is the measure of the angle formed by the ladder and the wall?

$$\tan^{-1}\left(\frac{32}{132}\right) = 14^\circ$$



Using Trig Inverses to Find Angles



Name _____

Finding Missing

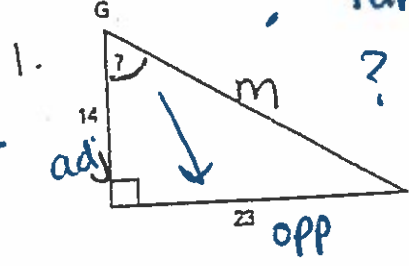
Round angles to nearest whole #.

Round sides to nearest tenth.

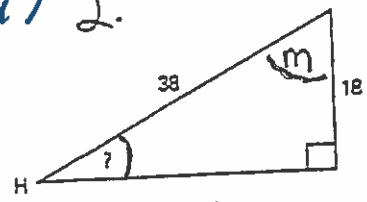
Find each? and m.

$? = \tan^{-1}\left(\frac{23}{14}\right)$ 2.

$14^2 + 23^2 = m^2$

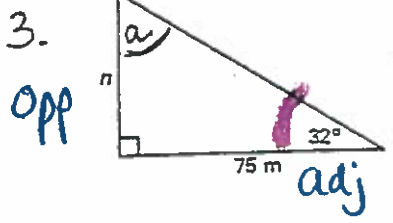


? = _____
m = _____



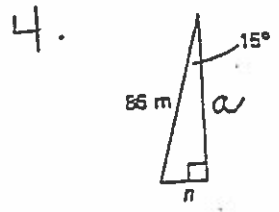
? = _____
m = _____

Find n & a in each.
 $a = 90^\circ - 32^\circ$

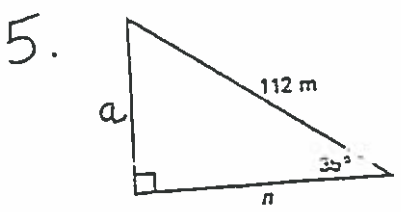


$\frac{\tan 32^\circ}{1} = \frac{n}{75}$

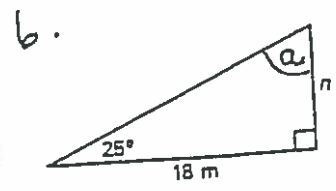
a = _____
n = _____



a = _____
n = _____



a = _____
n = _____



a = _____
n = _____

Practice

Choose the best answer. You may use your calculator.

1. A jet is capable of a steady 15° climb. What is a , the approximate altitude of the jet, in meters, after it moves 800 meters through the air?



- A. 207 m C. 772 m
B. 309 m D. 828 m

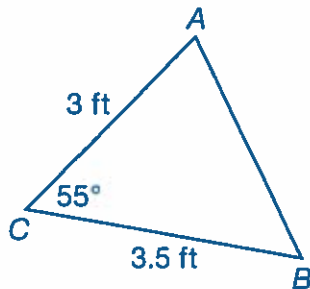
2. At a certain time of day, Sean, who is 6 feet tall, casts an 8-foot shadow. What is the approximate angle of elevation of the sun when this shadow is cast?

- A. 37° C. 53°
B. 49° D. 68°



The figure and its shadow form a right triangle. The location of the sun determines the angle.

3. What is the area of $\triangle ABC$, to the nearest tenth of a square foot?

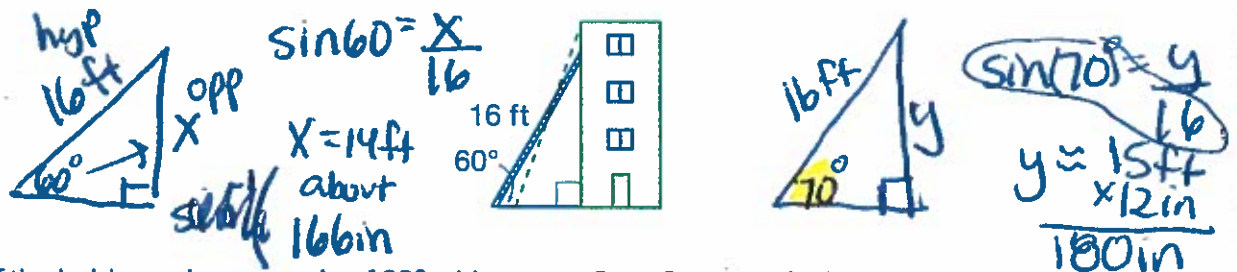


- A. 3.9 ft^2 C. 4.6 ft^2
B. 4.3 ft^2 D. 4.9 ft^2

4. When the sun's angle of elevation is 56° , a tree casts a shadow that is 60 feet long. What is the height of the tree to the nearest foot?

- A. 40 ft
B. 50 ft
C. 89 ft
D. 116 ft

Use the diagram of a 16-foot ladder leaning against a building for questions 5 and 6.



5. If the ladder makes an angle of 60° with the ground, how high does it reach? Give an exact answer and give an answer to the nearest inch.

166 in

6. Suppose the ladder is adjusted to be at an angle of 70° with the ground. Approximately how many inches higher will it reach?

180 - 166 = 14 in

REMEMBER The sides of a 30° - 60° - 90° triangle are in the ratio x ; $x\sqrt{3}$; $2x$.