Chapter 8 Name _____ BLOCK ____

8.1 Pythagorean Theorem

Find the missing lengths.

	Leg	Leg	Hypotenuse
1.	24	10	_____
3.	5	_____	8
5.	6	9	_____
7.	_____	$\frac{7}{7}$	$\frac{32}{4}$
9.	8	10	_____

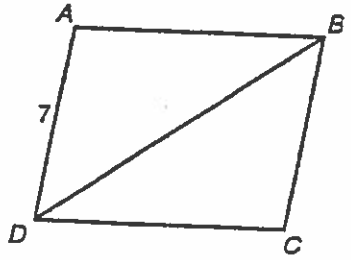
8.1 Converse of Pythagorean Theorem.

Acute, Obtuse, or Right

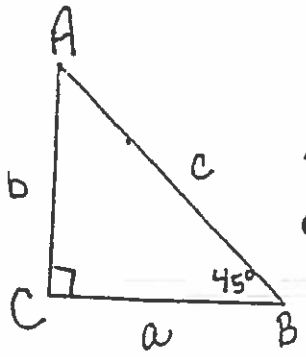
2. 5, 7, $\sqrt{85}$ _____
4. 12, 12, 12 _____
6. 2, $\sqrt{5}$, 3 _____
8. 4, 6, 7 _____
10. $\sqrt{7}$, 3, 4 _____
12. $\sqrt{5}$, 3, 7 _____

14. For what value of *DB* will rhombus *ABCD* be a square?

_____

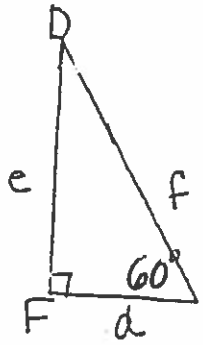


8.2 Special Right Triangles



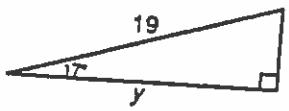
	a	b	c
2.	_____	$\frac{3}{8}$	_____
4.	_____	_____	$11\sqrt{2}$
6.	_____	_____	26

	d	e	f
8.	$8\sqrt{3}$	_____	_____
10.	_____	$7\sqrt{3}$	_____
12.	_____	_____	32



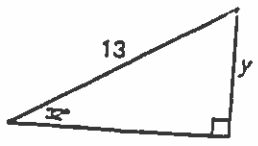
Trig Ratios 8.3 + 8.4

1.



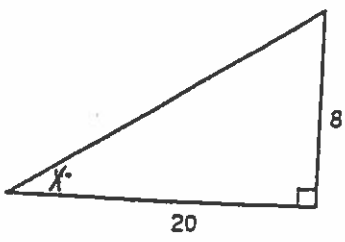
y =

2.



y =

3.

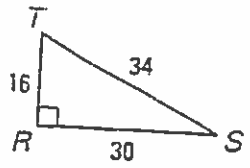


x =

1

Sine, Cosine, and Tangent Ratios • Part 1

Use ΔRST for Exercises 1–6. Find each ratio in lowest terms.



1. $\sin T$
2. $\tan S$
3. $\cos T$
4. $\tan T$
5. $\cos S$
6. $\sin S$

For each triangle, use the information given to find the trigonometric ratio indicated. Write the answ in lowest terms.

7. In ΔABC, $\angle B = 90°$, $\overline{AB} = 12$, and $\overline{BC} = 9$. Find $\cos C$.
8. In ΔDEF, $\angle F = 90°$, $\overline{FE} = 24$, and $\overline{DE} = 26$. Find $\sin E$.
9. In ΔJKL, $\angle L = 90°$, $\overline{JL} = 10$, and $\overline{JK} = 26$. Find $\tan J$.
10. In ΔPQV, $\angle Q = 90°$, $\overline{PV} = 34$, and $\overline{QV} = 30$. Find $\cos P$.
11. In ΔTAG, $\angle G = 90°$, $\overline{TA} = 39$, and $\overline{TG} = 15$. Find $\sin T$.
12. In ΔHOP, $\angle O = 90°$, $\overline{OP} = 36$, and $\overline{HO} = 15$. Find $\cos P$.

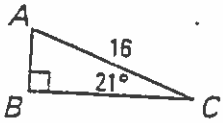
Use a calculator or the Table of Trigonometric Ratios on page 581 to find each ratio. Round th answer to four decimal places.

13. $\cos 50°$
14. $\tan 20°$
15. $\cos 37°$
16. $\sin 74°$
17. $\tan 51°$
18. $\sin 15°$
19. $\tan 8°$
20. $\tan 82°$
21. $\sin 44°$
22. $\cos 45°$
23. $\sin 50°$
24. $\cos 25°$

Extra Practice 8.3/8.4 Finding Lengths of Sides in Right Triangles • Part 2

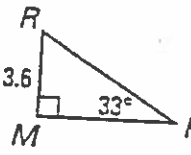
Solve. Round answers to the nearest tenth.

Use ΔABC for Exercises 1 and 2.



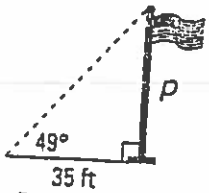
1. Find $\overline{AB}$.
2. Find $\overline{BC}$.

Use ΔRPM for Exercises 3 and 4.

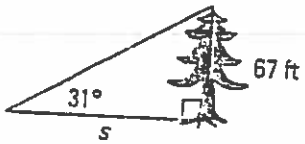


3. Find $\overline{RP}$.
4. Find $\overline{MP}$.

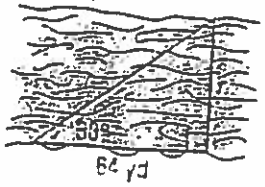
5. Find the height of the flagpole, p.



6. Find the length of the tree's shadow, s.



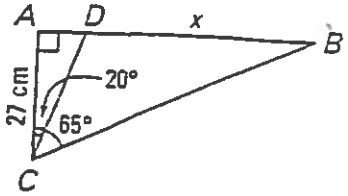
7. Find the width of the river, r.



8. Find the length of the guy wire, g.

In each figure, find the length of x to the nearest tenth.

9.



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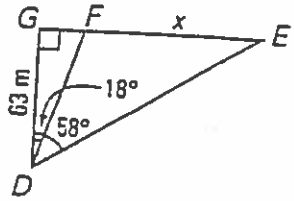
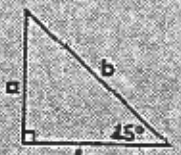


8.2 Special Right Triangles

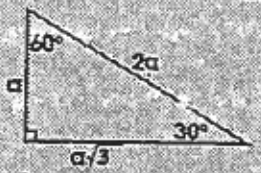
Isosceles Right Triangle

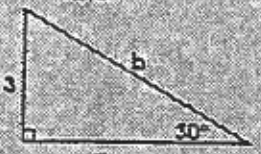


$a = 4$

$b = 4\sqrt{2}$

30 - 60 - 90 Triangle

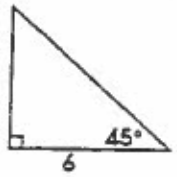


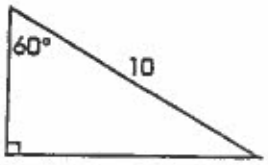


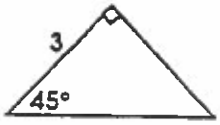
$a = 3\sqrt{3}$

$b = 2 \cdot 3 = 6$

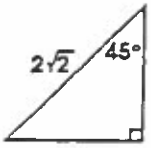
Find the missing sides.

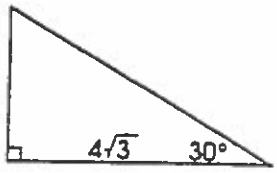
1. 

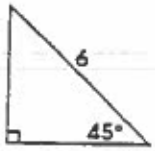
2. 

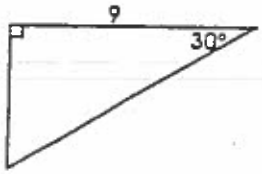
3. 

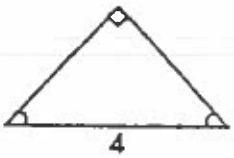
4. 

5. 

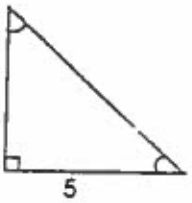
6. 

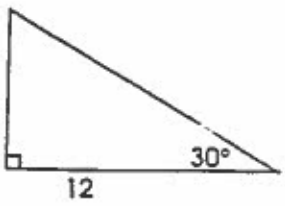
7. 

8. 

9. 

10. 

11. 

12. 

8.4 Special Right Triangles

Practice

Name:
Date:

1 If the perimeter of a square is $8\sqrt{2}$, then what is the length of the diagonal?

draw a picture.

A. 8
B. $4\sqrt{2}$
C. 4
D. 2

2 If the longest side of an isosceles right triangle is 12 feet long, how long are the other sides?

A. $6\sqrt{2}$ feet and $6\sqrt{2}$ feet
B. 6 feet and $6\sqrt{3}$ feet
C. 6 feet and $6\sqrt{2}$ feet
D. $4\sqrt{3}$ feet and $4\sqrt{3}$ feet

3 If the altitude of an equilateral triangle is $21\sqrt{3}$ inches, what is the perimeter of the triangle?

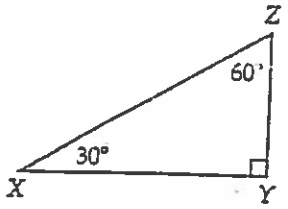
A. 63 inches
B. 99.4 inches
C. 109.1 inches
D. 126 inches

draw a picture.

If the legs of a right triangle are $2\sqrt{3}$ and 6, what is the length of the hypotenuse?

A. $4\sqrt{3}$
B. $4\sqrt{6}$
C. $6\sqrt{2}$
D. 12

Exercises 5–10: $\triangle XYZ$ is a 30°–60°–90° triangle. The length of one side is given. Find the lengths of the other two sides in radical form.



5 $YX = 36$

6 $YZ = 9$

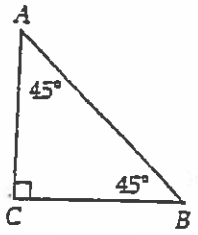
7 $ZX = 6\sqrt{3}$

8 $YZ = 4\sqrt{3}$

9 $YX = 27$

10 $ZX = 10$

Exercises 11–16: $\triangle ABC$ is a 45°–45°–90° triangle. The length of one side is given. Find the lengths of the other two sides in radical form.



11 $AB = 12$

12 $AC = 3\sqrt{2}$

13 $BC = 4$

14 $AB = 17$

15 $BC = 10\sqrt{2}$

16 $AB = 8\sqrt{3}$

Name: _____

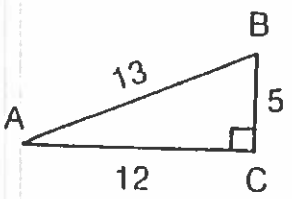
Why Did the Saltine Lock Itself in the Bank Vault?

TO ANSWER THIS QUESTION, FOLLOW THESE INSTRUCTIONS:

For each exercise, select the correct ratio from the four choices given. Write the letter of the correct choice in the box that contains the number of the exercise.

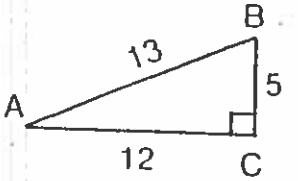
① sin A
② cos A
③ tan A

(T) $\frac{12}{13}$ (A) $\frac{5}{13}$ (L) $\frac{13}{5}$ (E) $\frac{5}{12}$



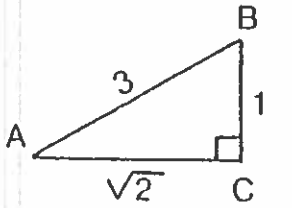
④ sin B
⑤ cos B
⑥ tan B

(M) $\frac{13}{5}$ (A) $\frac{5}{13}$ (C) $\frac{12}{13}$ (D) $\frac{12}{5}$



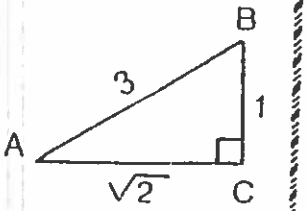
⑦ sin A
⑧ cos A
⑨ tan A

(A) $\frac{1}{3}$ (O) $\frac{1}{\sqrt{2}}$ (H) $\frac{3}{1}$ (E) $\frac{\sqrt{2}}{3}$



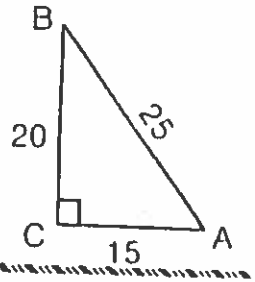
⑩ sin B
⑪ cos B
⑫ tan B

(T) $\frac{\sqrt{2}}{1}$ (S) $\frac{1}{\sqrt{2}}$ (E) $\frac{1}{3}$ (I) $\frac{\sqrt{2}}{3}$



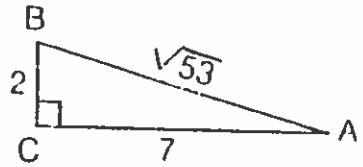
⑬ sin A
⑭ cos A
⑮ tan A

(A) $\frac{4}{3}$ (E) $\frac{3}{5}$ (U) $\frac{5}{3}$ (B) $\frac{4}{5}$



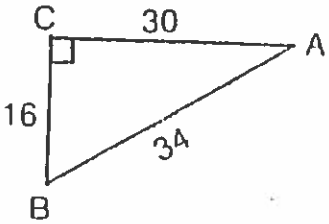
⑯ sin B
⑰ cos B
⑱ tan B

(W) $\frac{7}{\sqrt{53}}$ (R) $\frac{2}{7}$ (C) $\frac{2}{\sqrt{53}}$ (T) $\frac{7}{2}$



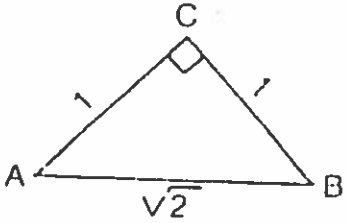
⑲ sin A
⑳ cos A
㉑ tan A

(K) $\frac{8}{15}$ (H) $\frac{17}{8}$ (S) $\frac{8}{17}$ (N) $\frac{15}{17}$



㉒ sin A
㉓ cos A
㉔ tan A

(R) $\frac{1}{\sqrt{2}}$ (R) $\frac{1}{\sqrt{2}}$ (L) $\frac{\sqrt{2}}{1}$ (F) 1



10	2	16	5	20	18	14	6	12	9	13	3	7	19	1	24	11	17	22	15	4	21	8	23

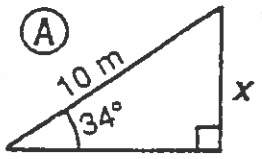
Did You Hear About. . .

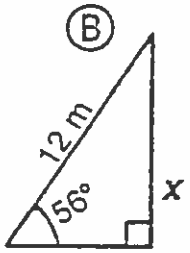
A	B	C	D	E	F	G
H	I	J	K	L	M	?

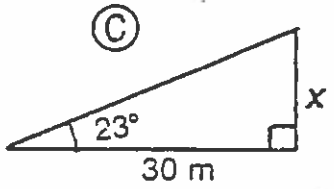
DIRECTIONS:

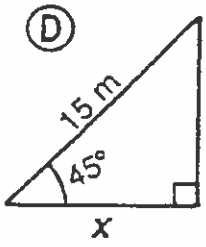
In any triangle below, find the length x. Round it to the nearest 0.1 meter. Find your answer in the answer column and notice the word next to it. Write this word in the box that has the same letter as that triangle.

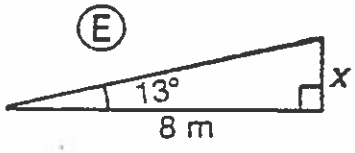
KEEP WORKING AND YOU WILL HEAR ABOUT A NOVEL NAME!

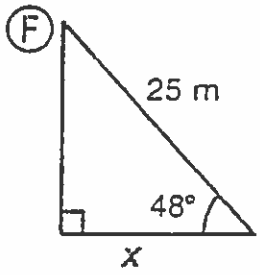
Ⓐ 

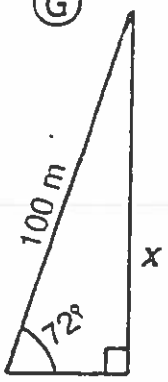
Ⓑ 

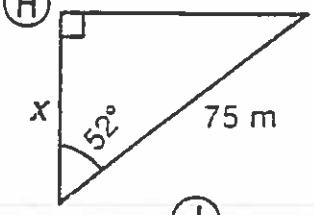
Ⓒ 

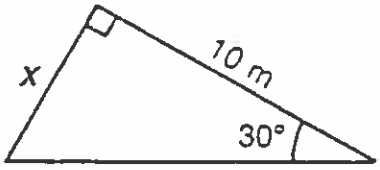
Ⓓ 

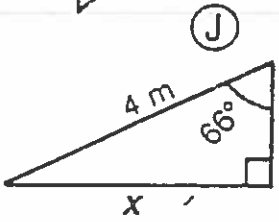
Ⓔ 

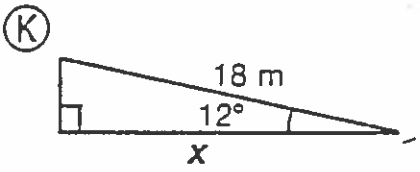
Ⓕ 

Ⓖ 

Ⓗ 

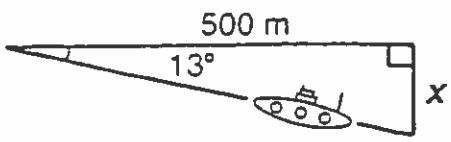
Ⓘ 

Ⓙ 

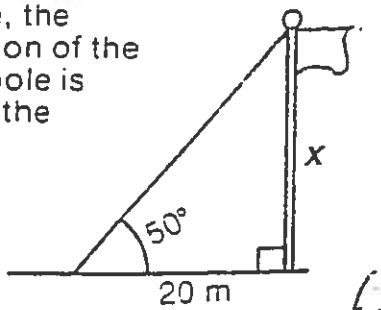
Ⓚ 

16.8 m—ROBINS
3.7 m—BECAUSE
16.7 m—ROOSTER
23.8 m—SO
46.2 m—NAME
22.7 m—SUN
44.9 m—BEST
5.6 m—THE
87.3 m—WAS
3.2 m—BANKS
10.6 m—GAVE
98.5 m—WRECKED
5.8 m—ROBINSON
9.9 m—FARMER
115.5 m—CREW
17.6 m—HE
12.7 m—WHO
15.4 m—PET
95.1 m—THE
1.8 m—HIS

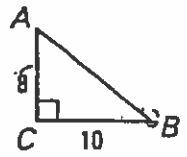
Ⓛ A submarine dives at an angle of 13°. How far is it beneath the surface at a point 500 meters along the surface from where it submerged?



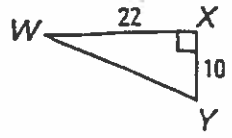
Ⓜ At a point 20 meters from a flagpole, the angle of elevation of the top of the flagpole is 50°. How tall is the flagpole?



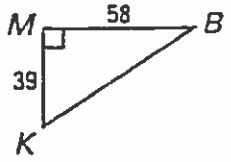
Find each measure to the nearest whole degree.

1. 

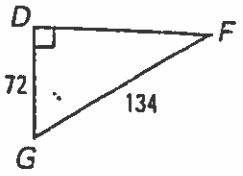
$m\angle B =$ _____

2. 

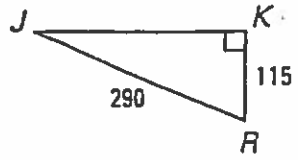
$m\angle W =$ _____

3. 

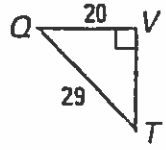
$m\angle B =$ _____

4. 

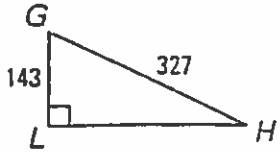
$m\angle G =$ _____

5. 

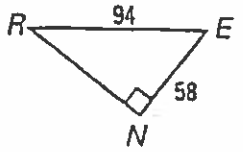
$m\angle R =$ _____

6. 

$m\angle T =$ _____

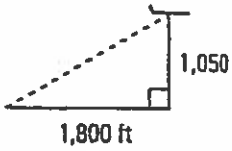
7. 

$m\angle H =$ _____

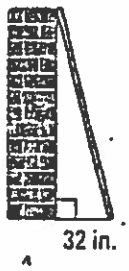
8. 

$m\angle R =$ _____

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?

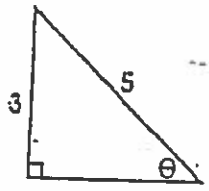


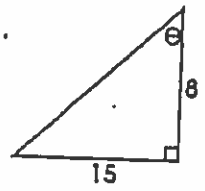
10. The base of a ladder is 32 inches from a wall. The top of the ladder is touching the wall at a place that is 132 inches from the ground. To the nearest degree, what is the measure of the angle formed by the ladder and the wall?

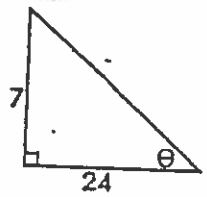


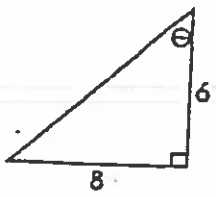
8.3 + 8.4

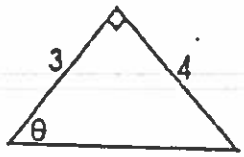
Using Trig Inverses to Find Angles

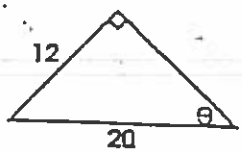
1. 

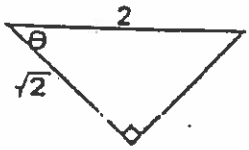
2. 

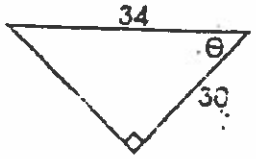
3. 

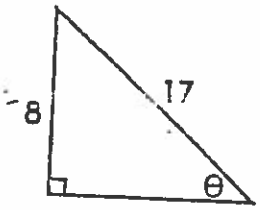
4. 

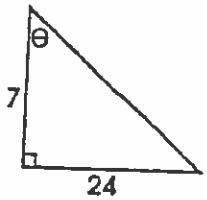
5. 

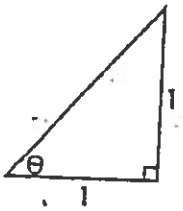
6. 

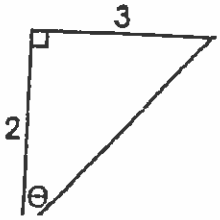
7. 

8. 

9. 

10. 

11. 

12. 

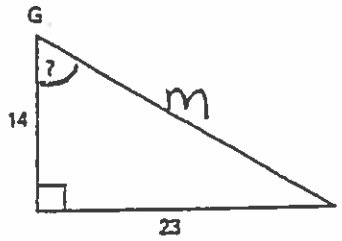
Name _____

Finding Missing Parts

* Round angles to nearest whole #.
* Round sides to nearest tenth.

Find each ? and m.

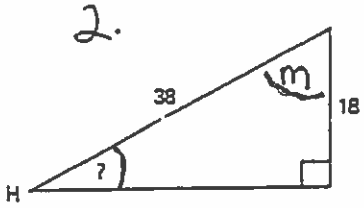
1.



? = _____

m = _____

2.

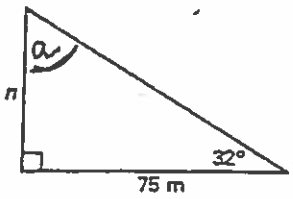


? = _____

m = _____

Find n & a in each.

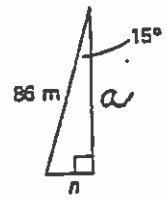
3.



a = _____

n = _____

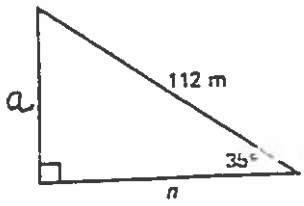
4.



a = _____

n = _____

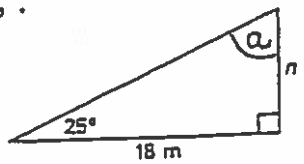
5.



a = _____

n = _____

6.



a = _____

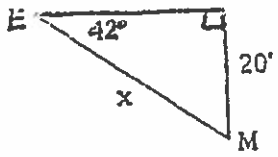
n = _____

Name _____ Period ____

8.5 Trigonometric Ratios

Draw a picture and solve each problem using trig ratios.

Ex: An eagle spotted a mouse 20 feet below at an angle of 42 degrees with the horizon. If the eagle flies along its line of sight, how far will it have to fly to reach its prey?



$$\sin 42^\circ = \frac{20}{x}$$

$$x = \frac{20}{\sin 42} = 29.889 = 29.9 \text{ feet}$$

1. A 20-foot ladder is leaning against a wall. The base of the ladder is 3 feet from the wall. What angle does the ladder make with the ground?

2. How tall is a bridge if a 6-foot-tall person standing 100 feet away can see the top of the bridge at an angle of 30 degrees to the horizon?

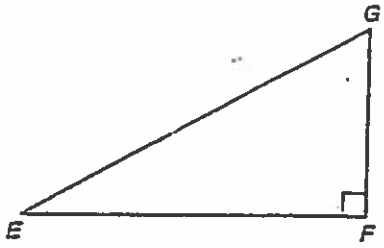
3. An air force pilot must descend 1500 feet over a distance of 9000 feet to land smoothly on an aircraft carrier. What is the plane's angle of descent?

4. In a movie theater 150 feet long, the floor is sloped so there is a difference of 30 feet between the front and back of the theater. What is the angle of depression?

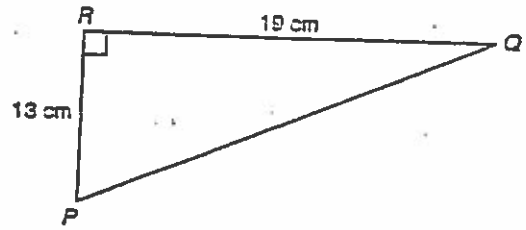
5. A bow hunter is perched in a tree 15 feet off the ground. If he sees his prey on the ground at an angle of 30 degrees, how far will the arrow have to travel to hit his target?

1. Using $\triangle EFG$, what is

(a) $\sin G$? (b) $\cos G$? (c) $\tan G$?



2.



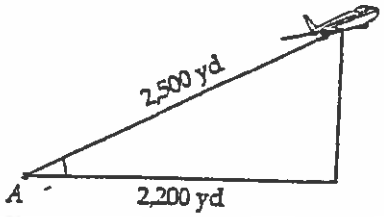
a) $\angle P =$

$\angle Q =$

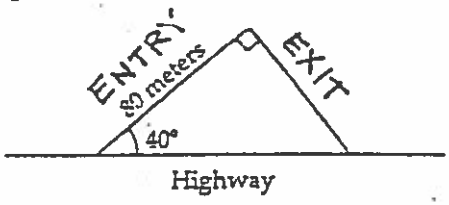
b) $PQ =$

(a) Find the measure of each missing angle to the nearest hundredth of a degree.
(b) Find the length of the missing side to the nearest hundredth of a centimeter.

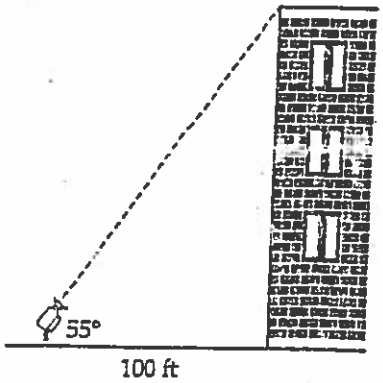
3 A pilot takes off at point A and ascends at a fixed angle with the level runway. If he flies a distance of 2,500 yards but covers only a ground distance of 2,200 yards, then what is his angle of ascent?



4 A highway rest area is planned so that the entry and exit paths form a right angle. The entry path is completed. It is 80 meters long and forms a 40-degree angle with the highway. How long will the exit path be to the nearest meter?



5. A camera is on the ground 100 feet from a building. The angle of elevation to the top of the building is 55°. How tall is the building?



A. 57 ft
B. 70 ft
C. 82 ft
D. 143 ft

10