Directions: Show all work neatly on this paper. All angles are in degrees. Remember to show the basic equation
          and calculator-ready form on all trig problems.

**For each problem, solve for *x*. Leave answers in simplest radical form.**

1.



$12\sqrt{6}$   *x*
$12\sqrt{6}$

2.



$12\sqrt{6}$   *x*
60

3.



*x*   $12\sqrt{6}$
*x*

4.



*x*-6
30
57

5.



*x*   $10\sqrt{3}$
60

6.



2*x*+3
30
124
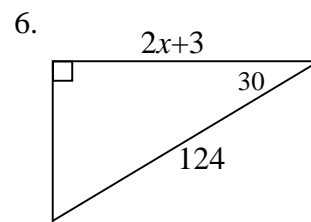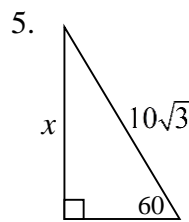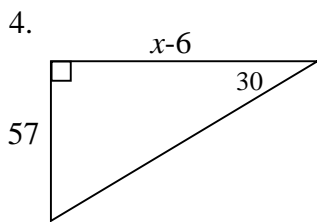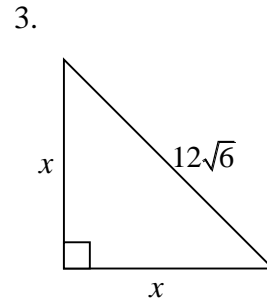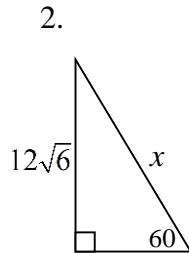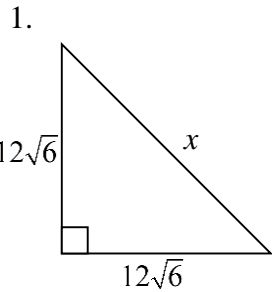
**For each problem, write and solve an equation for *x*. Round answers to 3 decimal places.**
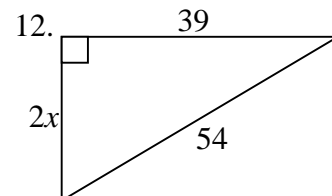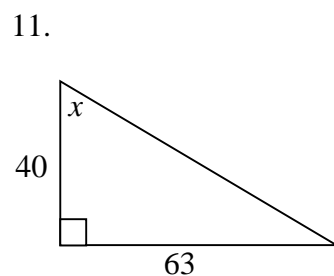
7.



32
*x*
58

8.



28
3*x*
56

9.



*x*
$12\sqrt{14}$
28
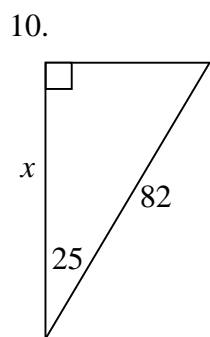
10.



*x*
82
25
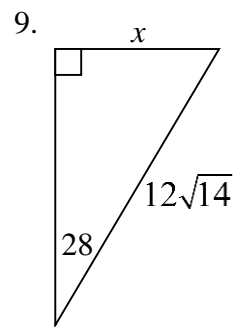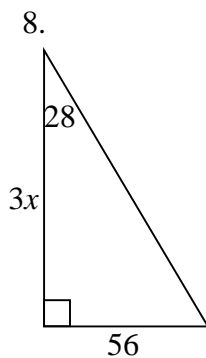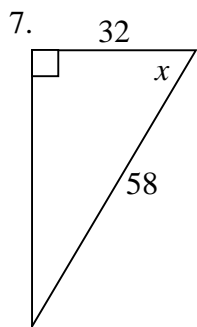
11.



*x*
40
63

12.



39
2*x*
54

Directions: Show all work neatly on this paper. All angles are in degrees. Remember to show the basic equation and calculator-ready form on all trig problems.

**Read carefully. Draw a correct picture. Show all work. Round to hundredths.**

13.      Find the length of the altitude that divides the hypotenuse into segments of length six and ten.

14.      A rectangle has sides in ratio 3:2 and diagonal length $5\sqrt{26}$. Find the long side of the rectangle.

15.      Two sides of a right triangle are twelve and six. Find all possible values of the third side.

16.      Find the angle of elevation of a kite using 200 feet of string to attain a height of 85 feet.

17.      A helicopter is 30 miles from its landing. The angle of depression to the landing is 27 degrees. Find the altitude of the helicopter.