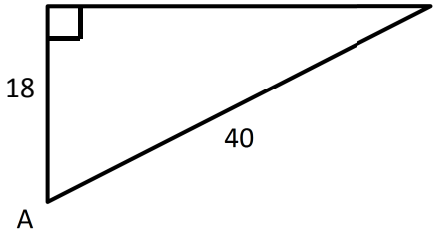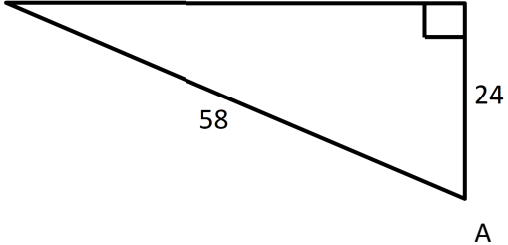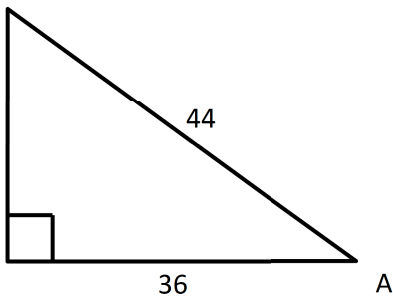# Unit 6: Triangle Geometry Day 6
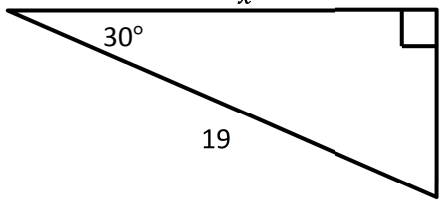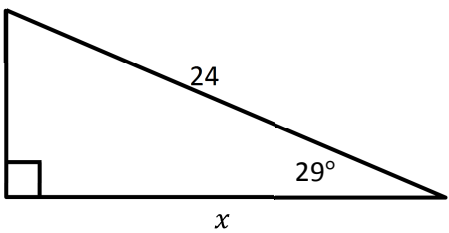
Math 9 Principles

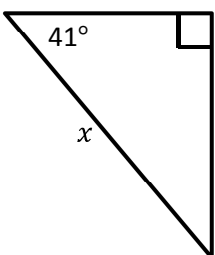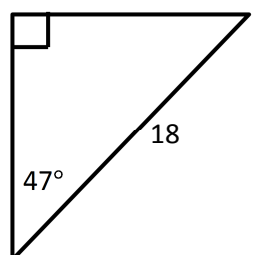**6-4 I can evaluate the sine, cosine, and tangent ratio in right angled triangle and use this to find missing sides and angles.**

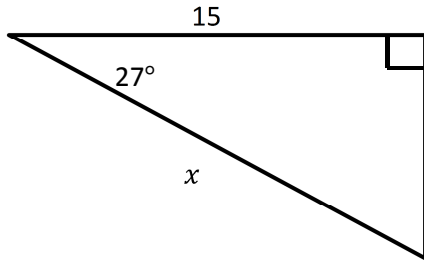*Find angle A in each triangle using the arccosine function. (Round to the nearest degree)*
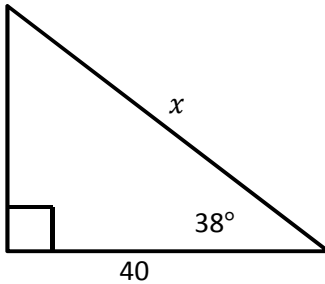
1)

18

40

A

2)

24

58

A

3)

44

36   A

Use the cosine ratio to find the indicated length (x) in each.

4)

x

30°

19

5)

24

29°

x

6)

32

41°

x

7)

x

18

47°

8)

15

27°

_x_

9)

_x_

38°

40

*Create a labeled diagram for each question and solve using the cosine ratio.*

10)   A ladder is 12 m long. If safety rgulations prohibit the ladder to be inclined against a building at an angle greater that 70°, at least how far away should the ladder be from the base of the building?

11)   Upon takeoff, an airplane maintains a constant angle climb of 18°. If the flight travelled is 10km, what ground distance has been travelled?

12)   Seen below is the side veiw of a roof truss. For the type of roofing that is to be installed, the angle of inclination for the roof should be 20°. If the width of the house is 8m, calculate the length of the roof slope.

20°

8
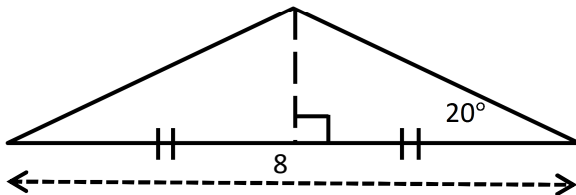
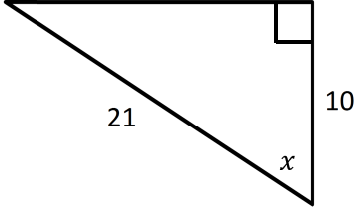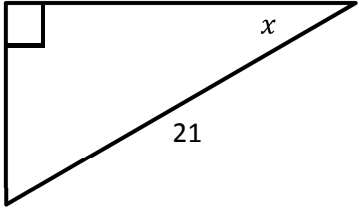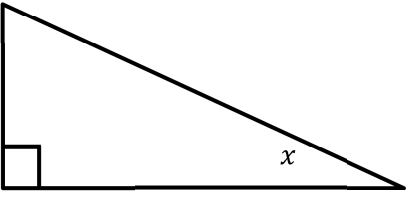*Identify the three trigonometric ratios. Do not calculate angles.*

13)

A, 185, 153, 104, B, C (triangle with right angle at C)
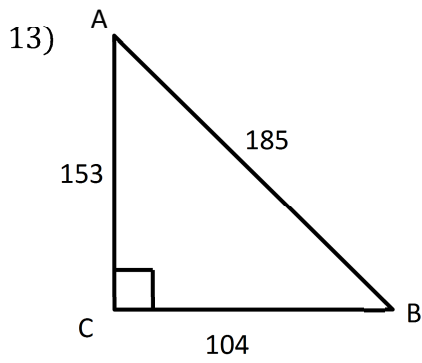
Sin A =   Sin B =

Cos A =   Cos B =
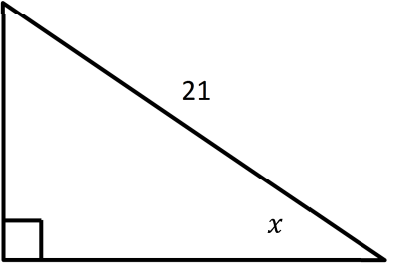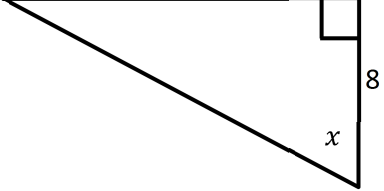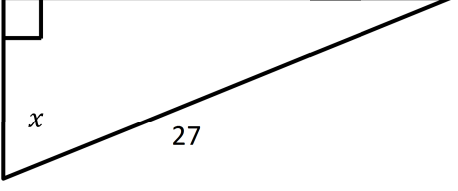
Tan A =   Tan B =
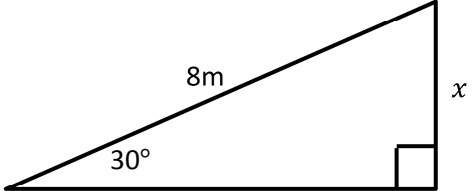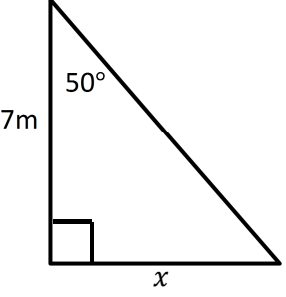
Identify the trigonometric ratio. Complete with either Sin B, Cos B, Tan B, or None.

14)

x, y, B (triangle, right angle at bottom left)

$$\frac{x}{y} =$$

15)

y, x, B (triangle, right angle at top left)

$$\frac{y}{x} =$$

16)

x, y, B (triangle, right angle at bottom left)

$$\frac{x}{y} =$$

17)

B, y, x (triangle, right angle at top right)

$$\frac{y}{x} =$$

18)

x, y, B (triangle, right angle at top)

$$\frac{x}{y} =$$

19)

B, y, x (triangle, right angle at top right)

$$\frac{y}{x} =$$

Use either arcsine, arccosine, or arctangent to determine the angle measured in each. (Round to the nearest degree)

20) 21 10 x	21) 9 x 21
22) 12 x 20	23) 15 21 x
24) 13 8 x	25) 16 x 27

Use either sin, cos, or tan to determine the indicated side in each. (Round to the nearest tenth)

26) 8m x 30°	27) 50° 7m x

28)

x
53°
12cm

29)

45°
x
100m

30)

30°
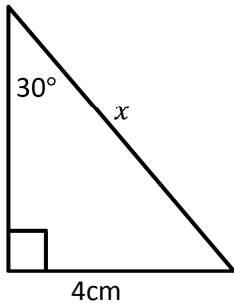x
4cm

31)

15m
x
40°
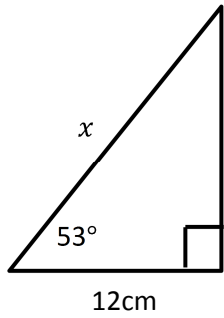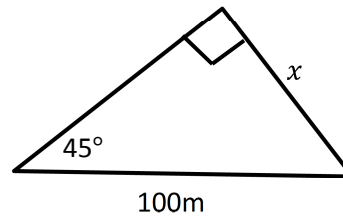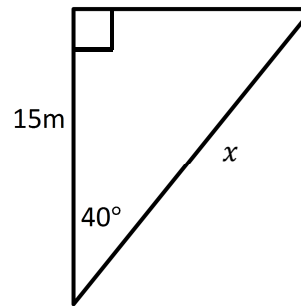
Sketch a right angled triangle for each, label, and solve using the appropriate trigonometric ratio.

32) A ladder is 6m long. To what height of a building will the ladder reach when its angle of elevation is 75° ?

33) From a ship, the angle of elevation to the top of the communication tower on the shore is 16°. If the tower is 150m high, how far offshore is the ship?

34) The width of a cabin is 8m. If the roof truss needs and angle of elevation of 60°, calculate the length of the roof incline.

35) A rectangle is 12 by 30. Its diagonal cuts each corner right angle into two angles. What are the angles?

36) An isosceles triangle has side lengths 9, 12, and 12. Find the measure of the base angles.

37) After travelling 2300m along a road with an incline, the gain in elevation is 150m. Find the angle of elevation of the road.

38) An airplane takes off from a runway which is 5000m from the base of a hill which rises 800m almost straight up. If the plane is going to just clear the top of the hill, what should its minimum angle of elevation be?