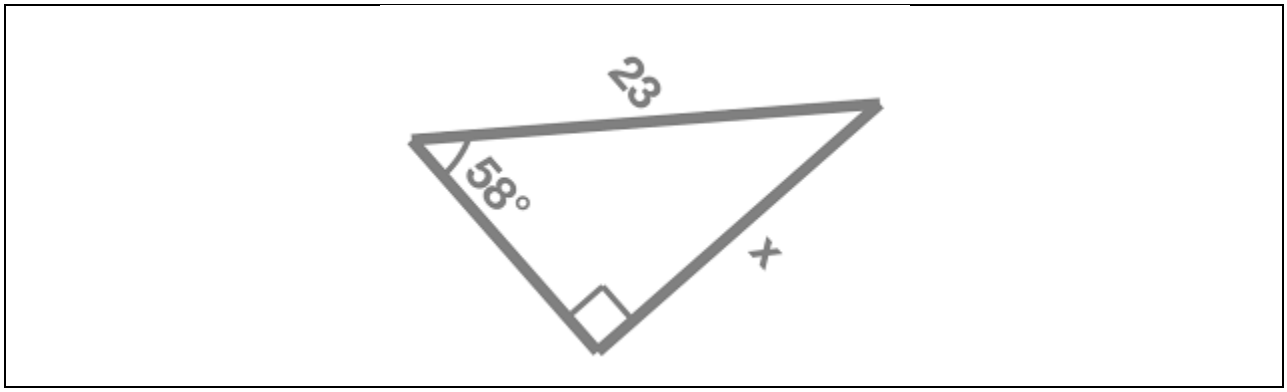
Trigonometry – Finding Sides and Angles Practice

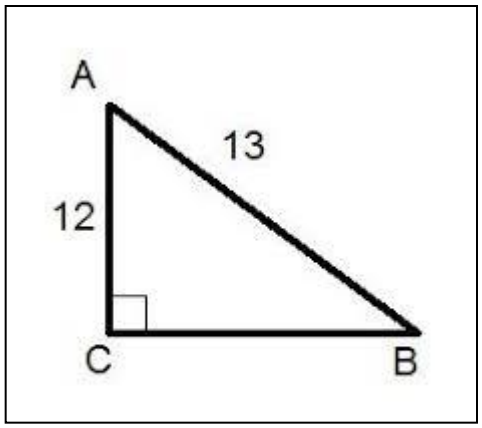
1. The calculator will tell us that the cosine of 60^0 is 0.5. This means that
   A) The side opposite the angle is half as large as the hypotenuse.
   B) The side opposite the angle is twice as large as the hypotenuse.
   C) The side adjacent the angle is half as large as the hypotenuse.
   D) The side adjacent the angle is twice as large as the hypotenuse.

Use the following information to answer the next question.



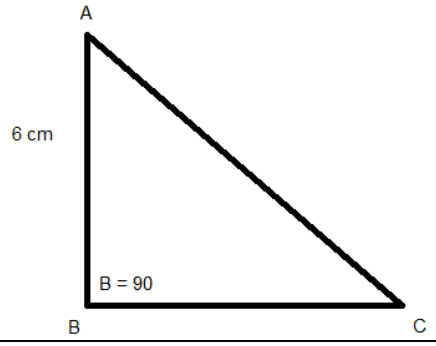
2. To find side x, the correct ratio to use **and** the length of x to one decimal is
   A) cos; **and** x = 27.1
   B) cos; **and** x = 19.5
   C) sin; **and** x = 27.1
   D) sin; **and** x = 19.5

3. Given the following triangle, to the nearest degree, angle B exceeds angle A by ____ degrees.



Use the following information to answer the next question.

In the following triangle, the measure of angle A is 49 degrees.



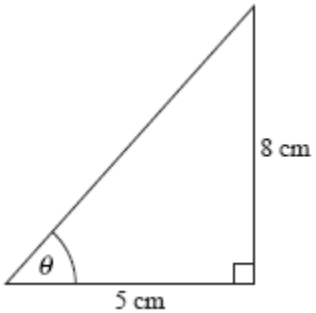
4. The length of the hypotenuse is

   A) 7 cm B) 8 cm C) 9 cm D) 10 cm

5. The tangent of 68.2^0 is 2.5. This means that

   A) The side opposite the angle is 2.5 times as large as the hypotenuse.
   B) The side opposite the angle is 2.5 times as large as the side adjacent the angle.
   C) The side opposite the angle is 25 times as large as the hypotenuse.
   D) The side opposite the angle is 25 times as large as the side adjacent the angle.

6. Find the missing angle in the diagram below.



Trigonometry – Finding Sides and Angles PracticeSolutions

1. The calculator will tell us that the cosine of 60^0 is 0.5. This means that

A) The side opposite the angle is half as large as the hypotenuse.

B) The side opposite the angle is twice as large as the hypotenuse.

C) The side adjacent the angle is half as large as the hypotenuse.

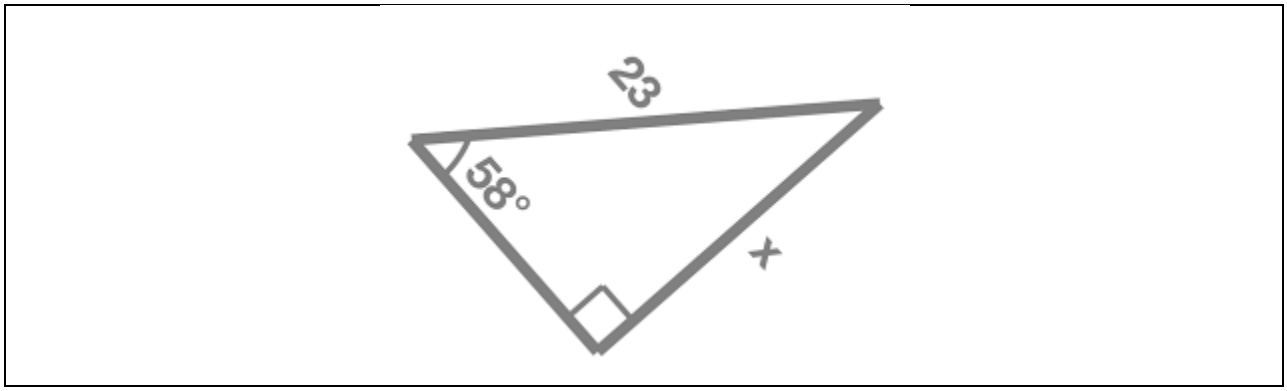
D) The side adjacent the angle is twice as large as the hypotenuse.

Solution

The cosine of 60^0 is $\frac{1}{2}$. Since the definition of cosine is $\frac{adjacent}{hypotenuse}$, if the adjacent side is 1 unit, the hypotenuse must be 2 units, or twice as large. For every 60^0 in the universe, the adjacent side **must** be half as large as the hypotenuse.

The correct answer is C.

Use the following information to answer the next question.



2. To find side x, the correct ratio to use **and** the length of x to one decimal is

A) cos; **and** x = 27.1

B) cos; **and** x = 19.5

C) sin; **and** x = 27.1

D) sin; **and** x = 19.5

Solution

Since we know the hypotenuse, and we are trying to find the side opposite the angle, the only ratio using these two sides is sine.

$\sin 58^0 = \frac{x}{23}$

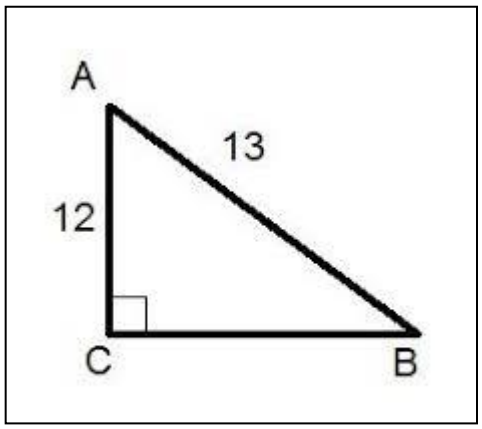
Since the unknown is in the numerator, the values will be multiplied.

$x = (\sin 58^0)(23)$

$x = 19.5$

The correct answer is D.

3. Given the following triangle, to the nearest degree, angle B exceeds angle A by _45_ degrees.



Solution

Use a sine ratio to find angle B.

$\sin B = \frac{12}{13}$

$\sin^{-1}(\frac{12}{13}) = 67.38^0$

Use a cosine ratio to find angle A.

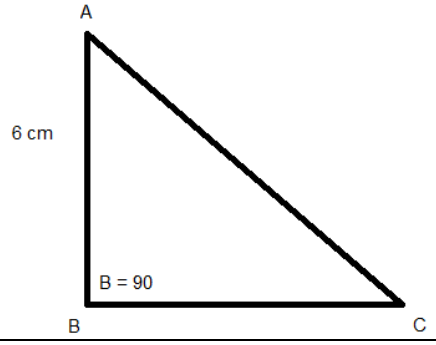
$\cos A = \frac{12}{13}$

$\cos^{-1}(\frac{12}{13}) = 22.62^0$

$67.38^0 - 22.62^0 = 44.76^0$, or 45

Use the following information to answer the next question.

In the following triangle, the measure of angle A is 49 degrees.



4. The length of the hypotenuse is

   A) 7 cm B) 8 cm C) 9 cm D) 10 cm

Solution

From the reference point of angle A, side AB is the adjacent side. Since we are trying to determine the hypotenuse, a cosine ratio is needed.

$$\cos 49^0 = \frac{6}{hypotenuse}$$

Since the unknown is in the denominator, we will switch and divide.

$$\text{hypotenuse} = \frac{6}{\cos 49^0}$$

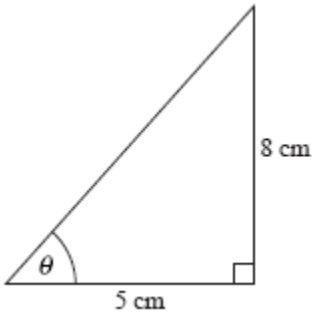
hypotenuse = 9.15

The correct answer is C.

5. The tangent of 68.2^0 is 2.5. This means that
   A) The side opposite the angle is 2.5 times as large as the hypotenuse.
   B) The side opposite the angle is 2.5 times as large as the side adjacent the angle.
   C) The side opposite the angle is 25 times as large as the hypotenuse.
   D) The side opposite the angle is 25 times as large as the side adjacent the angle.

The correct answer is B.

6. Find the missing angle in the diagram below.



Solution

Since we know the side opposite the angle, and the side adjacent the angle, the tangent ratio will be used.

$\tan \theta = \frac{8}{5}$

$\tan^{-1}(\frac{8}{5}) = 58^0$.