

Chapter 3+4: Trigonometry

3.4 Obtuse Angles

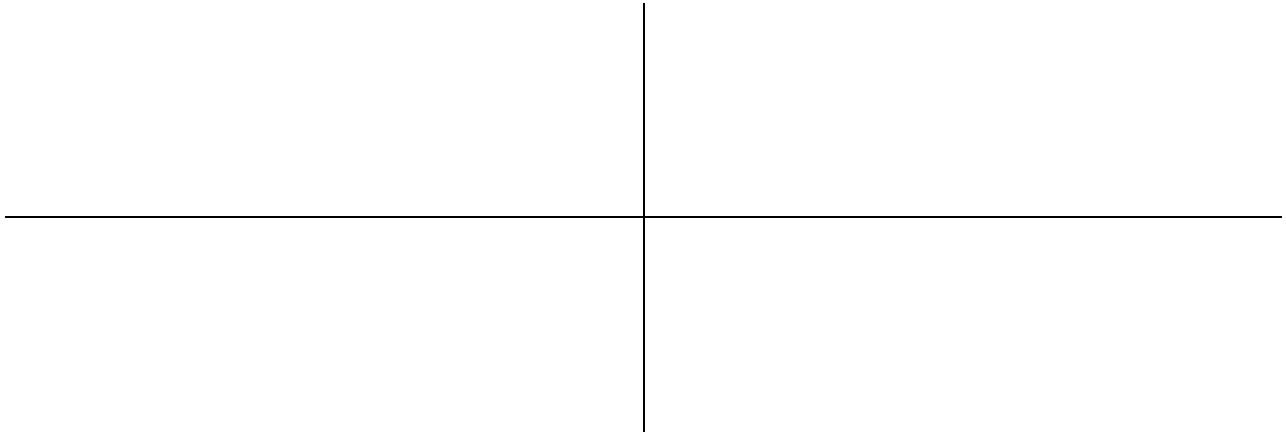
Bigger than _____ degrees

Fill in the chart below:

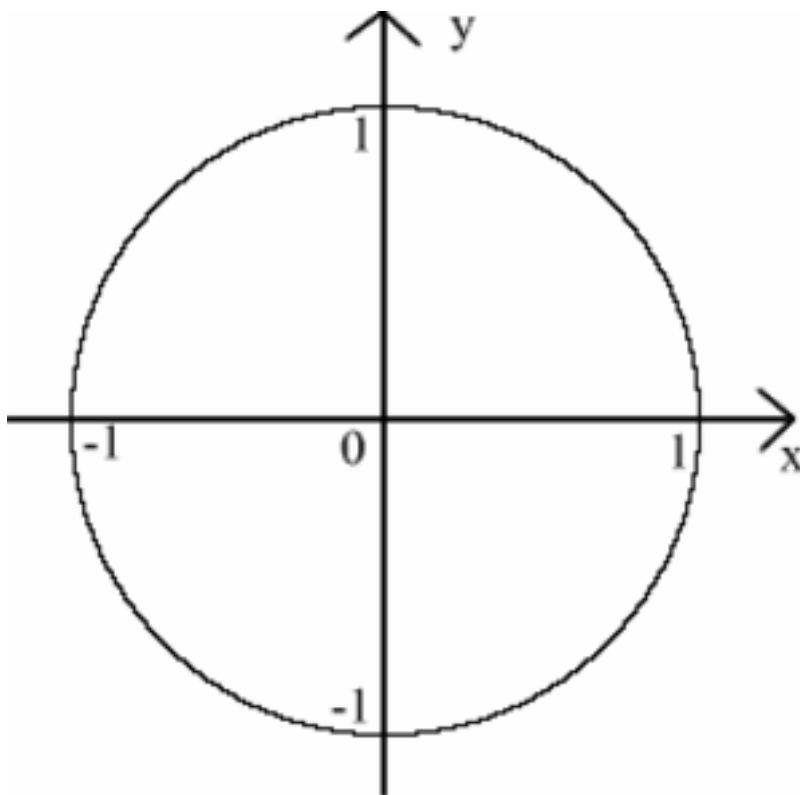
Angle	Tangent	Sine	Cosine
0			
30			
45			
60			
90			
120			
135			
150			
180			
210			
225			
240			
270			
300			
315			
330			
360			

Observations:

Sine and Cosine ratios are cyclical. Observe the graph of $y=\sin X$

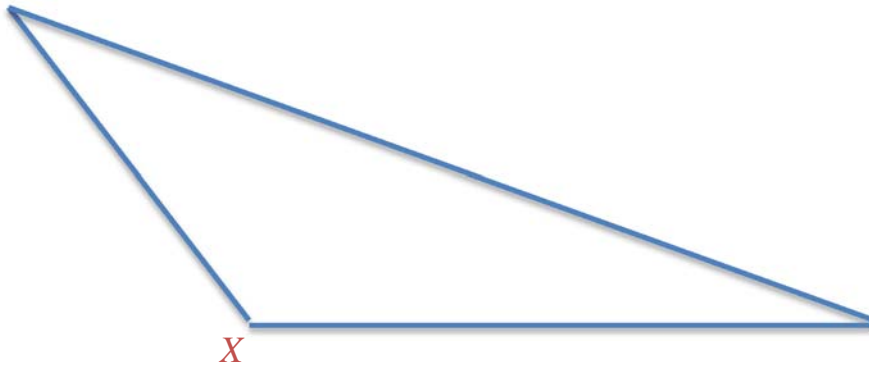


Sine and Cosine ratios are based on the “unit circle”:



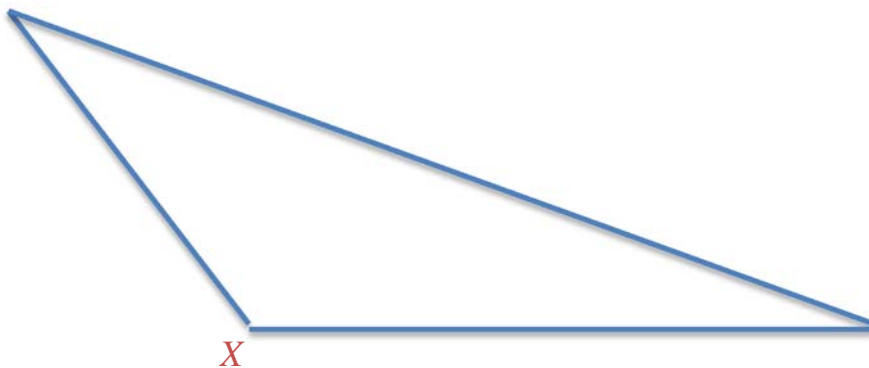
The Problem:

$$\sin X = 0.5 \quad \text{find } X$$



The Good News:

$$\cos X = -0.866 \quad \text{find } X$$



Simple Rule:

Between 0° and 180° sine has ___ solutions and cosine has ___ solutions.

This means to find a second answer for **sine** you always *subtract your first solution from 180°* .

Examples: Solve the following for angle A, where $0 \leq A \leq 180^\circ$.

1) $\sin A = 0.374$

2) $\sin A = 0.815$

3) $\cos A = 0.195$

4) $\cos A = -0.943$

5) $\sin A = 0.513$

Assignment:

1. Each angles is inside a triangle (must be between 0 and 180). Which equations result in two difference answers?

a) $\sin A = 0.7071$

b) $\cos A = -0.5$

c) $\sin A = 0.9269$

d) $\cos A = -0.7071$

e) $\sin A = 0.8660$

f) $\cos A = -1$

g) $\sin A = \frac{3}{4}$

h) $\cos A = \frac{3}{4}$

i) $\cos A = -\frac{3}{4}$

2. Given that $0^\circ \leq \angle C \leq 180^\circ$, determine the value(s) of $\angle C$.

a) $\sin C = 0.9063$

b) $\cos C = 0.5736$

c) $\cos C = -0.7321$

d) $\sin C = 0.4283$

e) $\sin C = 0.5726$

f) $\cos C = -0.3747$

g) $\sin C = \frac{1}{2}$

h) $\cos C = \frac{1}{2}$

i) $\cos C = -\frac{1}{2}$

j) $\sin C = \frac{2}{3}$

k) $\sin C = \frac{1}{4}$

l) $\cos C = -\frac{5}{6}$

Answers

1. a,c,e,g

2. a) $65^\circ, 115^\circ$ b) 55°

f) 112° g) $30^\circ, 60^\circ$

k) $14^\circ, 166^\circ$

l) 146°

c) 137° d) $25^\circ, 155^\circ$

h) 60°

e) $35^\circ, 145^\circ$

i) 120° j) $42^\circ, 138^\circ$

Practice Quiz

1) Explain why $\sin X = 0.5$ has two possible answers between 0 and 180 degrees.

2) Given that $0^\circ \leq \angle C \leq 180^\circ$, determine the value(s) of $\angle C$ (to the nearest whole number)

a) $\sin C = 0.866$

b) $\cos C = 0.5$

c) $\cos C = -0.866$

Practice Quiz Answer Key

1) see notes 2) a) 60,120 b) 60 c) 150