Name ____________________ Date ________________________

Law of Sines and the Ambiguous Case - Guided Lesson Explanation:

Explanation#1

Use the Law of Sines: a/sin A = c/sin c

8/40° = 17/ sin c 8(sin C) = 17*sin40°

sin C = 17*(0.6)/8 = 1.275

Since sin *C* must be $\leq$ 1, no angle exists for angle *C.*
NO triangle exists for these measurements.

Explanation#2

Use the Law of Sines: a/sin A = b/sin B

12/20° = 17/ sin B 12(sin B) = 17*sin20°

sin B = 17*(0.3)/12 = 0.425

Angles could be 20°, 25.15°, and 134.85°: sum 180°

Now m<A = 20° and m<B = 25.15° the sum of the angles would exceed 180°.Not possible! Therefore, m<B = 25.15°, m<A = 20°, and m<C = 134.85° and only ONE triangle is possible.

Explanation#3

Use the Law of Sines: a/sin A = b/sin B

15/40° = 20/ sin B 15(sin B) = 20*sin40°

sin B = 20*(0.6)/15 = 0.8

Angles could be 40°, 53.13°, and 86.87°, sum 180°

Now m<A = 40° and m<B = 53.13° the sum of the angles would exceed 180°.Not possible! Therefore, m<B = 53.13°, m<A = 40°, and m<C = 86.87° and only ONE triangle is possible.