

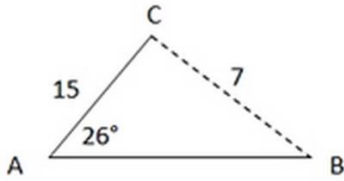
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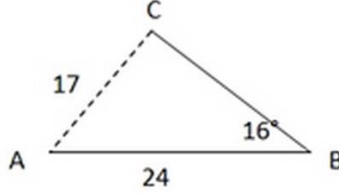
Math 9/10 Enriched: Section 6.4b Ambiguous Case with the Sine Law

1. Given each triangle, find the indicated angle to the nearest degree:

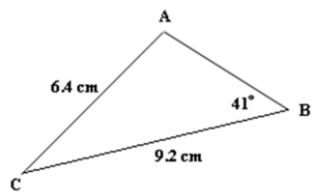
a) Find all the possible values for $\angle C$



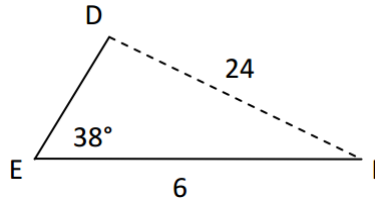
b) Find all the possible values for $\angle B$



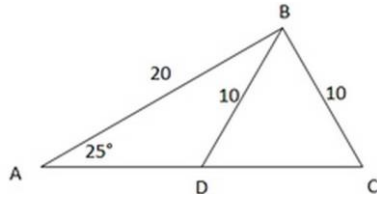
c) Find all the possible values for $\angle A$



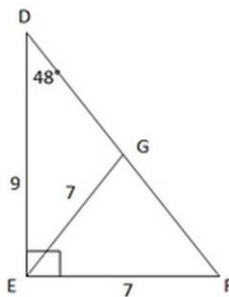
d) Find all the possible values for $\angle F$



e) Find all the possible values for $\angle C$



f) Find all the possible values for $\angle F$



2. A lighthouse at point L is 10 km from a yacht at point Y and 8 km from a sailboat at point B. From the yacht, the lighthouse and the sailboat are separated by an angle of 48°

a) Is it necessary to consider the ambiguous case? Explain.

b) Sketch all possible diagrams for this situation.

c) Determine all possible the distances from the yacht to the sailboat, to the nearest tenth of a kilometre.

3. Albert and Belle are part of a scientific team studying thunderclouds. The team is about to launch a weather balloon into an active part of the cloud. Albert's rope is 7.8 m long and makes an angle of 36° with the ground. Belle's rope is 5.9 m long.

a) Is it necessary to consider the ambiguous case? Explain.

b) Sketch all possible diagrams for this situation.

c) Determine all possible the distances between Albert and Belle to the nearest tenth of a meter.

5. A triangular plot of land is enclosed by a fence. Two sides of the fence are 9.8 m and 6.6 m long, respectively. The other side forms an angle of 40° with the 9.8 m side.

a) Draw a sketch of this situation

- b) Calculate the height of the triangle to the nearest tenth. Compare it to the given sides.
- c) How many lengths are possible for the third side? Explain.
- d) Calculate all possible lengths to the nearest tenth of a meter.
6. An eight metre telephone pole has a very bad lean and creates an angle greater than 90 degrees with the ground. A guide wire, 14 m long, is attached to the pole for support so the pole will not fall down. The guide wire is anchored in the ground at a point 10m from the base of the pole. Calculate the angle that the pole makes with the ground
7. A spider crawling down a wall spots its prey, a moth, on the ground at an angle of 16° with the wall. After crawling downward 16 cm, the moth still hasn't moved, but now the angle with the wall is 28° . How far is the moth from the wall?
8. While exploring the woods at the end of Bengal Road in Mira, two of Glace Bay's policemen, spotted a fire in the distance. From where they were standing, they estimated an angle of elevation of 15° to the top of the tower. Moving **10 m** closer to the tower, they now estimate the angle of elevation to be 18° . How high is the tower?