

DRAW A TRIANGLE

Unit
4

This is a game for 2 or more groups of 3 players.

Materials: ruler, protractor, tables

Instructions

Part A: Two Angles Specified

Step 1 Ask your teacher for a copy of the table shown below. Each member of your group should choose a different row of the table. You will use the table to draw $\triangle ABC$ with two angles specified.

Triangle Number	Angle A	Angle B	Angle C	Sum of Angle Measures
1	45°	50°		
2	30°	90°		
3	25°	100°		

Step 2 Using a ruler and protractor, draw and label angle A with your assigned angle measure on a sheet of paper or tracing paper.

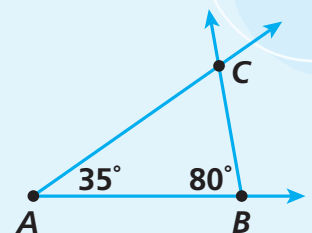
Step 3 Mark a separate point B on one side of angle A. Using a protractor, draw and label angle B with your assigned angle measure so that angles A and B form two angles of one triangle.

Step 4 Extend the sides of your angles as needed to complete the triangle at point C. Label the point.

Step 5 Measure angle C inside the triangle to the nearest degree, and work with your group to complete the table.

Step 6 Compare the triangles drawn by your group with the triangles drawn by other groups. Then answer the following questions on your own paper.

- What does the sum of the angle measures appear to be for each triangle?
- Do two angles of a triangle determine a unique triangle? Explain.



Instructions

Part B: Two Angles and a Side Length Specified

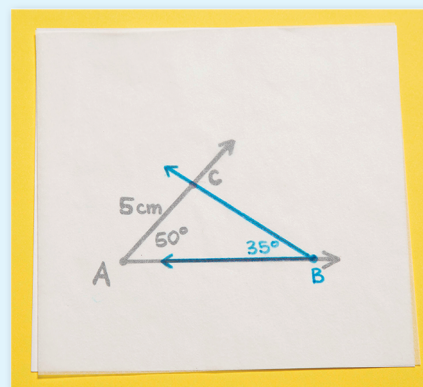
Step 1 There is a second table in the handout from your teacher. Your group should select Triangle 1, 2, or 3 from the table below and record the information in the second table in the handout.

Triangle Number	Angle A	Angle B	Side Length
1	50°	45°	5 cm
2	75°	40°	5 cm
3	100°	35°	5 cm

Step 2 Each of you will draw a triangle with these angle measures and one side that is 5 cm long. Make sure that \overline{AB} is 5 cm long in one triangle, \overline{AC} is 5 cm long in another, and \overline{BC} is 5 cm long in the third.

Step 3 Use a protractor and ruler to draw and label your $\triangle ABC$ using the assigned angle measures and ensuring that the appropriate side is 5 cm in length. It might help to draw a copy of angle B on a separate piece of tracing paper to help guide you, as shown in blue in the example, where \overline{AC} is 5 cm long.

- 1) Draw angle A .
- 2) Draw point C .
- 3) Overlay a copy of angle B aligned with angle A and passing through point C as shown to locate point B .



Step 4 Compare your group's triangles. What do you observe? Did the measures you were given produce a unique triangle?

Step 5 Find another group that was assigned the same triangle number as your group. Compare your triangles. Did your groups draw six unique triangles?

Step 6 Discuss your results as a class. If you are given the measures of two specific angles of a triangle and the length of one specific side, does this determine a unique triangle?