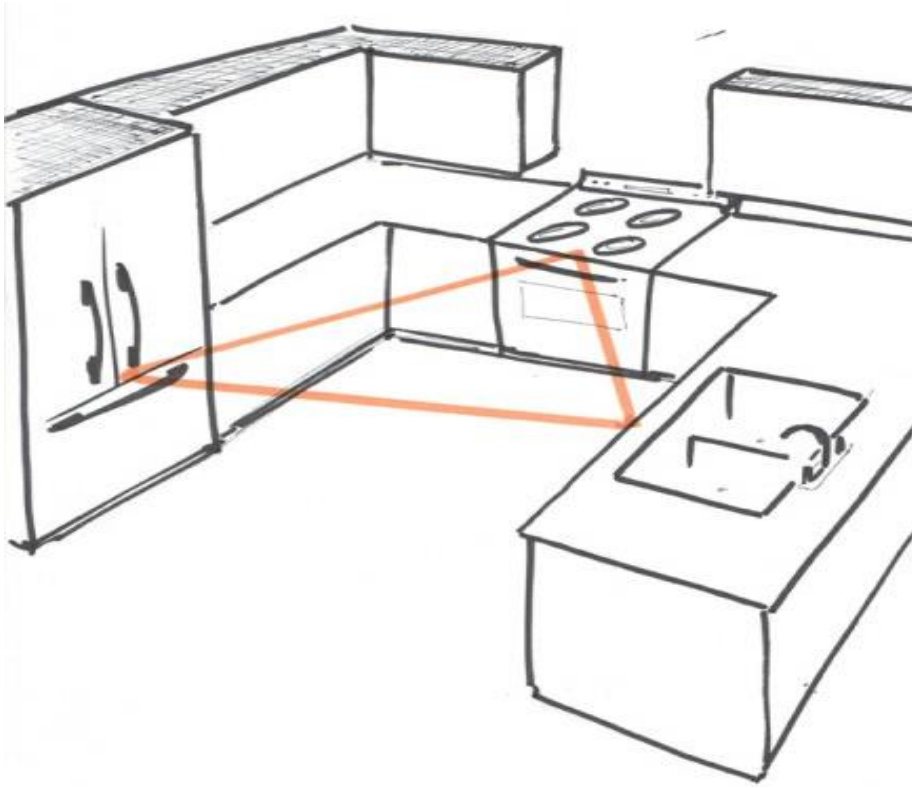# Inequalities in One Triangle

Lesson 5.5

The Kitchen **Triangle**

For efficient movement in the kitchen home designers follow some simple rules in kitchen design.

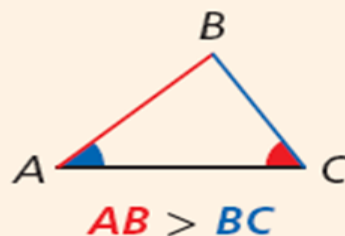## Theorems — Angle-Side Relationships in Triangles

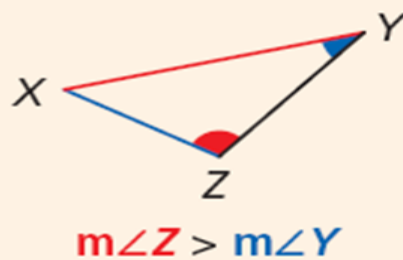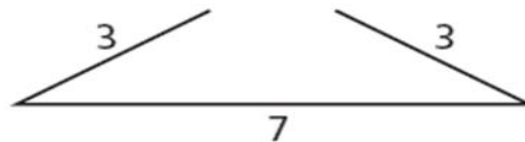| THEOREM	HYPOTHESIS	CONCLUSION
5-5-1 If two sides of a triangle are not congruent, then the larger angle is opposite the longer side. (In △, larger ∠ is opp. longer side.)	$AB > BC$	$m\angle C > m\angle A$
5-5-2 If two angles of a triangle are not congruent, then the longer side is opposite the larger angle. (In △, longer side is opp. larger ∠.)	$m\angle Z > m\angle Y$	$XY > XZ$

CAN ANY THREE SEGMENTS   MAKE A TRIANGLE?

Segments with lengths of 7, 4, and 4 can form a triangle.
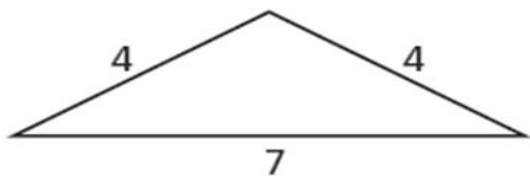
Segments with lengths of 7, 3, and 3 cannot form a triangle.

Theorem 5-5-3 — Triangle Inequality Theorem

The sum of any two side lengths of a triangle is greater than the third side length.

$$AB + BC > AC$$
$$BC + AC > AB$$
$$AC + AB > BC$$