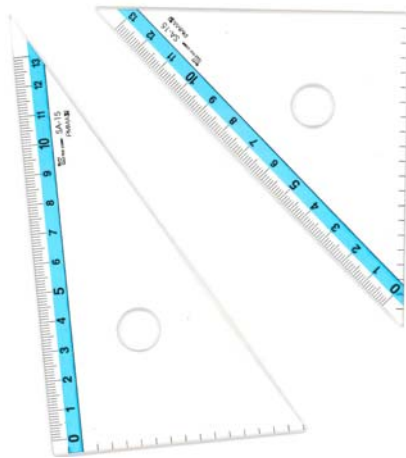


Angles of Set Squares

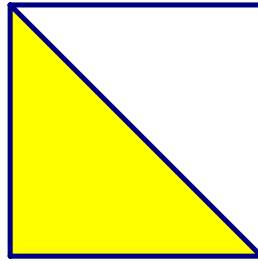
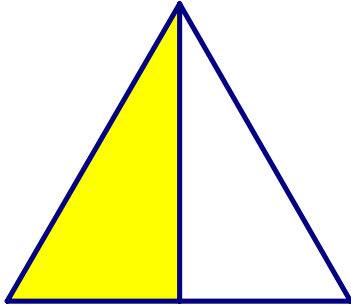
Find all possible angles you can make with two angles of a pair of set squares. Draw the angles you found on a sheet of paper.

Discussion, Suggestions, Possible Solutions

A set square is a triangular shaped tool that is used in technical drawing. The set squares typically come in two forms – one with 30-60-90 degree angles, and the other 45-45-90 degree angles. Here is a pair of set squares.



These shapes are a half of an equilateral triangle and a square, respectively, as shown below.



In this task, students are asked to identify all angles they can make by combining the angles of set squares.

Students will readily discover that they can make 30° , 45° , 60° , 75° , 90° , 105° , 120° , 135° , and 150° (and reflex angles that correspond to these angles, that is, 330° , 315° , 300° , 285° , 270° , 255° , 240° , 225° , and 210°). Note that angle measures are increasing by 15° , but we are missing 15° and 165° . Have them investigate how they can make those two angle measures as well.

You can make 15° by looking at the difference between a 45° angle and a 30° angle, for example. Once you create a 15° angle, you can use it to create a 165° angle.

Extension:

This activity may be done using angles of 2 different pattern blocks, for example, using an orange square (90° angles) and a tan rhombus (30° and 150°).