

Lesson 13: Find Angle Measurements

Standards Alignments

Addressing 4.MD.C.7

Teacher-facing Learning Goals

- Compose and decompose angles to determine their measurements.

Student-facing Learning Goals

- Let's compose and decompose angles to find their measurements.

Lesson Purpose

The purpose of this lesson is for students to find unknown angle measurements by composing or decomposing known measurements, and to see that an angle is not determined by the length of the segments that form it.

In this lesson, students use tactile tools to find angle measurements and observe more clearly that angles are additive. They compose and decompose angles by arranging paper cutouts, by folding paper or tracing, and by drawing diagrams. Students arrange smaller angles whose sizes are unknown into larger angles with familiar sizes and features (90° , 180° , and 360°). Once the measurement of an angle is known, they use it to find those of other angles. For example, if two copies of angle x form a right angle, angle x must be 45° . If another angle, z , can be decomposed into three of these 45° angles, then z must be 135° .

Encourage students to continue to collect, define, and illustrate new terms to support communication and reasoning at the end of each lesson.

Access for:

Students with Disabilities

- Representation (Activity 2)

Instructional Routines

MLR5 Co-craft Questions (Activity 1), Notice and Wonder (Warm-up)

Materials to Gather

- Origami paper: Activity 2
- Patty paper: Activity 1

Materials to Copy

- How Big Are These Angles? (groups of 2): Activity 1

Required Preparation

Lesson Timeline

Warm-up	10 min
Activity 1	25 min
Activity 2	10 min
Lesson Synthesis	10 min
Cool-down	5 min

Teacher Reflection Question

The work of finding angle measurements in this lesson offered opportunities to reason about equal groups. Did you hear students use this type of reasoning? What were some other ways students reasoned about the angle sizes?

Cool-down (to be completed at the end of the lesson)

 5 min

Sets of Three Angles

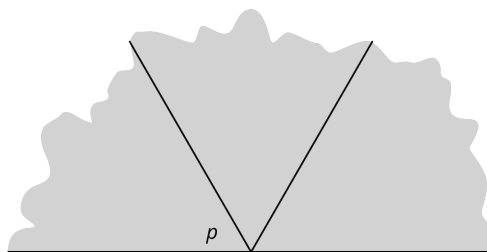
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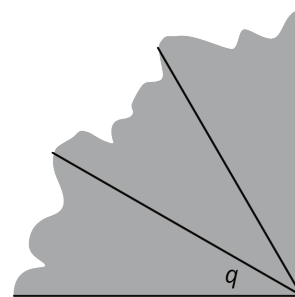
Student-facing Task Statement

Noah cuts out 3 copies of angle p and 3 copies of angle q . He arranges them side by side.

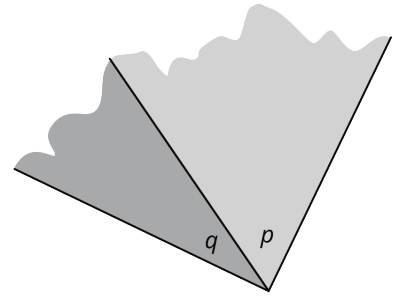
1. Three copies of angle p make a straight line. How many degrees is angle p ? Explain or show your reasoning.



2. Three copies of angle q make a right angle. How many degrees is angle q ? Explain or show your reasoning.



3. Noah puts angle p and angle q together. How many degrees is the resulting angle? Explain or show your reasoning.



Student Responses

1. 60° . Sample response: Three times the measure of p is 180° , so p must measure 60° .
2. 30° . Sample response: $90 \div 3 = 30$.
3. 90° . Sample response: $60 + 30 = 90$.