# Quarter Turn Sort

Sort angles by how far they turn.

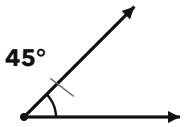
**MT.4.MD.5** "Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint and understand concepts of angle measurement by: Understanding that an angle is formed by two rays with a common endpoint at the center of a..."

NAME _____ DATE _____

## QUARTER TURN OR LESS

Two rays meet at one endpoint. A full turn around that point is 360°, and 1° is 1/360 of that turn. An angle of 90° or less turns no more than a quarter turn.

This 45° angle stays within a quarter turn.




## PAST A QUARTER TURN

An angle greater than 90° goes past a quarter turn. Its measure tells how many one-degree turns it makes.

This 155° angle goes past a quarter turn.




## 1 SORT

8 items

Circle a category for each figure, then choose one figure from each category and explain how each turn compares with a quarter turn.

**1.**



Figure 1

WITHIN BEYOND

**2.**

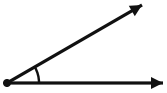


Figure 2

WITHIN BEYOND

**3.**

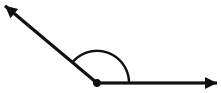


Figure 3

WITHIN BEYOND

**4.**

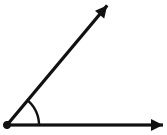


Figure 4

WITHIN BEYOND

**5.**

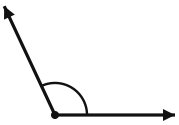


Figure 5

WITHIN BEYOND

**6.**



Figure 6

WITHIN BEYOND

**7.**

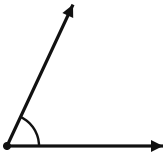


Figure 7

WITHIN BEYOND

**8.**

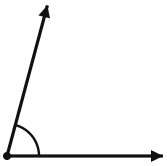


Figure 8

WITHIN BEYOND

## 2 PROVE IT

Explain your thinking

Pick two items from Part 1. For each one, tell how you knew where it belonged.

**ITEM #** _____ **HOW I KNEW** _____

**ITEM #** _____ **HOW I KNEW** _____

## 3 MAKE YOUR OWN

One of each

Write a new degree measure for each category and draw an angle to match each measure. Do not use a measure from Part 1.

**WITHIN**

**BEYOND**

**CHALLENGE**

A ray turns 35° and then 70° farther in the same direction around its endpoint. What is the total angle measure, how many one-degree turns does it make, and which category fits?

**ANSWER KEY**

# Quarter Turn Sort

**GRADE 4 · MT.4.MD.5**

## PART 1 · SORT

| # | ITEM | CATEGORY | WHY |
|---|---|---|---|
| 1 | Figure 1 (angle 15°) | **WITHIN** | 15° is less than 90°. |
| 2 | Figure 2 (angle 30°) | **WITHIN** | 30° is less than 90°. |
| 3 | Figure 3 (angle 140°) | **BEYOND** | 140° is greater than 90°. |
| 4 | Figure 4 (angle 50°) | **WITHIN** | 50° is less than 90°. |
| 5 | Figure 5 (angle 115°) | **BEYOND** | 115° is greater than 90°. |
| 6 | Figure 6 (angle 165°) | **BEYOND** | 165° is greater than 90°. |
| 7 | Figure 7 (angle 65°) | **WITHIN** | 65° is less than 90°. |
| 8 | Figure 8 (angle 75°) | **WITHIN** | 75° is less than 90°. |

## PART 2 · PROVE IT

Accept any explanation that names the deciding feature from the rule box for the chosen item.

## PART 3 · MAKE YOUR OWN (SAMPLE ANSWERS)

- **WITHIN**: 25°, with an angle drawn to match.
- **BEYOND**: 120°, with an angle drawn to match.

**Challenge:** 35° + 70° = 105°. The angle makes 105 one-degree turns, so it fits BEYOND.

In Part 2, accept explanations that correctly compare each chosen angle with a 90° quarter turn. Part 3 drawings should show two rays with a shared endpoint and turns that match the written measures.