

# Geometry: Name It and Draw It

*Points, paths, angles, and line pairs*

**GRADE 4 • 4.MG.4**

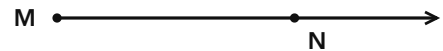
**4.MG.4** "The student will identify, describe, and draw points, rays, line segments, angles, and lines, including intersecting, parallel, and perpendicular lines. Identify and describe points, lines, line segments, rays, and angles..."

NAME \_\_\_\_\_

DATE \_\_\_\_\_

## LOOK CLOSELY, THEN EXPLAIN

A point marks a location. A segment has two endpoints; a ray has one endpoint and continues in one direction; a line has no endpoints. Two rays with a common endpoint form an angle; that endpoint is the vertex. Parallel lines never meet in a plane. Perpendicular lines meet at right angles. Symbols:  $\parallel$  means parallel;  $\perp$  means perpendicular.



## WORKED EXAMPLE

Name this ray and its endpoint.

1. M is the endpoint; N is another point on the ray.
2. The arrow shows that the ray continues beyond N. Write the endpoint letter first.

**Answer:**  $\overrightarrow{MN}$ ; endpoint M.

## PRACTICE 4 problems

- 1 Name the segment with a bar over its letters. List both endpoints. Explain how its ends differ from those of a line.




---



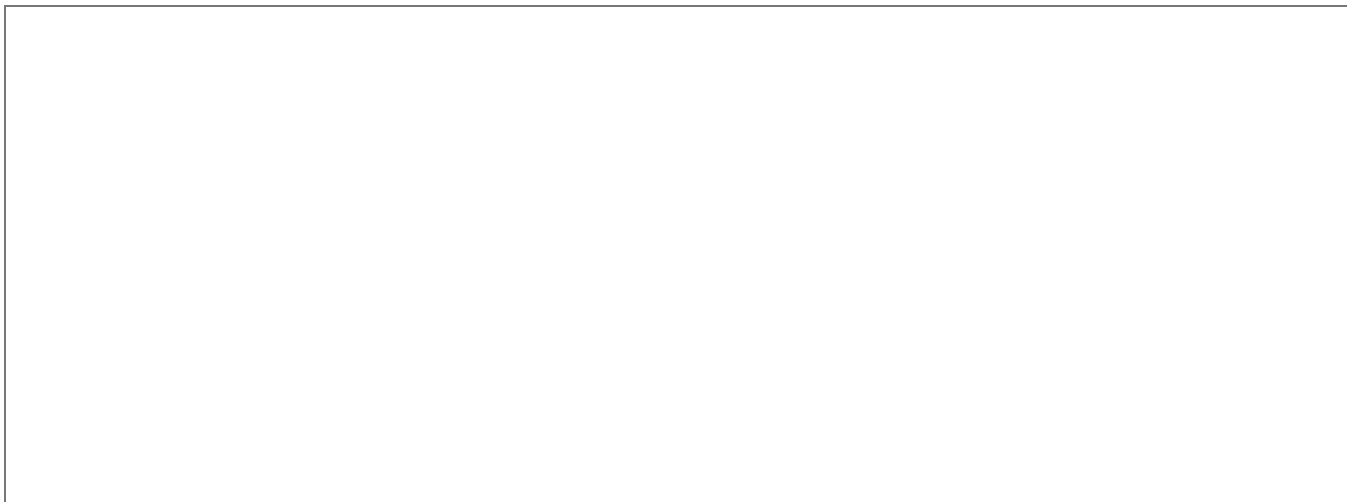
---



---

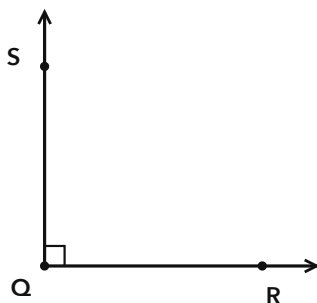
**ANSWER** \_\_\_\_\_

- 2** Use a ruler. Draw point P. Separately draw  $\overline{CD}$ , then  $\overleftrightarrow{EF}$ . Add the correct dots and arrowheads. Write each name beside it.



**ANSWER** \_\_\_\_\_

- 3** Name this angle using three letters and the angle symbol. Name its vertex and both rays. Describe the relationship between the rays.




---



---



---

**ANSWER** \_\_\_\_\_

- 4** Use a ruler. Draw  $\overrightarrow{TU}$  and  $\overrightarrow{TV}$  with the same endpoint, making an angle smaller than a right angle. Label all points. Name the angle beneath your drawing.

**ANSWER** \_\_\_\_\_

## APPLY IT Show your work

- 1** ABCD is a rectangular window. Name one pair of parallel sides using  $\parallel$  and one pair of perpendicular sides using  $\perp$ . Also name where the perpendicular sides intersect.




---



---



---

### REASONING AND ANSWER

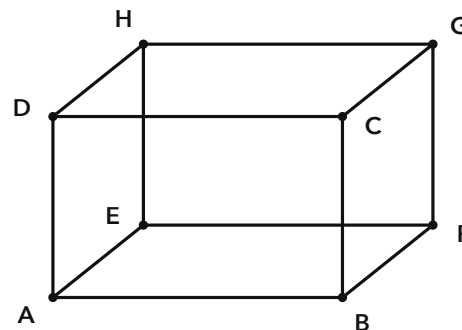
---



---

2

This is a rectangular prism; ABCD is its front face. Name a pair of parallel front-face edges and a pair of perpendicular front-face edges using symbols. Why are the perpendicular edges also intersecting?



**REASONING AND ANSWER**

---



---

**CHALLENGE** One step up

Use a ruler to draw two labelled lines that intersect but are not perpendicular. Mark their intersection X. Draw a separate pair of parallel lines. Write one sentence explaining the difference between the pairs.

**PRACTICE 1**

$\overleftrightarrow{AB}$  or  $\overleftrightarrow{BA}$ ; endpoints A and B. A line continues forever in both directions and has no endpoints.

**PRACTICE 2**

A labelled point P; a straight segment with endpoints C and D and no arrows; a line through E and F with arrows on both ends. Names use a bar for the segment and a double arrow for the line.

**PRACTICE 3**

$\angle RQS$  or  $\angle SQR$ ; vertex Q;  $\overrightarrow{QR}$  and  $\overrightarrow{QS}$ . The rays are perpendicular and form a right angle.

**PRACTICE 4**

Two rays share endpoint T and extend through U and V with arrowheads. They form an acute angle.  $\angle UTV$  or  $\angle VTU$  has T as its vertex.

**APPLY IT 1**

For example,  $\overline{AB} \parallel \overline{CD}$ ;  $\overline{AB} \perp \overline{BC}$ , intersecting at B. Accept other correct opposite or adjacent pairs. Accept equivalent correct reasoning supported by the stated measurements or geometric properties.

**APPLY IT 2**

$\overline{AB} \parallel \overline{CD}$ ;  $\overline{AB} \perp \overline{BC}$ , for example. The perpendicular edges meet at B, so they intersect. Accept equivalent correct reasoning supported by the stated measurements or geometric properties.

**CHALLENGE**

The first pair has arrows at all four ends and meets at X at non-right angles. The second pair has arrows and never meets if extended in the same plane. Accept any correct labels and explanation.

Check drawings for straightness, labelled endpoints or vertices, and correct arrowheads. Angle names place the vertex in the middle. Accept reversed segment or line names, but a ray must name its endpoint first. Prism relationships refer to actual box edges, not apparent angles in the perspective picture.