

Just In Time Quick Check
Standard of Learning (SOL) 4.10a

Strand: Measurement and Geometry

Standard of Learning (SOL) 4.10a

The student will identify and describe points, lines, line segments, rays, and angles, including endpoints and vertices.

Grade Level Skills:

- Identify and describe points, lines, line segments, rays, and angles, including endpoints and vertices.
- Use symbolic notation to name points, lines, line segments, rays, and angles.

Just in Time Quick Check

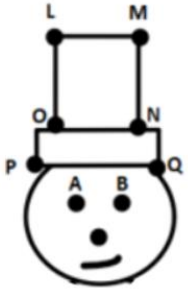
Just in Time Quick Check Teacher Notes

Supporting Resources:

- VDOE Mathematics Instructional Plans (MIPS)
 - [4.10ab - Geometry in Real-world Situations](#) (Word) / [PDF Version](#)
- VDOE Word Wall Cards: Grade 4 ([Word](#)) | ([PDF](#))
 - Point
 - Line
 - Ray: Endpoint
 - Line Segment: Endpoint
 - Angle
 - Vertex
 - Symbolic Notation

Supporting and Prerequisite SOL: [3.11](#)

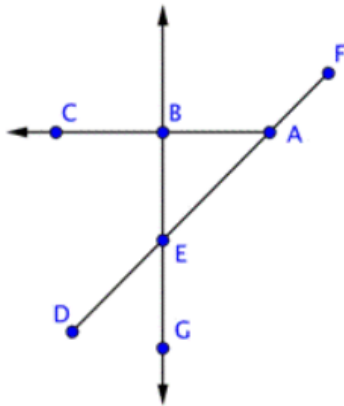
SOL 4.10a - Just in Time Quick Check



1. Using the picture above-
 - a. Identify two points using symbolic notation.

 - b. Describe a point using words.

Use this picture to answer questions 2-4.



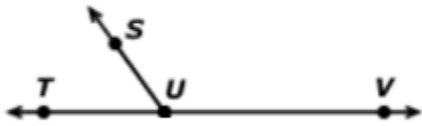
2. Identify a line using symbolic notation.
 - a. Describe a line using words.

3. Identify two line segments using symbolic notation.
 - a. Describe a line segment using words.

4. Identify two rays using symbolic notation.

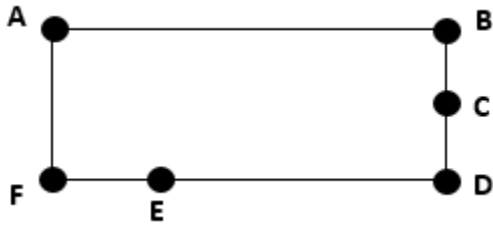
a. Describe a ray using words.

5. Identify one angle in the figure below using symbolic notation.



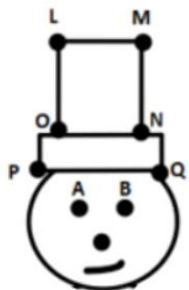
a. Describe an angle using words.

6. Identify more than one vertex in the figure below using symbolic notation. Explain your thinking.



SOL 4.10a - Just in Time Quick Check Teacher Notes

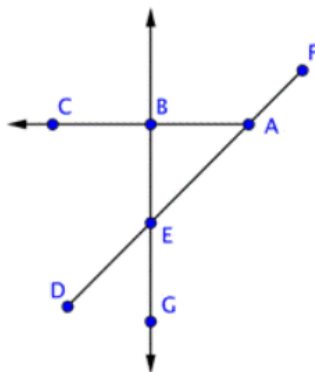
Common Errors /Misconceptions and their Possible Indications



- Using the picture above-
 - Identify two points using symbolic notation.
 - Describe a point using words.

Some students may be able to identify a point but may have difficulty with the symbolic notation. Other students may have the misconception that only A and B can be points. Teachers may wish to use real world contexts along with Word Wall cards and anchor charts to build an understanding of what a point is. Some students may have difficulty articulating what a point is in their own words. Engage students in a discussion of the vocabulary terms and ask questions like “How would you describe a point? What does a point make you think of?” Students may benefit from contextual associations such as a map. A Virginia map or a google map image may help students think of a point and its representation in other ways.

Use this picture to answer questions 2-4.



- Identify a line using symbolic notation.

The concept of a line is abstract because it continues in either direction infinitely, and some students may struggle between differentiating between a line, a ray, and a line segment. This will be evident if students identify a ray or a line segment mistaking them for a line. Some students may be able to identify a line but may have difficulty with the symbolic notation. These students may identify line BG, but may try to name it with one point, three points, \overline{BEG} , or name it using the wrong symbolic notation, \overline{BE} , \overrightarrow{BG} , etc. Some students may not understand that line BG may also be named with any two points on the line, for example, line BE or line EG. Students would benefit from discussions on the similarities and differences in lines, segments, and rays. They would also benefit from examples that are based in context. “Look around the room; do you see a representation of a line, a ray, a line segment? Describe what you see and why it is a line/ray/line segment.”

- a. Describe a line using words.

Students may be able to identify a line given a representation, but may have difficulty describing what a line is in their own words. When asking students to “describe a line” follow up with “how do you know it is a line? What features make it a line and not a ray/line segment?” You can use the characteristics they describe to help formulate a written description of a line. Teachers may also wish to use Word Wall cards as anchor charts to provide additional support to students.

3. Identify two line segments using symbolic notation.

Some students may have difficulty conceptualizing that line segments are parts of a line because any straight line or line segment is often referred to as a “line” in everyday language. For instance, they may have the misconception that \overline{FD} is the only line segment in the diagram and may struggle with naming an additional line segment. It is important for students to have exposure to different images containing lines, line segments, and rays. Some students may think that the sides of polygons are composed of lines instead of line segments. Teacher may wish to use specific terminology when identifying line segments, as well as emphasizing that, unlike lines, line segments have distinct endpoints.

- a. Describe a line segment using words.

Students may be able to identify a line segment given a representation, but may have difficulty providing a written description of a line segment. If students are able to identify a line segment, ask them how they know it is a line segment, and not another geometric figure. Have students discuss the characteristics of a line segment. Ask the question “What makes it a line segment and not a line/ray?” Students may also benefit from thinking of items in their surroundings that would represent a line segment.

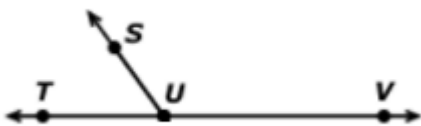
4. Identify two rays using symbolic notation.

Some students may not understand that rays are parts of a line. These students will think that \overrightarrow{AC} is the only ray in the diagram and struggle with naming an additional ray. Some students may recognize that ray AC is a ray, but may name it \overrightarrow{CA} . These students will need a reminder that rays are named with the endpoint (starting point) listed first. Students would benefit from examples of rays in different diagrams/representations so they are aware that rays may not always appear as a single ray.

- a. Describe a ray using words.

Some students may have difficulty conceptualizing that rays are parts of a line and will not know how to provide a written description. Students may think that rays and lines are completely separate entities instead of making connections among them. Students would benefit from a class discussion on the definition of a ray, and from hearing how other students recognize a ray. Teachers may wish to use a comparison chart to show similarities and differences among lines/rays/line segments.

5. Identify one angle in the figure below using symbolic notation.



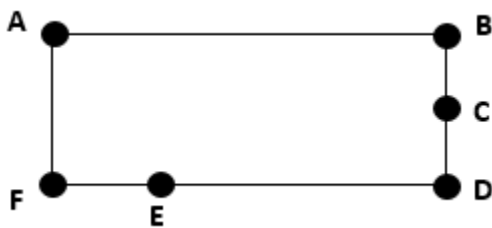
Some students may be able to recognize an angle but have difficulty naming the angle using symbolic notation. Since there are three ways to name an angle, some students may think they can name angle U. Have students discuss how angle U could cause confusion as to which angle students should be referencing. Using the vertex (U) as the starting

point, have the students identify and name the sides of one angle. Once they are able to do this, lead them to verbally name and write the symbolic notation of the angle. Teachers may wish to use Word Wall cards and anchor charts that identify the 3 different naming conventions of an angle.

a. Describe an angle using words.

Some students may have difficulty identifying that an angle consists of 2 rays that share a common vertex. Teachers may wish to have students draw an angle and reflect on their drawing, and what components they used to create an angle. Teachers are encouraged to lead a class discussion on angles, identifying different angles in the students' environment. Students may express confusion as to whether angles always have to have rays as their sides. Could an angle have segments as the sides? Provide different representations for students to identify angles and sides. Once students are able to conceptualize what an angle is, encourage them to write their own definition.

6. Identify more than one vertex in the figure below using symbolic notation. Explain your thinking.



Students who name points C and E as vertices may not understand that a vertex is the point where two sides of a polygon meet to form an angle. It is possible that these students are interpreting point C and point E as vertices for the straight angles that make up line segment BD and line segment DF. Teachers are encouraged to ask follow-up questions to determine if this is the case. Having students talk about how points C and E are different from points A, B, D, and F may uncover whether students consider points C and E vertices of straight angles or if they consider all labeled points on any figure to be vertices. Students with this misconception would benefit from opportunities to identify the vertices- and points that are not vertices- in a variety of figures and to discuss the attributes that are essential when identifying a vertex. Ensure that students can identify the vertex of a single angle formed by two rays or two line segments that share a single point before having students consider vertices in figures that include more than one angle and/or more than one vertex.