

## Lesson 9 Practice Problems

1. a. Draw parallel lines  $AB$  and  $CD$ .

b. Pick any point  $E$ . Rotate  $AB$  90 degrees clockwise around  $E$ .

c. Rotate line  $CD$  90 degrees clockwise around  $E$ .

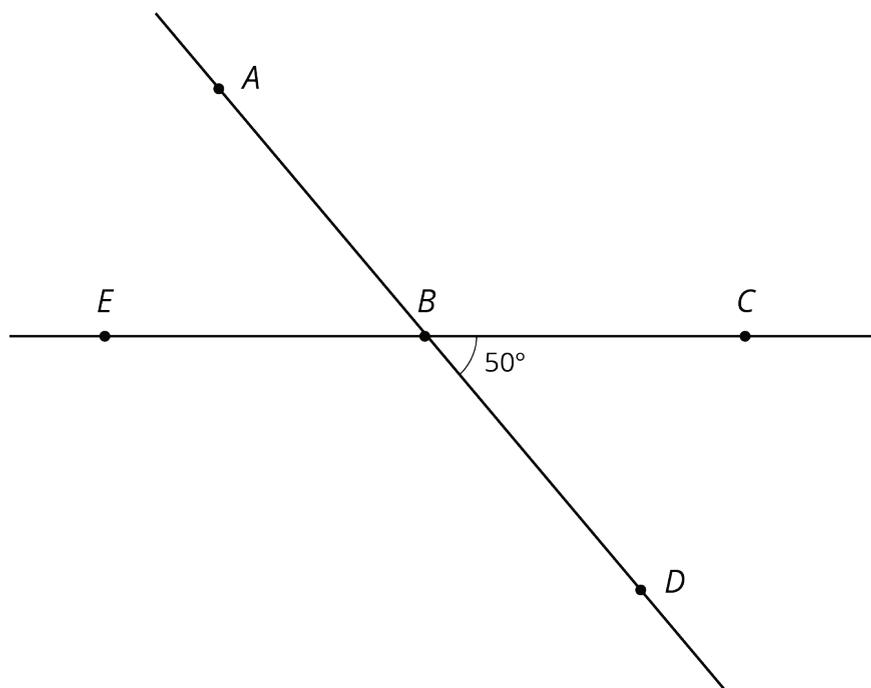
d. What do you notice?

2. Use the diagram to find the measures of each angle. Explain your reasoning.

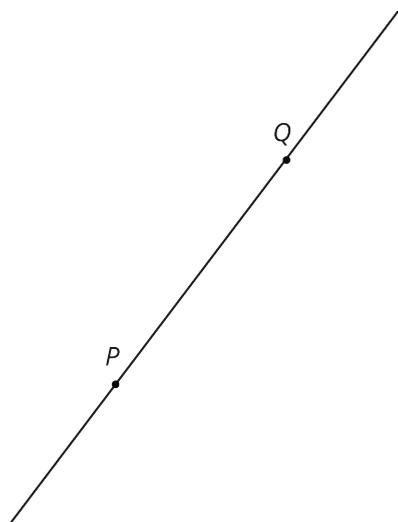
a.  $m\angle ABC$

b.  $m\angle EBD$

c.  $m\angle ABE$

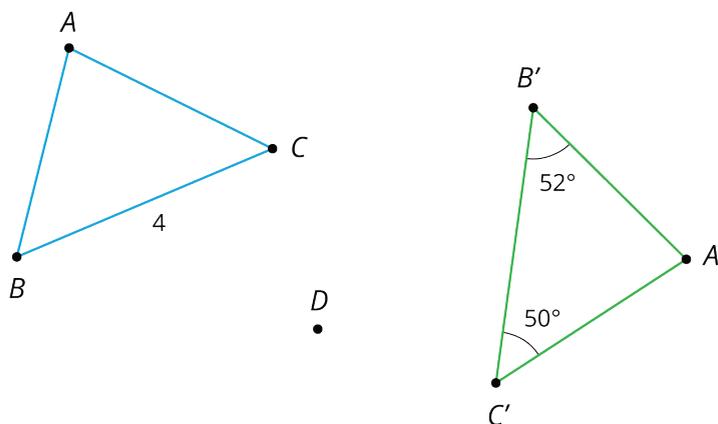


3. Points  $P$  and  $Q$  are plotted on a line.



- Find a point  $R$  so that a 180-degree rotation with center  $R$  sends  $P$  to  $Q$  and  $Q$  to  $P$ .
- Is there more than one point  $R$  that works for part a?

4. In the picture triangle  $A'B'C'$  is an image of triangle  $ABC$  after a rotation. The center of rotation is  $D$ .



- What is the length of side  $B'C'$ ? Explain how you know.
- What is the measure of angle  $B$ ? Explain how you know.
- What is the measure of angle  $C$ ? Explain how you know.

(From Unit 1, Lesson 7.)

5. The point  $(-4, 1)$  is rotated 180 degrees counterclockwise using center  $(0, 0)$ . What are the coordinates of the image?

A.  $(-1, -4)$

B.  $(-1, 4)$

C.  $(4, 1)$

D.  $(4, -1)$

(From Unit 1, Lesson 6.)