Extended Problems Answer Key

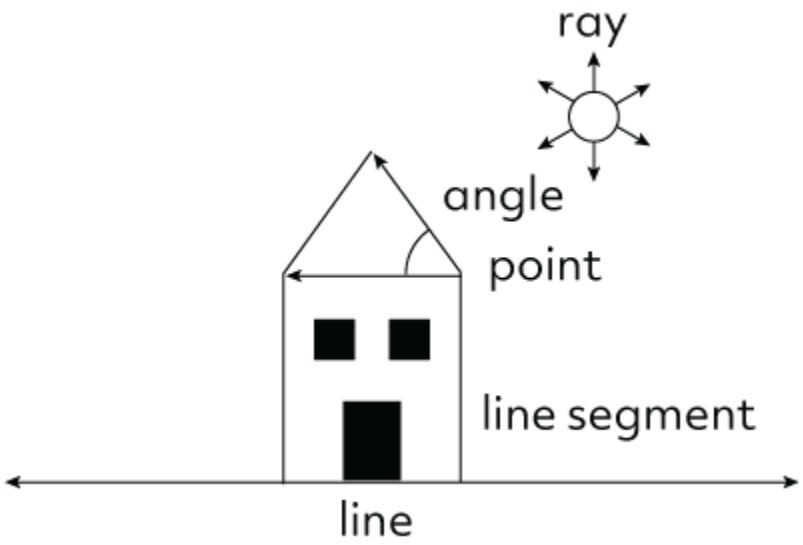
Big Ideas: Extended Problems

Use or adapt the feedback in this Answer Key as you grade each student paper. Answers will vary. Therefore, you must examine each answer based upon its own merits. Representative examples are shown here.

Total Score: 25 points

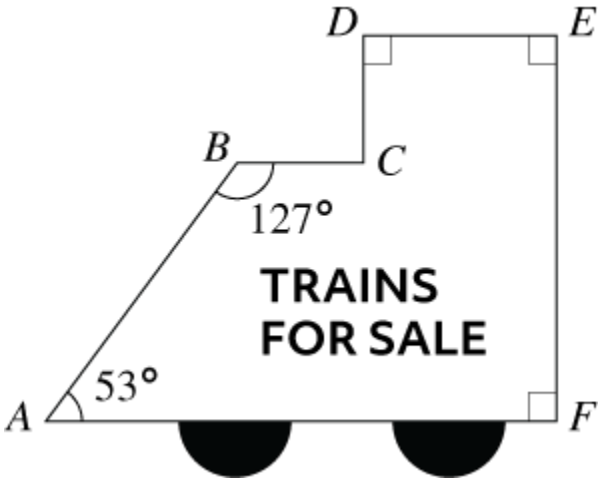
1. Draw a picture that includes at least one of each of the following objects: point, line, line segment, ray, and angle. Label each object with the words point, line, line segment, ray, and angle. Use a straightedge to draw any lines, line segments, and rays.

Sample response



Note: *Students may draw any picture that includes at least one labeled point, line, line segment, ray, and angle.*

2. Mr. Cole builds model trains in his shed. He needs a new sign for the train shed. Mr. Cole wants to use a picture he sees in a train catalog as the basic design for the sign. He measures and labels the angles of the picture.



(a) Angle *C* is a right angle. Identify the other right angle(s) in the picture.

Sample response for Part (a)

angle *D*, angle *E*, angle *F*

(b) Name the acute angle(s). Explain your answer.

Sample response for Part (b)

Angle A is an acute angle because it has a measure of 53°, which is less than 90°.

(c) Name the obtuse angle(s). Explain your answer.

Sample response for Part (c)

Angle B is an obtuse angle because it has a measure of 127°, which is greater than 90° and less than 180°.

(d) On the next page, draw a sketch of the train sign for Mr. Cole. The angles need to be the same as the angles in the picture. Use a protractor to measure and draw the angles.

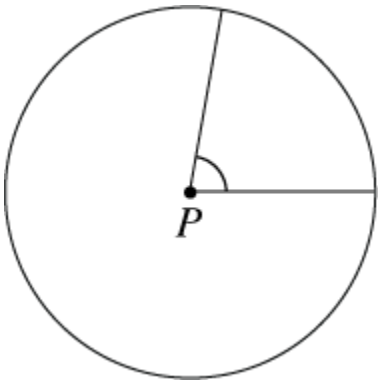
Sample response of Part (d)

See next page.

Note: *Students' drawings may be any size. The emphasis is on checking that the angles are drawn correctly.*

3. Ethan has three pizzas that he wants to cut into slices.

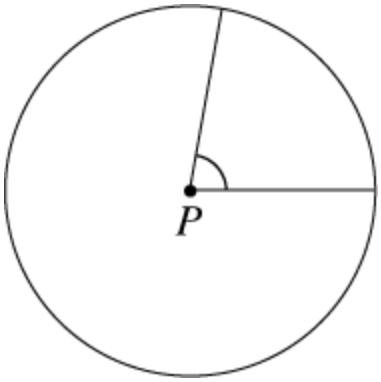
(a) Ethan cuts one slice from the first pizza so that the slice has angle *P*. Use a protractor to find the measure of angle *P*.



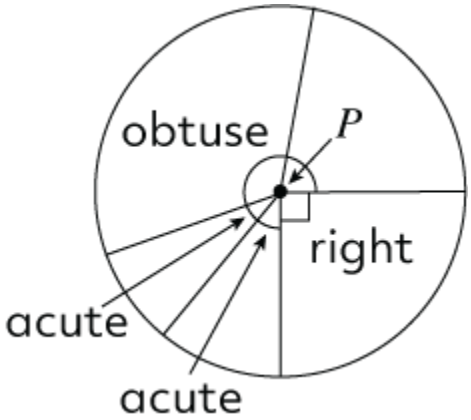
Sample response for Part (a)

The measure of angle *P* is 80°.

(b) Ethan wants to cut four more slices in the first pizza so that one slice has a right angle, one slice has an obtuse angle, and two slices have acute angles. Draw these other slices. State whether the angle in each slice is acute, right, or obtuse.

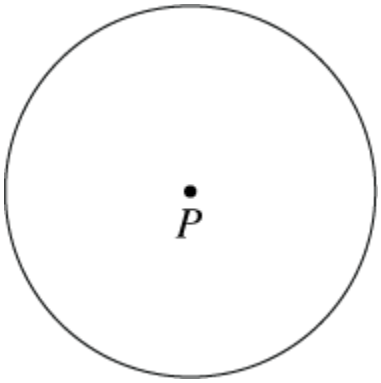


Sample response for Part (b)

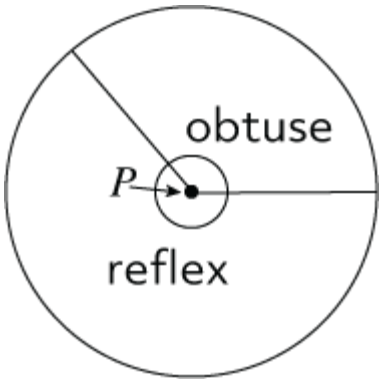


Note: *Students may draw angles of any measure as long as one is a right angle, one is obtuse, and two are acute.*

(c) Ethan cuts the second pizza into two large slices so that one slice has a reflex angle and the other slice has an obtuse angle. Draw these two slices. Let point *P* be the vertex of the angle for each slice. State whether the angle in each slice is the reflex angle or the obtuse angle.

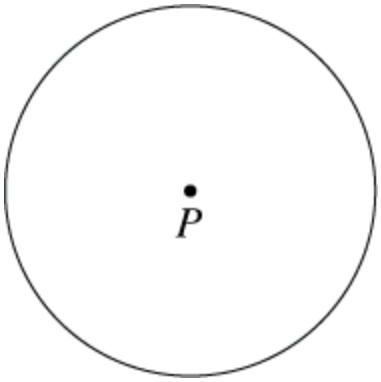


Sample response for Part (c)

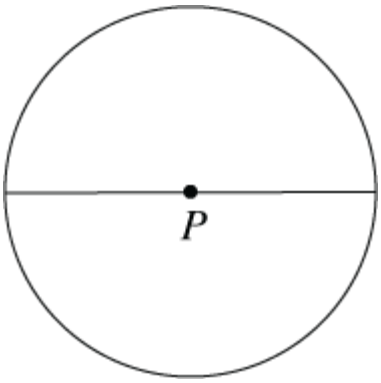


Note: *Students may draw angles of any measure as long as one is an obtuse angle and the other is a reflex angle.*

(d) Ethan wants to cut the third pizza into two equal slices. Draw the two slices. Let point *P* be the vertex of the angle for each slice. What type of angle is angle *P* in each slice? What is the measure of the angle in each slice?



Sample response for Part (d)



Note: *Students may draw the segment in any direction as long as it goes through point P.*

Each angle is a straight angle and has a measure of 180°.