Exploring Circles

Let's explore circles.

11.1 How Do You Figure?

Here are two figures.

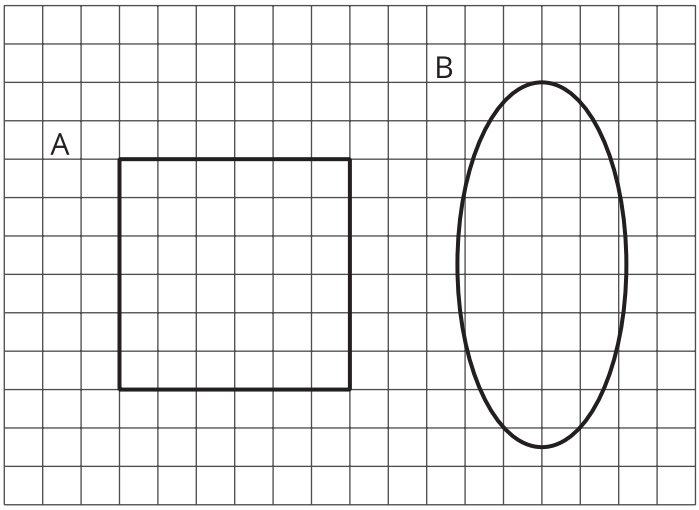


Figure C looks more like Figure A than like Figure B. Sketch what Figure C might look like. Explain your reasoning.

11.2 Card Sort: Sorting Round Objects

Your teacher will give you some pictures of different objects.

1. How could you sort these pictures into two groups? Be prepared to share your reasoning.

2. Take turns with your partner to sort the pictures into the categories that your class has agreed on.
   a. For each match that you find, explain to your partner how you know it's a match.
   b. For each match that your partner finds, listen carefully to their explanation. If you disagree, discuss your thinking and work to reach an agreement.

   Pause here so your teacher can review your work.

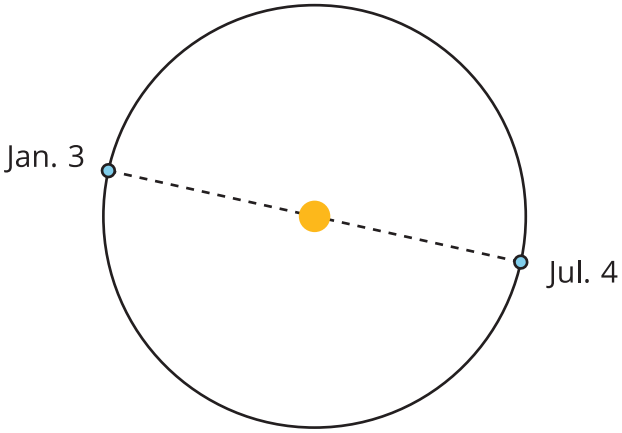
3. What are some characteristics that all **circles** have in common?

4. Put the circular objects in order from smallest to largest.
5. Select one of the pictures of a circular object. What are some ways that you could measure the actual size of your circle?

Are you ready for more?

On January 3rd, Earth is 147,500,000 kilometers away from the Sun. On July 4th, Earth is 152,500,000 kilometers away from the Sun. The Sun has a radius of about 865,000 kilometers.

Could Earth's orbit be a circle with some point in the Sun as its center? Explain your reasoning.



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11.3 Measuring Circles

Priya, Han, and Mai each measured one of the circular objects from earlier.

- Priya says that the bike wheel is 24 inches.
- Han says that the yo-yo trick is 24 inches.
- Mai says that the glow necklace is 24 inches.

1. Do you think that all these circles are the same size?

2. What part of the circle did each person measure? Explain your reasoning.

11.4 Drawing Circles

Draw and label each circle.

1. Circle A, with a diameter of 6 cm.

2. Circle B, with a radius of 5 cm.

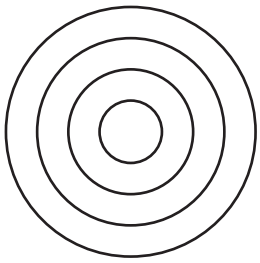
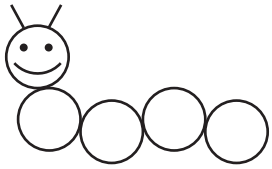
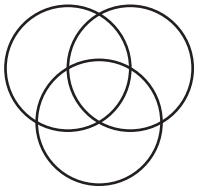
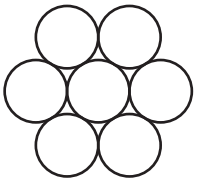
Pause here so your teacher can review your work.

3. Circle C, with a radius that is equal to Circle A's diameter.

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4. Circle D, with a diameter that is equal to Circle B's radius.

5. If you have time, use a compass to recreate one of these designs.

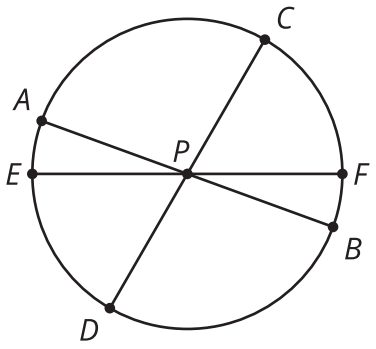





Lesson 11 Summary

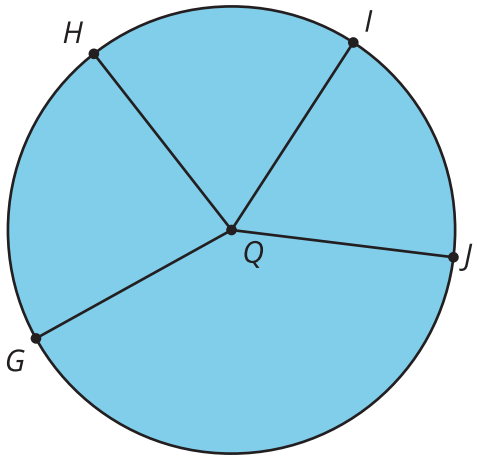
A **circle** consists of all of the points that are the same distance away from a particular point called the *center* of the circle.

A segment that connects the center with any point on the circle is called a **radius**. For example, segments QG, QH, QI, and QJ are all radii of Circle 2. (We say one radius and two radii.) The length of any radius is always the same for a given circle. For this reason, people also refer to this distance as the *radius* of the circle.

Circle 1



Circle 2



A segment that connects two opposite points on a circle (passing through the circle's center) is called a **diameter**. For example, segments AB, CD, and EF are all diameters of Circle 1. All diameters in a given circle have the same length because they are composed of two radii. For this reason, people also refer to the length of such a segment as the *diameter* of the circle.

The **circumference** of a circle is the distance around it. If a circle was made of a piece of string and we cut it and straightened it out, the circumference would be the length of that string. A circle always encloses a circular region. The region enclosed by Circle 2 is shaded, but the region enclosed by Circle 1 is not. When we refer to the area of a circle, we mean the area of the enclosed circular region.

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