



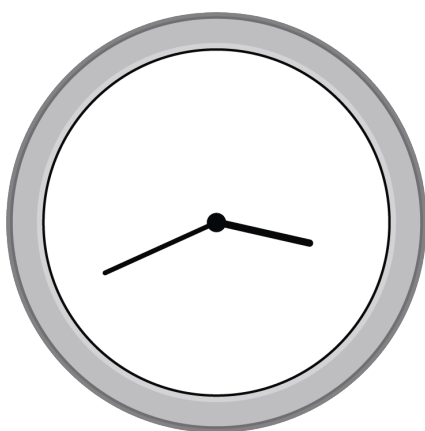
# Use a Protractor to Draw Angles

Let's draw some angles.

## Warm-up

### Estimation Exploration: Long Hand and Short Hand

How many degrees is the angle formed by the long hand and the short hand of the clock?



Make an estimate that is:

| too low | about right | too high |
|---------|-------------|----------|
|         |             |          |

## Activity 1

### Draw These Angles

1. Draw a line that is neither vertical nor horizontal. Put a point somewhere on this line. Use your protractor to draw a perpendicular line through this point. Be as precise as possible. (No folding this time!)

2. Here is a ray that starts at point  $M$ .



Use a protractor to draw:

- a. A ray starting at point  $M$  to create a  $40^\circ$  angle.
  - b. Another ray starting at point  $M$  to create a  $20^\circ$  angle.
  - c. One more ray starting at point  $M$  to create a  $95^\circ$  angle. Label each angle with its measurement.
3. There is one angle that is not labeled with a measurement and is greater than  $180^\circ$ . Label the angle with an arc. How many degrees is this angle? Explain how you know.

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## Activity 2

### Angles Made to Order

Your teacher will give you 4 blank cards. Label each card with a letter A–D.

1. On each labeled card, draw an angle that meets the requirement with the same letter. Use a ruler and a protractor.
  - a. an angle that is less than  $35^\circ$
  - b. an angle that is between  $35^\circ$  and  $80^\circ$
  - c. an angle that is greater than  $80^\circ$  but less than  $120^\circ$
  - d. an angle that is greater than  $120^\circ$  but less than  $180^\circ$
2. Trade cards with your partner.
  - a. Record the angle measurement for each angle. Check to make sure each angle meets the requirement.
  - b. Have your partner correct the angle if it does not meet the requirement. Save the cards for the next lesson.

If you have time:

1. Create a drawing that shows several angles. Then write some descriptions about your drawing. Be as specific as possible.
2. Ask a partner to recreate the drawing, based on your descriptions. Does their drawing look like your drawing? If not, adjust your descriptions and ask them to try again.

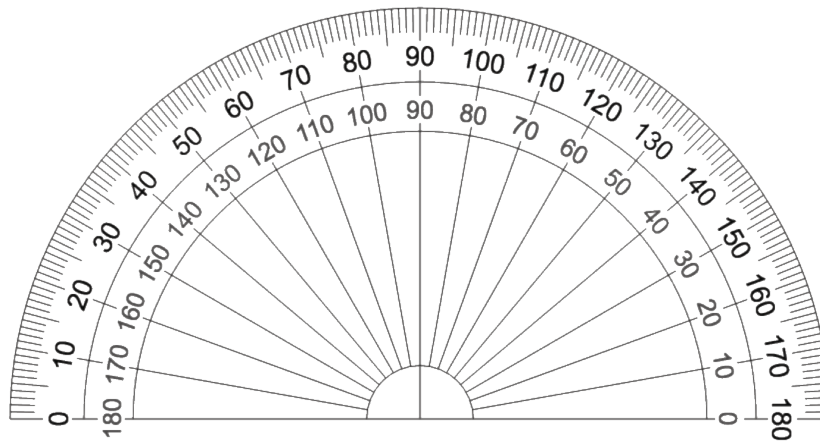


## Section B Summary

We learned ways to describe and measure the size of an angle.

We described angles as a turn of one ray away from the other. We learned that a degree is a measure of the turn around a circle and that 1 degree is  $\frac{1}{360}$  of a full turn of a ray through a circle.

Finally, we learned that a protractor is a tool used to measure angles that also can be used to create angles of a certain measure.



A protractor has two sets of numbers that can be used to measure an angle. We learned to use a protractor to measure and draw different angles.