1.5 Measuring and Constructing Angles
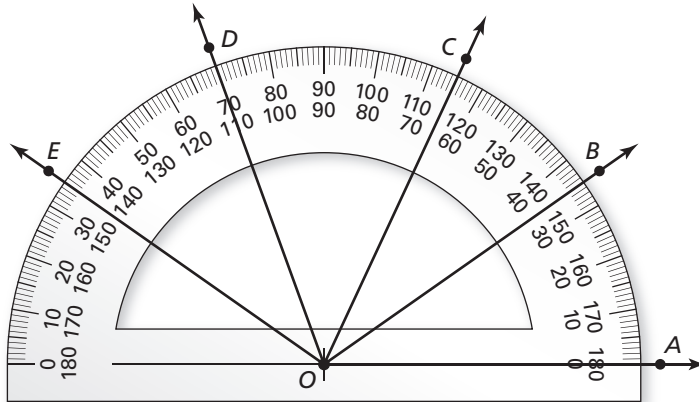
For use with Exploration 1.5

Essential Question How can you measure and classify an angle?

---

1 **EXPLORATION:** Measuring and Classifying Angles

Go to *BigIdeasMath.com* for an interactive tool to investigate this exploration.

Work with a partner. Find the degree measure of each of the following angles. Classify each angle as acute, right, or obtuse.
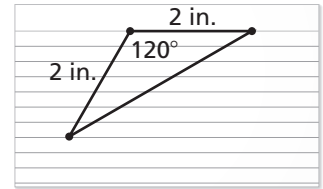

a. ∠*AOB*

b. ∠*AOC*

c. ∠*BOC*

d. ∠*BOE*

e. ∠*COE*

f. ∠*COD*

g. ∠*BOD*

h. ∠*AOE*

1.5 **Measuring and Constructing Angles** (continued)

2 **EXPLORATION:** Drawing a Regular Polygon

Go to *BigIdeasMath.com* for an interactive tool to investigate this exploration.

Work with a partner.

a. On a separate sheet of paper or an index card, use a ruler and protractor to draw the triangular pattern shown at the right.

b. Cut out the pattern and use it to draw three regular hexagons, as shown in your book.

c. The sum of the angle measures of a polygon with n sides is equal to $180(n - 2)°$.
   Do the angle measures of your hexagons agree with this rule? Explain.

d. Partition your hexagons into smaller polygons, as shown in your book. For each hexagon, find the sum of the angle measures of the smaller polygons. Does each sum equal the sum of the angle measures of a hexagon? Explain.

Communicate Your Answer

3. How can you measure and classify an angle?

Name _____ Date _____

Notetaking with Vocabulary
For use after Lesson 1.5

In your own words, write the meaning of each vocabulary term.

angle

vertex

sides of an angle

interior of an angle

exterior of an angle

measure of an angle

acute angle

right angle

obtuse angle
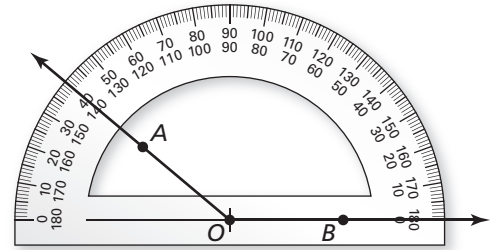
straight angle

congruent angles

angle bisector

1.5 **Notetaking with Vocabulary** (continued)

Postulate 1.3 Protractor Postulate

Consider $\overrightarrow{OB}$ and a point A on one side of $\overrightarrow{OB}$. The rays of the form $\overrightarrow{OA}$ can be matched one to one with the real numbers from 0 to 180.
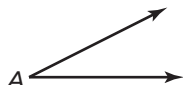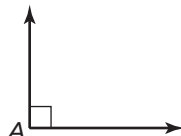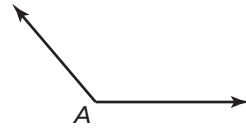
The **measure** of $\angle AOB$, which can be written as $m\angle AOB$, is equal to the absolute value of the difference between the real numbers matched with $\overrightarrow{OA}$ and $\overrightarrow{OB}$ on a protractor.

Notes:

Core Concepts

Types of Angles

acute angle	**right angle**	**obtuse angle**	**straight angle**
Measures greater than $0°$ and less than $90°$	Measures $90°$	Measures greater than $90°$ and less than $180°$	Measures $180°$

Notes:

Postulate 1.4 Angle Addition Postulate

Words If P is the interior of $\angle RST$, then the measure of $\angle RST$ is equal to the sum of the measures of $\angle RSP$ and $\angle PST$.

Symbols If P is in the interior of $\angle RST$, then
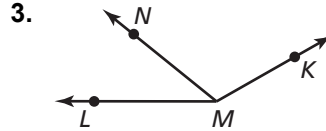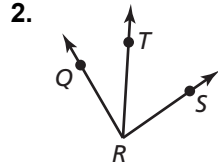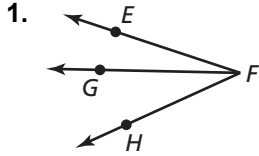$m\angle RST = m\angle RSP + m\angle PST$.
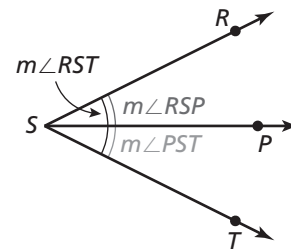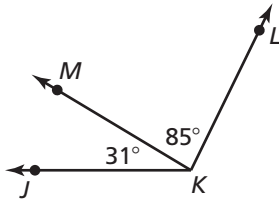
Notes:

1.5 **Notetaking with Vocabulary** (continued)

Extra Practice

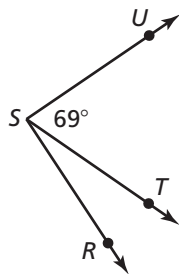**In Exercises 1–3, name three different angles in the diagram.**

1.

2.

3.

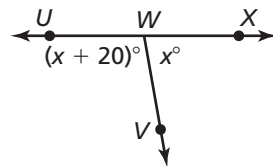**In Exercises 4–9, find the indicated angle measure(s).**
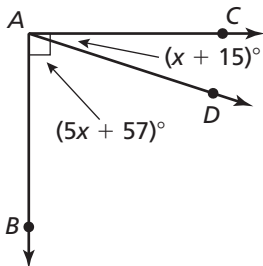
4. Find $m\angle JKL$.

5. $m\angle RSU = 91°$.
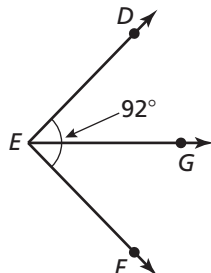Find $m\angle RST$.

6. $\angle UWX$ is a straight angle.
Find $m\angle UWV$ and $m\angle XWV$.

7. Find $m\angle CAD$
and $m\angle BAD$.

8. $\overrightarrow{EG}$ bisects $\angle DEF$.
Find $m\angle DEG$ and
$m\angle GEF$.

9. $\overrightarrow{QR}$ bisects $\angle PQS$.
Find $m\angle PQR$ and
$m\angle PQS$.