Objective:
Find and compare angles measures

G.CO.1:
Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, distance along a line, and distance around a circular arc.

1-4 MEASURING ANGLES
## Key Concept: Angle

### Definition
An angle is formed by two rays with the same endpoint.
The rays are the sides of the angle. The endpoint is the vertex of the angle.

### How to Name It
You can name an angle by:
- its vertex
- a point on each ray and the vertex
- a number

### Diagram
![Diagram of a right angle](image)

- $L_1$ or $LABC$ or $LA$

- The sides are $\overrightarrow{AB}$ and $\overrightarrow{AC}$.
1-4 Measuring Angles

**Key Concept** Types of Angles

11. Draw your own example of each type of angle.

- **Acute**: $0 < x < 90$
- **Right**: $x = 90$
- **Obtuse**: $90 < x < 180$
- **Straight**: $x = 180$

In the diagram, $m\angle ABC = 70$ and $m\angle BFE = 90$. Describe each angle as *acute*, *right*, *obtuse* or *straight*. Give an angle measure to support your description.

12. $\angle ABC$
   - Acute

13. $\angle CBD$
   - Obtuse

14. $\angle CFG$
   - Right

15. $\angle CFH$
   - Straight
1-4 Measuring Angles....using Protractor Postulate

Got It? What are the measures of \( \angle LKH \), \( \angle HKN \), and \( \angle MKH \) in the art below? Classify each angle as acute, right, obtuse, or straight.

16. Write the measure of each angle. Then classify each angle.

- \( \angle LKH \): 35°, Acute
- \( \angle HKN \): 180°, Straight
- \( \angle MKH \): 145°, Obtuse
Angles with the same angle measure are congruent.

That means if \( m\angle A = m\angle B \), then \( \angle A \cong \angle B \).
Got It? \(\triangle DEF\) is a straight angle. What are \(m\angle DEC\) and \(m\angle CEF\)?

23. Write a justification for each statement.

\[ m\angle DEF = 180 \]

\[ m\angle DEC + m\angle CEF = 180 \]

\[ (11x - 12) + (2x + 10) = 180 \]

\[ 13x - 2 = 180 \]

\[ 13x = 182 \]

\[ x = 14 \]

Definition of Straight Angle

Angle Add. Post

Substitution

Combine Like Terms

Subtraction Prop. Of Equality

Division Prop. Of Equality

24. Use the value of \(x\) to find \(m\angle DEC\) and \(m\angle CEF\).

\[ m\angle DEC = 11x - 12 = 11(14) - 12 = 142 \]

\[ m\angle CEF = 2x + 10 = 2(14) + 10 = 28 + 10 = 38 \]