Notes for Lesson 9-3: Arcs and Central Angles

Draw a diagram to go with each of the following definitions below:
1) **Central angle** - An angle with its vertex at the center of a circle

![Diagram of a central angle]

2) **Arc** - an unbroken part of the circle

- **Minor arc**: $< 180^\circ$
- **Major arc**: $> 180^\circ$
- **Semicircle**: $= 180^\circ$

![Diagram of arcs]

3) **Measure of an arc** - The measure of a minor arc is the measure of its central angle and is $< 180^\circ$. The measure of a major arc is $360^\circ - (\text{measure of the minor arc})$ and is $> 180^\circ$ but $< 360^\circ$. The measure of a semi circle $= 180^\circ$.

![Diagram of arc measures]

4) **Adjacent arcs** - arcs with exactly one point in common

![Diagram of adjacent arcs]
5) **Arc addition postulate** - the measure of the arcs formed by two adjacent arcs is the sum of the measures of these two arcs.

![Diagram of circle with arcs and angles](image)

6) **Congruent arcs** - arcs in the same circle or congruent circles that have equal measures (or the same measure for their central angles).

Name the following:

1) four central angles
   - \( \angle WXQ, \angle WQZ, \angle YQZ, \angle XQY \)

2) two semi circles
   - \( \overparen{WXY}, \overparen{XWZ} \)

3) four minor arcs
   - \( \overparen{WX}, \overparen{YZ}, \overparen{WZ}, \overparen{XY} \)

4) four major arcs
   - \( \overparen{XWQ}, \overparen{WYZ}, \overparen{YXQ}, \overparen{WXY} \)

Find the measure of each arc or angle named.

1) \( \angle PCQ \) \( 60^\circ \)
2) arc ST \( 45^\circ \)
3) arc SQP \( 180^\circ \)
4) arc SQ \( 120^\circ \)
5) arc SPQ \( 240^\circ \)
6) arc SPT \( 315^\circ \)