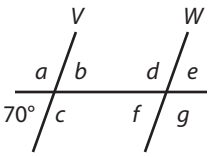
Name: **Math Academy I Classwork 5**

5-A Congruent and Supplementary Angles

1. Identify the measure of each labeled angle, given lines *V* and *W* are parallel. Give a justification for each.



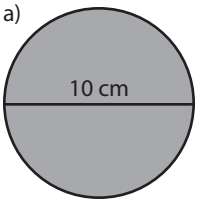
a) b) c)

d) e) f) g)

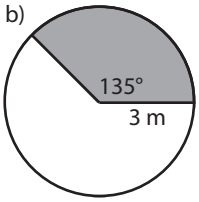
5-B Components of Circles

2. Find the arc length and area of each shaded region.

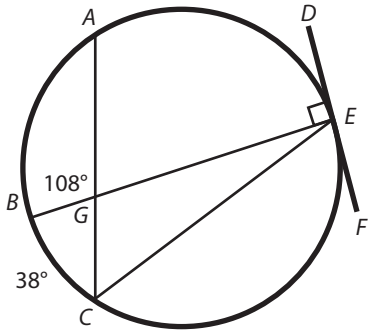
a)



b)



3. Find the measure of $\overset{\frown}{AB}$, given *DF* is tangent to the circle at *E*.



5-C Circle Theorems

4. Sketch a diagram to illustrate the following theorems.

a) Congruent Corresponding Chords theorem: In the same circle, or in congruent circles, two minor arcs are congruent if and only if their corresponding chords are congruent.

b) Segments of Secants theorem: If two secant segments share the same endpoint outside a circle, then the product of the lengths of one secant segment and its external segment equals the product of the lengths of the other secant segment and its external segment.

5. Prove the following theorems.

a) Equidistant Chords theorem: In the same circle, or in congruent circles, two chords are congruent if and only if they are equidistant from the center.

b) Inscribed Quadrilateral theorem: A quadrilateral can be inscribed in a circle if and only if its opposite angles are supplementary.

6. Find the following values in the diagram, given *CB* and *CE* are tangent to the circle.

a) $m\angle BCD$

b) $\overline{CE}$