

Show work for credit. No calculator/notes.

1. For each of the following, let the two angles be represented by A and B . Obtain two equations for each case, and then solve the system to find the angles.

(a) The angles are adjacent and form an angle measuring 100° . Their difference is 22° .

(b) The angles are complementary. One measures 10° more than three times the other.

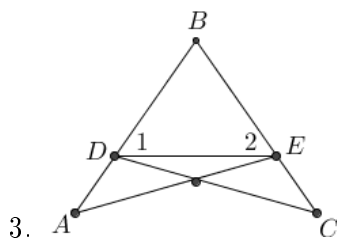
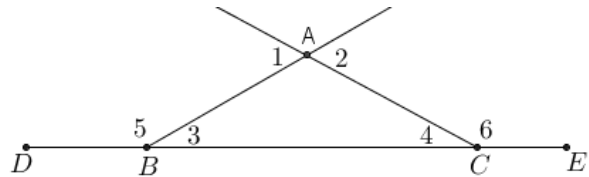
(c) The angles are supplementary. One measures 10° more than four times the other.

2. Answer each of the following by stating the basic angle theorem needed.

(a) Why does $m\angle 1 = m\angle 2$?

(b) Why does $m\angle DBC = m\angle ECB$?

(c) If $m\angle 3 = m\angle 4$, why does $m\angle 5 = m\angle 6$?



Given:

$$\angle 1 \cong \angle 2$$

$$\overline{AD} \cong \overline{EC}$$

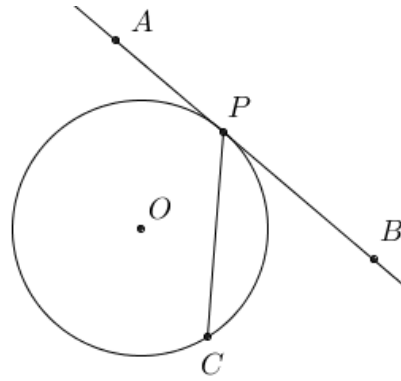
Prove:

$$\triangle ABE \cong \triangle CBD$$

3.

Statement	Reason
1. _____	1. If two angles of a \triangle are \cong then the sides opposite are \cong
2. $\overline{BD} + \overline{DA} = \overline{BA}$	2. _____
3. $\overline{BE} + \overline{EC} = \overline{BC}$	3. _____
4. $BA = BC$.	4. _____
5. _____	5. Reflexive postulate for congruence.
6. _____	6. SAS

4. **Given:**
 (O) with tangent \overleftrightarrow{AB} at P .
 Chord \overline{PC}



Prove:
 $\angle BPC = \frac{1}{2}\widehat{PC}$

Statement	Reason
1. Draw chord \overline{CD} parallel to \overleftrightarrow{AB} .	1. _____.
2. _____	2. Parallel lines cut off \cong arcs in a circle.
3. $\overline{DP} = \overline{CP}$	3. Arcs are $\cong \Leftrightarrow$ corresponding chords are \cong .
4. $\angle PDC = \frac{1}{2}\widehat{PC}$	4. _____.
5. $\angle PDC \cong \angle PCD$.	5. _____.
6. _____.	6. Trans. \overline{PC} cuts $\overline{AB} \parallel \overline{DC}$, alt. int. \angle s are \cong
7. $\angle BPC = \frac{1}{2}\widehat{PC}$.	7. _____.

5. Write a two-column proof for the statement: "If two angles of a triangle are congruent then the triangle is isosceles."