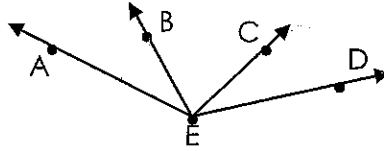


## 6.2A Line Segment and Angle Proofs

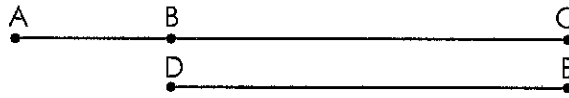
Name: \_\_\_\_\_ Hr: \_\_\_\_\_

1. Given:  $\angle AEC \cong \angle DEB$   
 Prove:  $\angle AEB \cong \angle DEC$



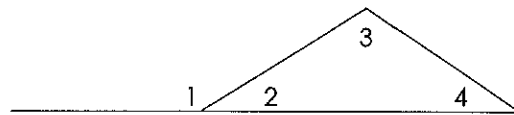
Statements	Reasons
1. $\angle AEC \cong \angle DEB$	1.
2. $m\angle AEC = m\angle DEB$	2.
3. $m\angle AEB + m\angle BEC = m\angle AEC$	3.
4. $m\angle DEC + m\angle BEC = m\angle DEB$	4.
5. $m\angle AEB + m\angle BEC = m\angle DEC + m\angle BEC$	5.
6. $m\angle AEB = m\angle DEC$	6.
7. $\angle AEB \cong \angle DEC$	7.

2. Given:  $\overline{BC} \cong \overline{DE}$   
 Prove:  $AC = AB + DE$



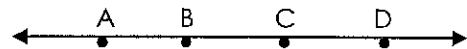
Statements	Reasons
1. $\overline{BC} \cong \overline{DE}$	1.
2. $BC = DE$	2.
3. $AC = AB + BC$	3.
4. $AC = AB + DE$	4.

3. Given:  $\angle 1$  and  $\angle 2$  form a linear pair;  
 $m\angle 2 + m\angle 3 + m\angle 4 = 180^\circ$   
 Prove:  $m\angle 1 = m\angle 3 + m\angle 4$



Statements	Reasons
1. $\angle 1$ and $\angle 2$ form a linear pair	1.
2. $\angle 1$ and $\angle 2$ are supplementary	2.
3. $m\angle 2 + m\angle 3 + m\angle 4 = 180^\circ$	3.
4. $m\angle 1 + m\angle 2 = 180^\circ$	4.
5. $m\angle 2 = m\angle 2$	5.
6. $m\angle 1 + m\angle 2 = m\angle 2 + m\angle 3 + m\angle 4$	6.
7. $m\angle 1 = m\angle 3 + m\angle 4$	7.

4. Given:  $B$  is between  $A$  and  $D$ ;  $C$  is between  $A$  and  $D$   
 Prove:  $AB + BD = AC + CD$

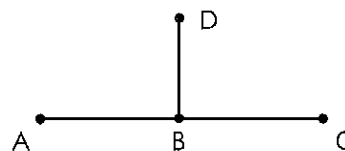


Statements	Reasons
1. $B$ is between $A$ and $D$ ; $C$ is between $A$ and $D$	1.
2. $AB + BD = AD$	2.
3. $AC + CD = AD$	3.
4. $AD = AC + CD$	4.
5. $AB + BD = AC + CD$	5.

5. Given:  $3x - 2 = x - 8$   
 Prove:  $x = -3$

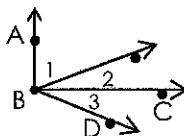
Statements	Reasons
1. $3x - 2 = x - 8$	1.
2. $3x - 2 + 2 = x - 8 + 2$	2.
3. $3x + 0 = x - 6$	3.
4. $3x + (-x) = x + (-x) - 6$	4.
5. $2x = -6$	5.
6. $x = -3$	6.

6. Given:  $A, B,$  and  $C$  are collinear;  $AB = BD$ ;  $BD = BC$   
 Prove:  $B$  is the midpoint of  $\overline{AC}$



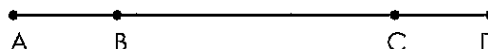
Statements	Reasons
1.	1. Given
2.	2. Transitive Property of Equality
3.	3. Definition of Congruent Segments
4.	4. Definition of Midpoint

7. Given:  $\overline{AB} \perp \overline{BC}$ ;  $m\angle 2 = m\angle 3$   
 Prove:  $m\angle 1 + m\angle 3 = 90^\circ$



Statements	Reasons
1. $\overline{AB} \perp \overline{BC}$ ; $m\angle 2 = m\angle 3$	1.
2.	2.
3.	3.
4.	4.
5.	5.
6. $m\angle 1 + m\angle 3 = 90^\circ$	6.

8. Given:  $AD = 2AB + BC$   
 Prove:  $\overline{AB} \cong \overline{CD}$



Statements	Reasons
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.