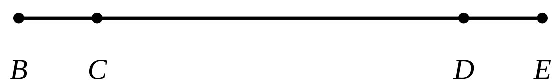
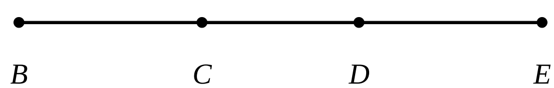
NAME:____________________________

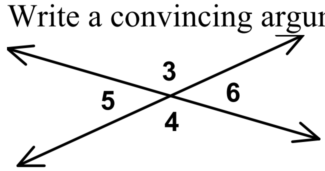
1. Write a two-column proof of the following.
Given: $BC = DE$
Prove: $BD = CE$



2. Write a two-column proof of the following.
Given: $BD = CE$
Prove: $BC = DE$



3. Write a convincing argument that $\angle 3 \cong \angle 4$.



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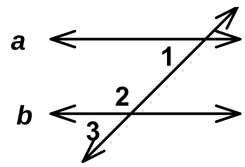
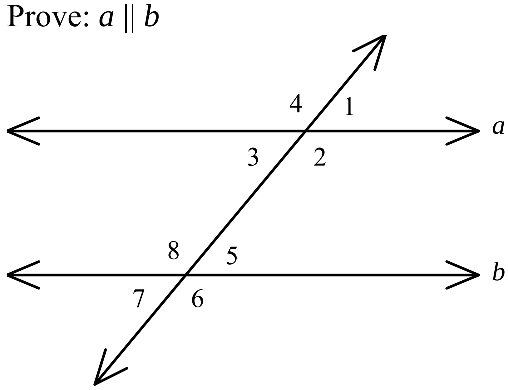
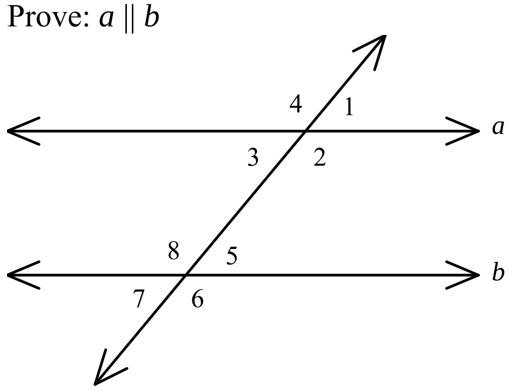
4. Write a paragraph proof of Theorem 7.2: If two parallel lines are cut by a transversal, then the pairs of same-side interior angles are supplementary.



5. Write a two-column proof of the following.
Given: $\angle 8$ is supplementary to $\angle 3$
Prove: $a \parallel b$



6. Write a two-column proof of the following.
Given: $\angle 7 \cong \angle 3$
Prove: $a \parallel b$



[1]

1. $BC = DE$	1. Given
2. $BC + CD = CD + DE$	2. Addition Property of Equality
3. $BD = BC + CD$ $CE = CD + DE$	3. Segment Addition Postulate
4. $BD = CE$	4. Substitution

[2]

1. $BD = CE$	1. Given
3. $BD = BC + CD$ $CE = CD + DE$	2. Segment Addition Postulate
2. $BC + CD = CD + DE$	3. Substitution
4. $BC = DE$	4. Subtraction Property of Equality

[3] Answers may vary. Sample: by the Angle Addition Postulate, $m\angle 3 + m\angle 5 = 180$ and $m\angle 4 + m\angle 5 = 180$. By substitution, $m\angle 3 + m\angle 5 = m\angle 4 + m\angle 5$. Subtract $m\angle 5$ from both sides, and you get $m\angle 4 = m\angle 3$, or $\angle 3 \cong \angle 4$.

[4] We are given $a \parallel b$. $\angle 3$ and $\angle 2$ are supplementary, so $m\angle 3 + m\angle 2 = 180$. $m\angle 1 = m\angle 3$ by the corresponding angles postulate, so $m\angle 1 + m\angle 2 = 180$, by substitution. By definition, $\angle 1$ and $\angle 2$ are supplementary.

[5]

1. $\angle 8$ is supp. to $\angle 3$	1. Given
2. $a \parallel b$	2. If two lines are cut by a transversal so that interior $\angle$s on the same side are supp., then the lines are $\parallel$.

[6]

1. $\angle 7 \cong \angle 3$	1. Given
2. $a \parallel b$	2. If two lines are cut by a transversal so that corresponding $\angle$s are $\cong$, then the lines are $\parallel$.