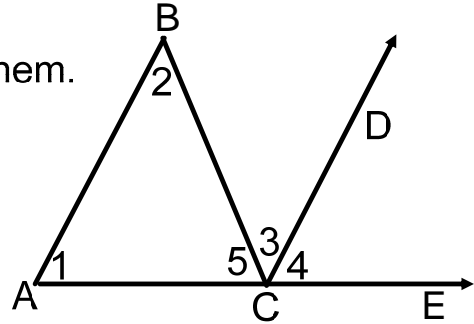## Geometry   Name_____
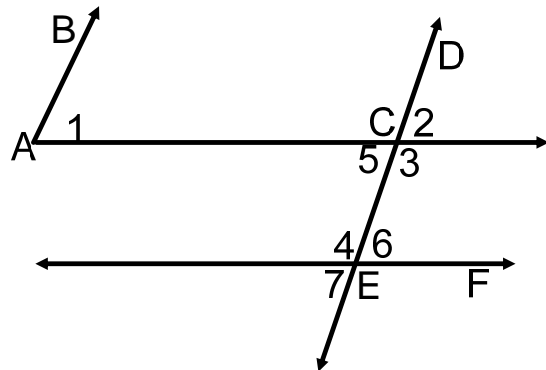
Find the errors in each proof and correct them.

1. Given: $\overrightarrow{AB} // \overrightarrow{CD};\ m\angle 1 = m\angle 2$
   Prove: $m\angle 3 = m\angle 4$

Statements	Reasons
1. $\overrightarrow{AB} // \overrightarrow{CD};\ m\angle 1 = m\angle 2$	1. Given
2. $m\angle 2 = m\angle 3$	2. If lines parallel, then alt. ext. angles = (alt. ext. angles thm.)
3. $m\angle 1 = m\angle 3$	3. Linear Pair Postulate
4. $m\angle 1 = m\angle 4$	4. If lines parallel, then corr. angles = (corr angles post)
5. $m\angle 1 = m\angle 5$	5. Substitution Property

2. Given: $\overrightarrow{AB} // \overrightarrow{CD};\ m\angle 1 = m\angle 6$
   Prove: $\overleftrightarrow{AC} // \overleftrightarrow{EF}$

Statements	Reasons
1. $\overrightarrow{AB} // \overrightarrow{CD};\ m\angle 1 = m\angle 6$	1. Given
2. $m\angle 1 = m\angle 2$	2. Substitution Property
3. $m\angle 2 = m\angle 6$	3. If lines parallel, then corr. angles = (corr angles post)
4. $\overleftrightarrow{AC} // \overleftrightarrow{EF}$	4. If lines //, then s.s. int. angles supp. (ss. int. angles thm.)

Monday warm-up continued....

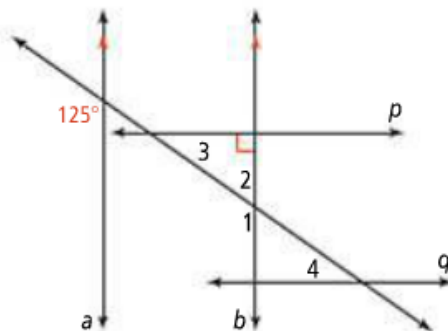3. Given: $\overline{AB}//\overline{DE}$; $m\angle 1 = m\angle 2$

Prove: $m\angle 3 = m\angle 4$
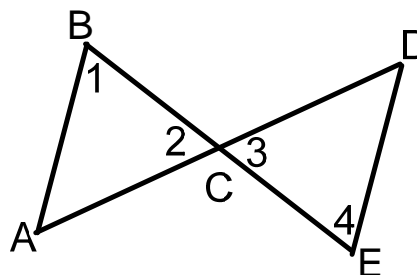
Statements	Reasons
1. $\overline{AB}//\overline{DE}$; $m\angle 1 = m\angle 2$	1. Given
2. $m\angle 2 = m\angle 3$	2. Linear Pair Postulate
3. $m\angle 1 = m\angle 3$	3. If lines parallel, then alt. int. angles = (alt int angles thm.)
4. $m\angle 1 = m\angle 2$	4. Substitution Property
5. $m\angle 3 = m\angle 4$	5. Substitution Property

© Performance Task 2

4. In the diagram below, $a \parallel b$. For lines p and q to be parallel, what is $m\angle 4$? Explain.

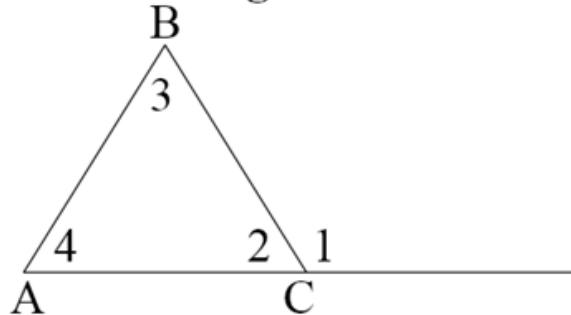1. Write the equation of the line that passes through the point $(3,-2)$ and is perpendicular to the line $y = \frac{2}{5}x - 1.$

ANSWERS in SLOPE-INTERCEPT FORM.

2. Write the equation of the line that passes through the point $(2,-3)$ and is parallel to the line $2x + y = 3.$

3. Write the equation of the perpendicular bisector of the line that passes through $(10,-2)$ and $(6, 4)$.

1. Prove the Exterior Angle Theorem

Given: $\angle 1$ is an exterior angle of $\triangle ABC$.

Prove: $m\angle 1 = m\angle 3 + m\angle 4$

Statements	Reasons
1. $\angle 1$ is an exterior angle of $\triangle ABC$.	1.
2. $m\angle 1 + m\angle 2 = 180°$	2.
3.	3. Triangle Sum Theorem
4.	4. Substitution Prop.
5.	5.

2. Write the equation of the perpendicular bisector in point-slope form of segment AB if A(2,-3) and B(4, 5).