3.2 Transversals and parallel lines

Angle relationships

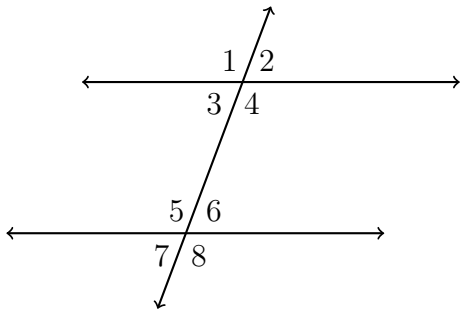
1. Review: Angle postulates and theorems you have learned.
   (a) $\perp$ lines and complementary $\angle$s make 90°
   (b) linear pairs add to 180°
   (c) vertical $\angle$s are $\cong$
   (d) definition of an angle bisector

2. New theorems for parallel lines

   (a) *corresponding* $\angle$s of $\parallel$ lines are $\cong$
   $\angle 2 \cong \angle 6$

   (b) *same-side interior* $\angle$s are supplementary
   $m\angle 3 + m\angle 5 = 180$

   (c) *alternate exterior* $\angle$s are $\cong$
   $\angle 2 \cong \angle 7$



Hint: There are only two angle measures, the acute angles and the obtuse angles (and they add to 180°)

3. Given two parallel lines and a transversal, as shown, with $m\angle 6 = 70°$. Write down the value of each angle measure.

(a) $m\angle 1 =$

(b) $m\angle 2 =$

(c) $m\angle 3 =$

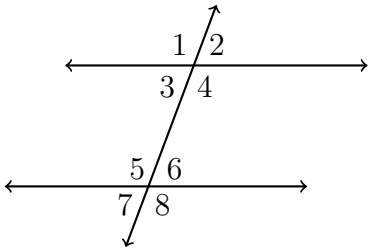
(d) $m\angle 4 =$

(e) $m\angle 5 =$

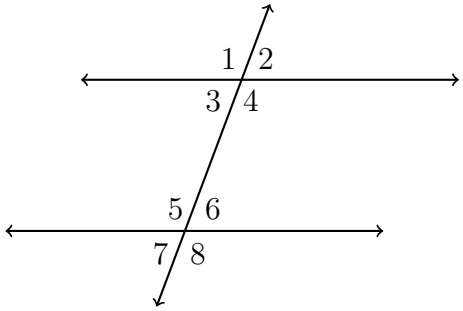
(f) $m\angle 6 =$

(g) $m\angle 7 =$

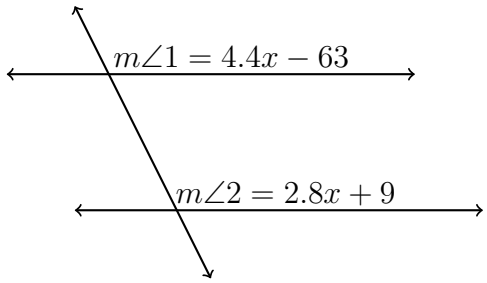
(h) $m\angle 8 =$



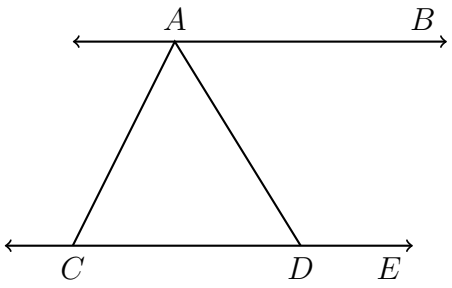
4. Given two parallel lines and a transversal, with $m\angle 4 = 3x$ and $m\angle 5 = x + 70$. Write an equation, then solve for x.



5. Two parallel lines intersect a transversal. Given corresponding angles $m\angle 1 = 4.4x - 63$ and $m\angle 2 = 2.8x + 9$, find the measure of $\angle 1$.



6. Given parallel lines $\overleftrightarrow{AB} \parallel \overleftrightarrow{CDE}$ with $\overline{AC} \cong \overline{CD}$. If $m\angle BAD = 80$ find $m\angle ACD$.



7. Two parallel lines intersect a second set of parallel lines. Given $m\angle 2 = 2.8x + 9$ and $m\angle 4 = 4.4x - 63$, find the measure of $\angle 1$.