3.8 Test: Parallel lines, transversals, and triangle angles

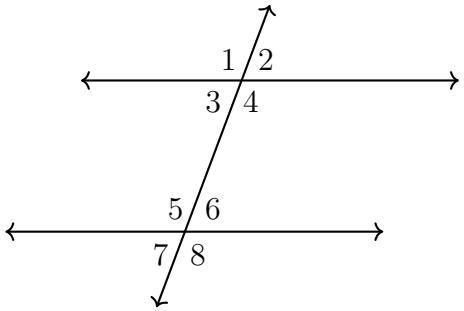
1. Identify the true relationships among angles made by two parallel lines and a transversal.

   (a) T F $\angle 1 \cong \angle 4$

   (b) T F $\angle 2 \cong \angle 6$

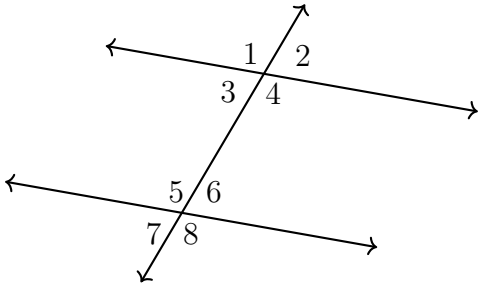
   (c) T F $m\angle 4 + m\angle 5 = 180$

   (d) T F $m\angle 2 + m\angle 8 = 180$



2. Find x given two parallel lines and a transversal, with alternate interior angles measuring

   $m\angle 3 = x$ $m\angle 6 = 80°$



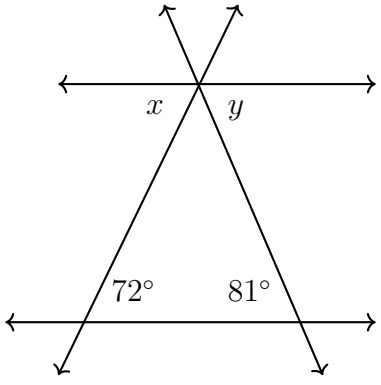
3. Given parallelogram with angle measure 110°, as shown. Find the measure of the opposite internal angle, x.

4. Given two parallel lines, two transversals.

   (a) Find x, y

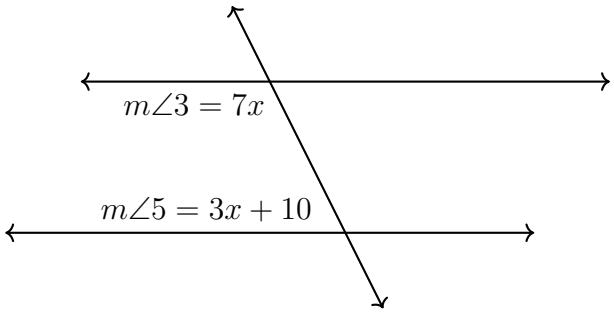
   (b) Circle the relationship depicted.

   - vertical angles
   - corresponding angles
   - same-side exterior angles
   - alternate interior angles

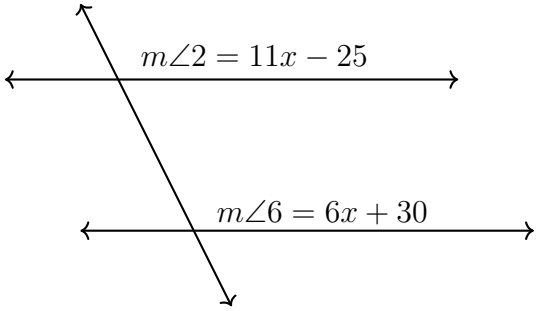


Do Not Solve

5. Given two parallel lines and a transversal, with same-side interior angles $m\angle 3 = 7x$ and $m\angle 5 = 3x + 10$. Write an equation, to solve for x, but do not solve it.

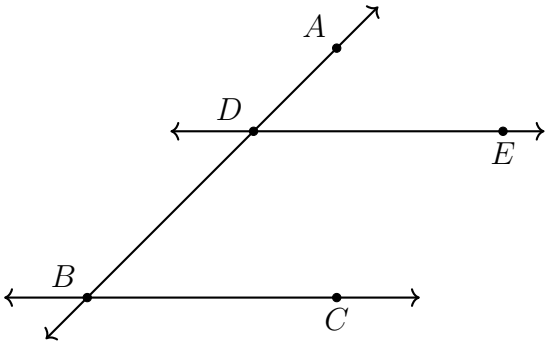


6. Two parallel lines intersect a transversal, shown. Given the corresponding angles $m\angle 2 = 11x - 25$ and $m\angle 6 = 6x + 30$. Write an equation, but do not solve it.

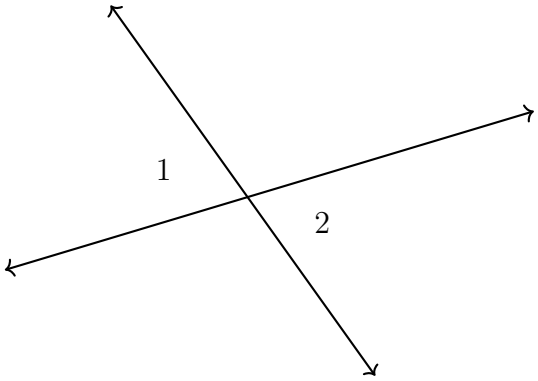


For the remaining problems, write an equation, solve for x, and check it.

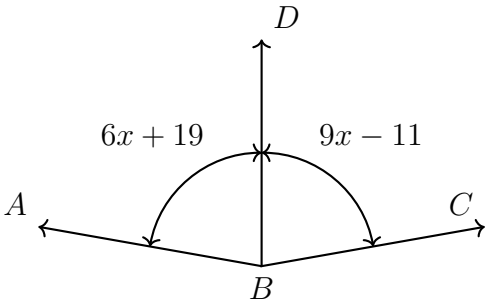
7. Given two parallel lines that intersect a transversal, $\overleftrightarrow{DE} || \overleftrightarrow{BC}$. $m\angle ABC = 3x - 10$ and $m\angle BDE = 6x + 10$. Find x.



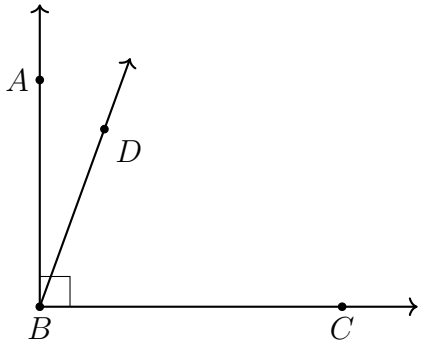
8. Given two vertical angles as shown, $m\angle 1 = 2x - 30$, and $m\angle 2 = x + 20$. Find x.



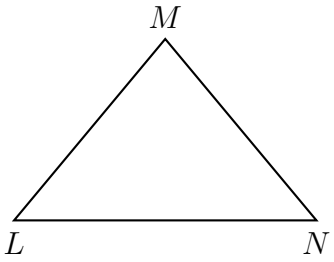
9. The ray $\overrightarrow{BD}$ is the angle bisector of $\angle ABC$. Given that the angle measures are $\text{m}\angle ABD = 6x + 19$ and $\text{m}\angle CBD = 9x - 11$, find x.



10. Given $\overrightarrow{BA} \perp \overrightarrow{BC}$, $m\angle ABD = 2x - 18$, and $m\angle DBC = 4x$. Find x.

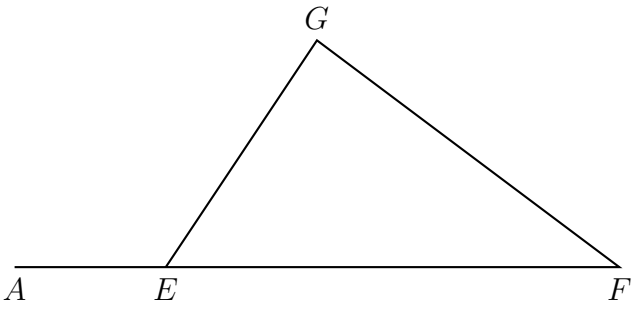


11. Given isosceles $\triangle LMN$, $\overline{LM} \cong \overline{NM}$. If $m\angle L = 3x$ and $m\angle N = 75°$, find x.



12. The measures in degrees of the three angles of a triangle are $2x$, $\frac{1}{2}x$, and $80°$. Find x.

13. Given $\triangle EFG$ with $\overline{EF}$ extended to A. If $m\angle F = 38°$ and $m\angle AEG = 133°$, find $m\angle G = x°$.



14. Given parallel lines $\overleftrightarrow{AB} \parallel \overleftrightarrow{CF}$, $m\angle BAE = 75°$ and $m\angle DAE = 55°$.

    Find $m\angle ADC = x$ and $m\angle AEF = y$.