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3.8 Test: Parallel lines, transversals, and triangle angles

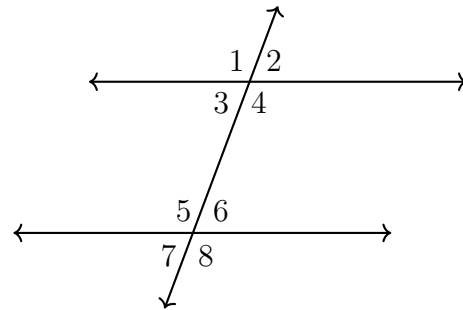
1. Identify the true relationships among angles made by two parallel lines and a transversal.

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

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

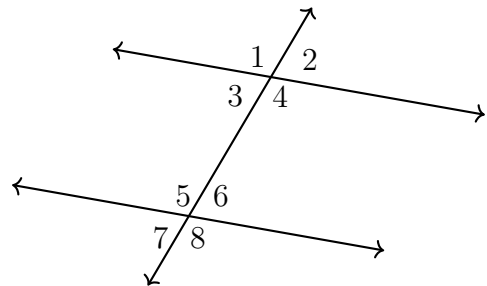
(c) T F $m\angle 4 + m\angle 5 = 180$

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

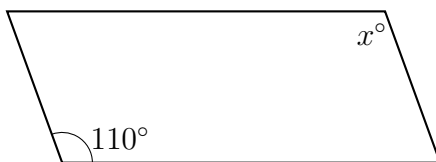


2. Find x given two parallel lines and a transversal, with alternate interior angles measuring

$m\angle 3 = x$ $m\angle 6 = 80^\circ$



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

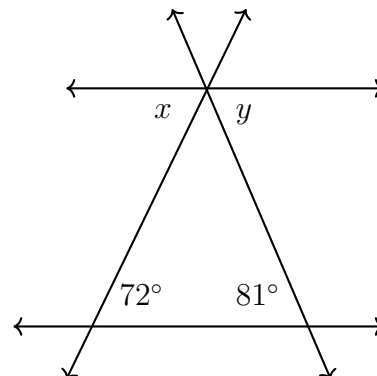


4. Given two parallel lines, two transversals.

(a) Find x, y

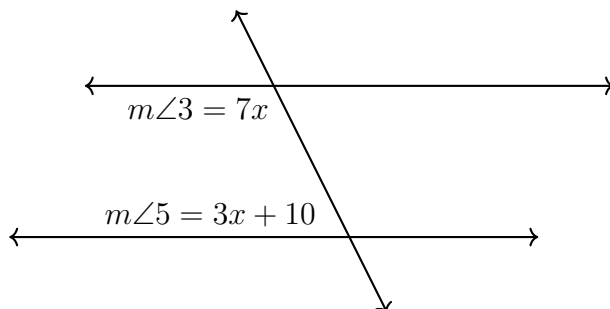
(b) Circle the relationship depicted.

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

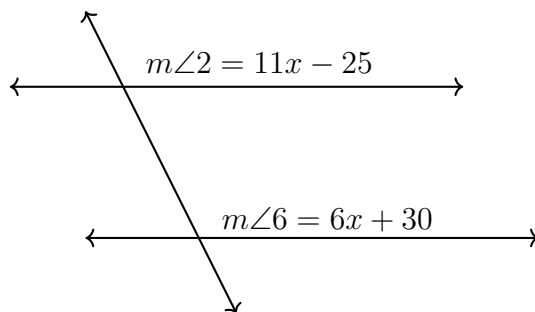


Do Not Solve

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.

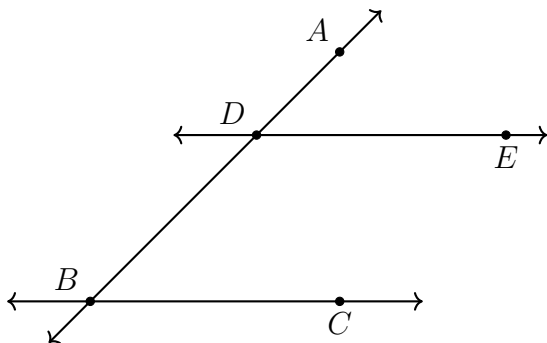


6. Two parallel lines intersect a transversal, shown. Given the corresponding angles $m\angle 2 = 11x - 25$ and $m\angle 6 = 6x + 30$. Write an equation, but do not solve it.



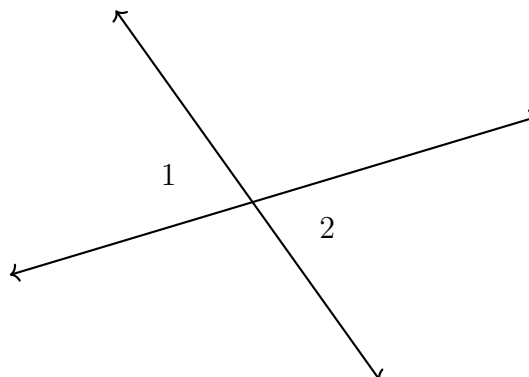
For the remaining problems, write an equation, solve for x , and check it.

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

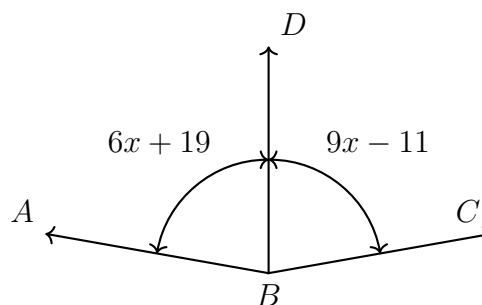


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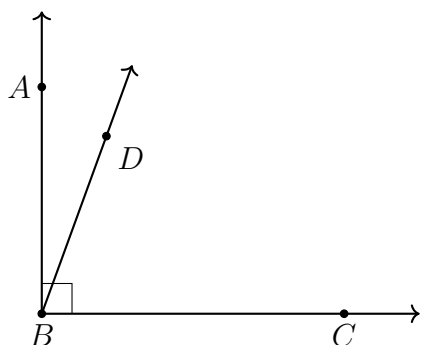
8. Given two vertical angles as shown, $m\angle 1 = 2x - 30$, and $m\angle 2 = x + 20$. Find x .



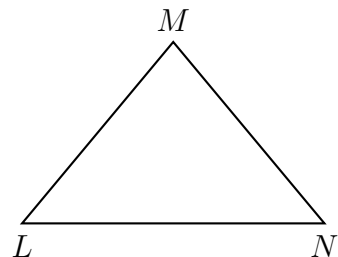
9. The ray \overrightarrow{BD} is the angle bisector of $\angle ABC$. Given that the angle measures are $m\angle ABD = 6x + 19$ and $m\angle CBD = 9x - 11$, find x .



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

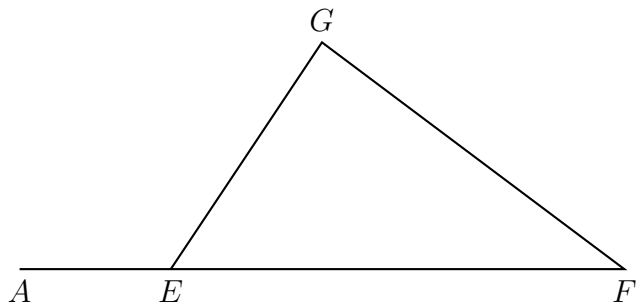


11. Given isosceles $\triangle LMN$, $\overline{LM} \cong \overline{NM}$. If $m\angle L = 3x$ and $m\angle N = 75^\circ$, find x .



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 $m\angle F = 38^\circ$ and $m\angle AEG = 133^\circ$, find $m\angle G = x^\circ$.



14. Given parallel lines $\overleftrightarrow{AB} \parallel \overleftrightarrow{CF}$, $m\angle BAE = 67^\circ$ and $m\angle DAE = 48^\circ$.

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

