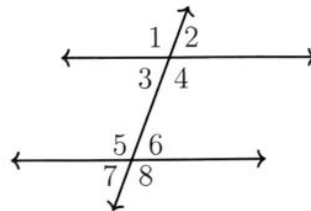


3.7 Review: Parallel lines, transversals, triangles mixed practice

1. Identify the relationships among the angles made by two parallel lines and a transversal, as shown. True or False:

- (a) ☒ T F $\angle 3 \cong \angle 6$
(b) T ☒ F $\angle 4 \cong \angle 7$
(c) ☒ T F $m\angle 3 + m\angle 5 = 180$
(d) T ☒ F $m\angle 1 + m\angle 8 = 180$

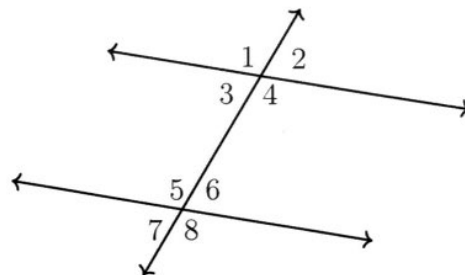


2. Find $m\angle 1$ given two parallel lines and a transversal, with

$$m\angle 3 = 5x + 21 \quad m\angle 5 = 9x - 9$$

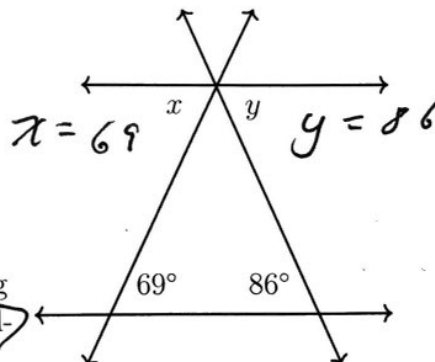
$$\begin{aligned} (5x + 21) + (9x - 9) &= 180 \\ 14x + 12 &= 180 \\ 14x &= 168 \\ x &= 12 \end{aligned}$$

$$5(12) + 21 + 9(12) - 9 = 180 \quad 81 + 99 = 180 \quad \checkmark$$



3. Given two parallel lines, two transversals

- (a) Find x, y



- (b) What relationship are you using?

(e.g. vertical angles, corresponding angles, same-side exterior angles, alternate interior angles, etc.)

4. The measures in degrees of the three angles of a triangle are $2x$, $\frac{2}{5}x$, and $\frac{1}{10}x$. Find the measures of the triangle's angles.

$$\begin{aligned} 2x + \frac{2}{5}x + \frac{1}{10}x &= 180 \\ \left(2 + \frac{2}{5} + \frac{1}{10}\right)x &= 180 \\ \frac{5}{2}x &= 180 \\ x &= 72 \end{aligned}$$

$$\begin{aligned} 2(72) + \frac{2}{5}(72) + \frac{1}{10}(72) &= 180 \\ 144 + 28.8 + 7.2 &= 180 \\ \checkmark \end{aligned}$$

5. Given $\triangle LMN$ with $m\angle L = 2x + 20$, $m\angle N = 3x + 5$, and $m\angle M = 5x + 5$. Find x .

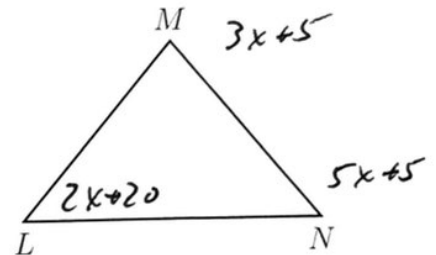
$$(2x + 20) + (3x + 5) + (5x + 5) = 180$$

$$10x + 30 = 180$$

$$x = 15$$

$$2(15) + 20 + 3(15) + 5 + 5(15) + 5 = 180?$$

$$50 + 50 + 80 = 180$$

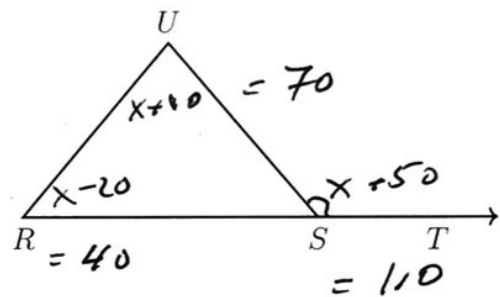


6. Given $\triangle RSU$. If $m\angle UST = x + 50$, $m\angle R = x - 20$, and $m\angle U = x + 10$, find $m\angle R$.

$$(x - 20) + (x + 10) = x + 50$$

$$2x - 10 = x + 50$$

$$x = 60$$



$$40 + 70 = 110 \checkmark$$

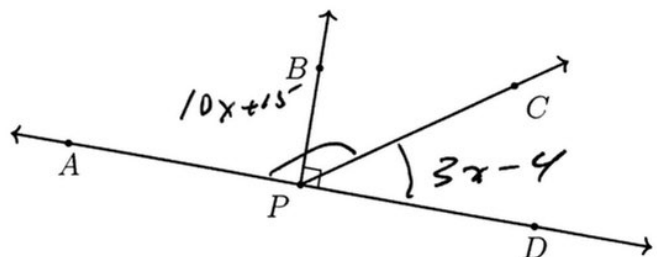
7. Angles APC and CPD form a linear pair. $m\angle APC = 10x + 15$ and $m\angle CPD = 3x - 4$. Find $m\angle CPD$. Check your answer for full credit.

$$(10x + 15) + (3x - 4) = 180$$

$$13x + 11 = 180$$

$$13x = 169$$

$$x = 13$$



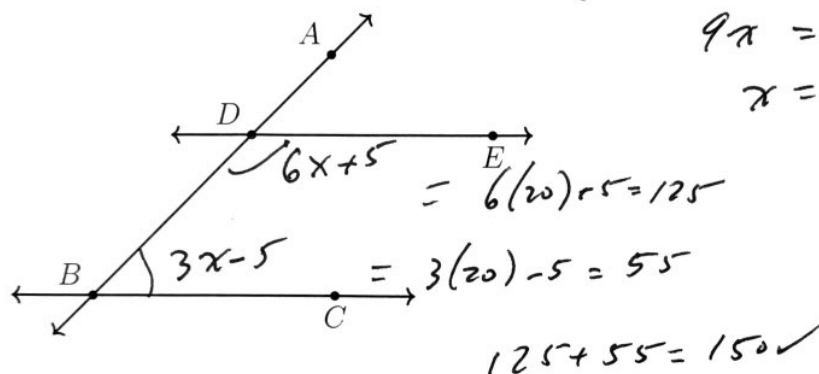
$$10(13) + 15 + 3(13) - 4 = 180?$$

$$145 + 35 = 180 \checkmark$$

Name:

8. Given two parallel lines that intersect a transversal, $\overleftrightarrow{DE} \parallel \overleftrightarrow{BC}$. $m\angle ABC = 3x - 5$ and $m\angle BDE = 6x + 5$.

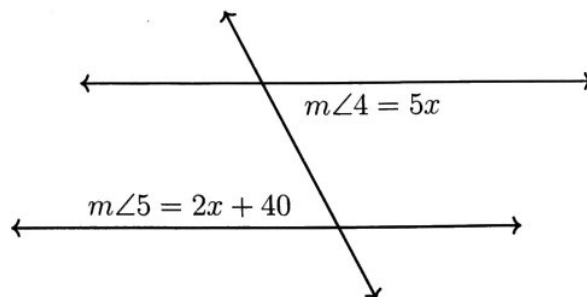
Find $m\angle ADE$.



Do Now Solve

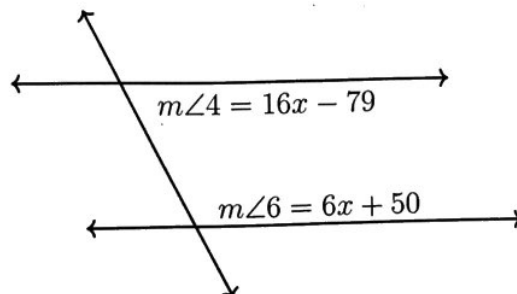
9. Given two parallel lines and a transversal, with alternate interior angles $m\angle 4 = 5x$ and $m\angle 5 = 2x + 40$. Write an equation, to solve for x , but do not solve it.

$$5x = 2x + 40$$



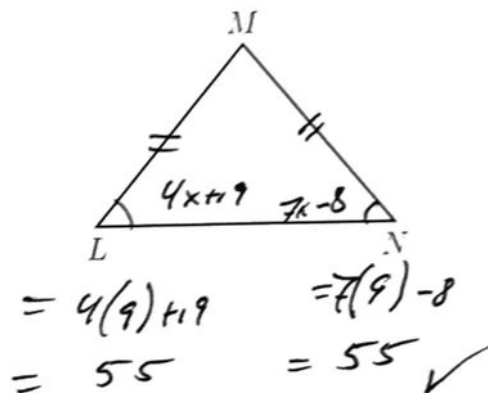
10. Two parallel lines intersect a transversal, shown. Given the same-side interior angles $m\angle 4 = 16x - 79$ and $m\angle 6 = 6x + 50$. Write an equation, but do not solve it.

$$(16x - 79) + (6x + 50) = 180$$



11. Given isosceles $\triangle LMN$, $\overline{LM} \cong \overline{NM}$. If $m\angle L = 4x + 19$ and $m\angle N = 7x - 8$, find $m\angle M$.

$$\begin{aligned} 4x + 19 &= 7x - 8 \\ 2x &= 3x \\ x &= 9 \end{aligned}$$



12. The measures in degrees of the three angles of a triangle are $3x$, $\frac{1}{2}x + 7$, and $5x - 65$. Find x .

$$\begin{aligned} 3x + \left(\frac{1}{2}x + 7\right) + (5x - 65) &= 180 \\ 8\frac{1}{2}x - 58 &= 180 \\ \frac{17}{2}x &= 238 \\ x &= 28 \end{aligned}$$

$$\begin{aligned} 3(28) &= 84 \\ 28\left(\frac{1}{2}\right) + 7 &= 21 \\ 5(28) - 65 &= 75 \\ 84 + 21 + 75 &= 180 \checkmark \end{aligned}$$

13. A triangle has two angles measuring x° and y° respectively. Find the measure of the third angle as an expression of x and y .

$$\begin{aligned} x + y + z &= 180 \\ z &= 180 - x - y \end{aligned}$$

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

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

$$\begin{aligned} y + 75 &= 180 \\ y &= 105 \\ x &= 75 + 55 \\ &= 130 \end{aligned}$$

