

Geometry

3.1 - 3.3 REVIEW - Parallel Lines and Angle Relations

Name: Key

Date: _____ Period: _____

Determine whether each statement is TRUE or FALSE.

1. T Line m is a transversal for lines r and s .

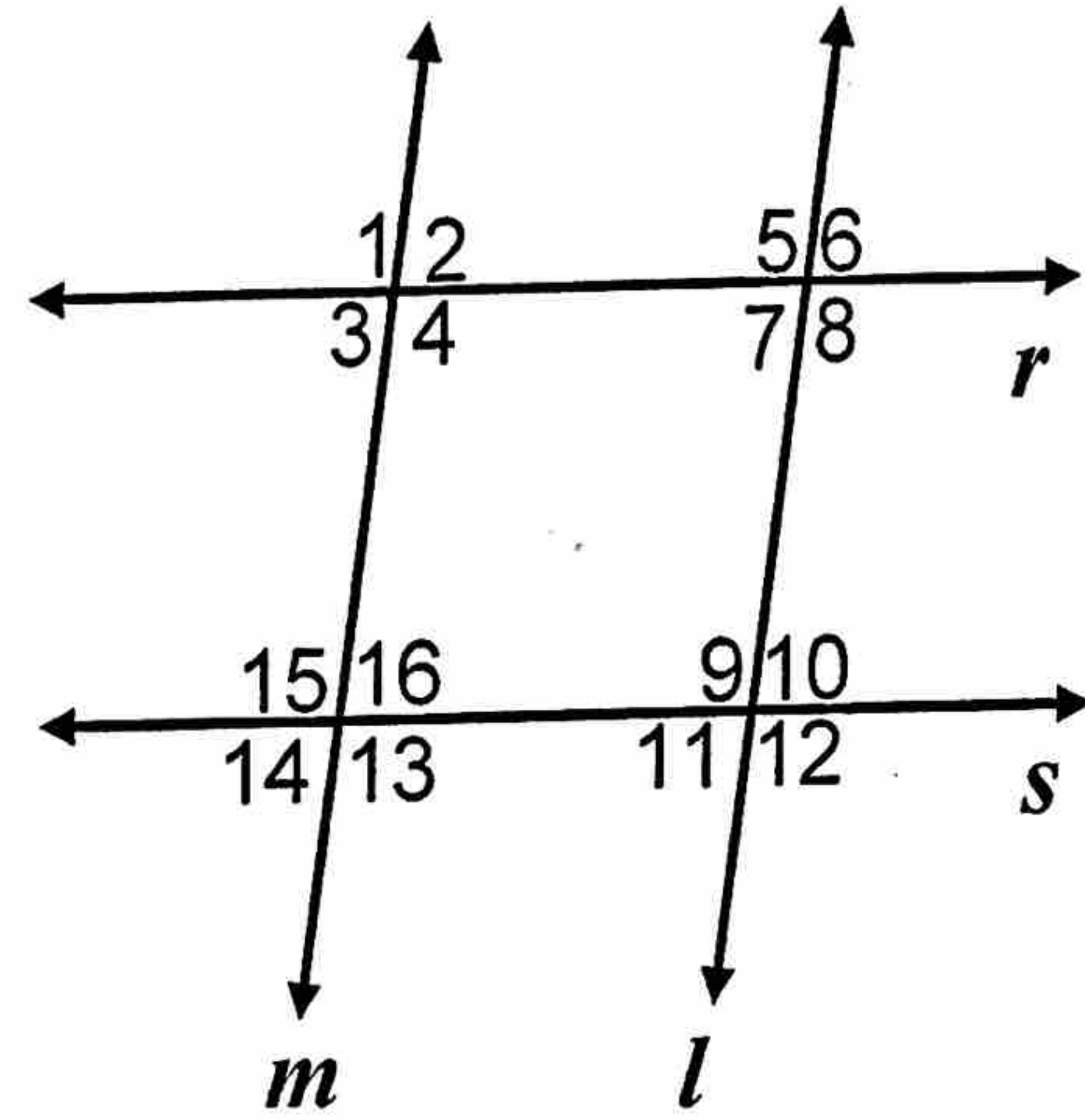
2. F $\angle 4$ and $\angle 9$ are alternate interior angles.

3. T $\angle 14$ and $\angle 10$ are alternate exterior angles.

4. T $\angle 2$ and $\angle 16$ are corresponding angles.

5. T $\angle 7$ and $\angle 10$ are alternate interior angles.

6. F $\angle 13$ and $\angle 11$ are formed by lines l and m and transversal r .



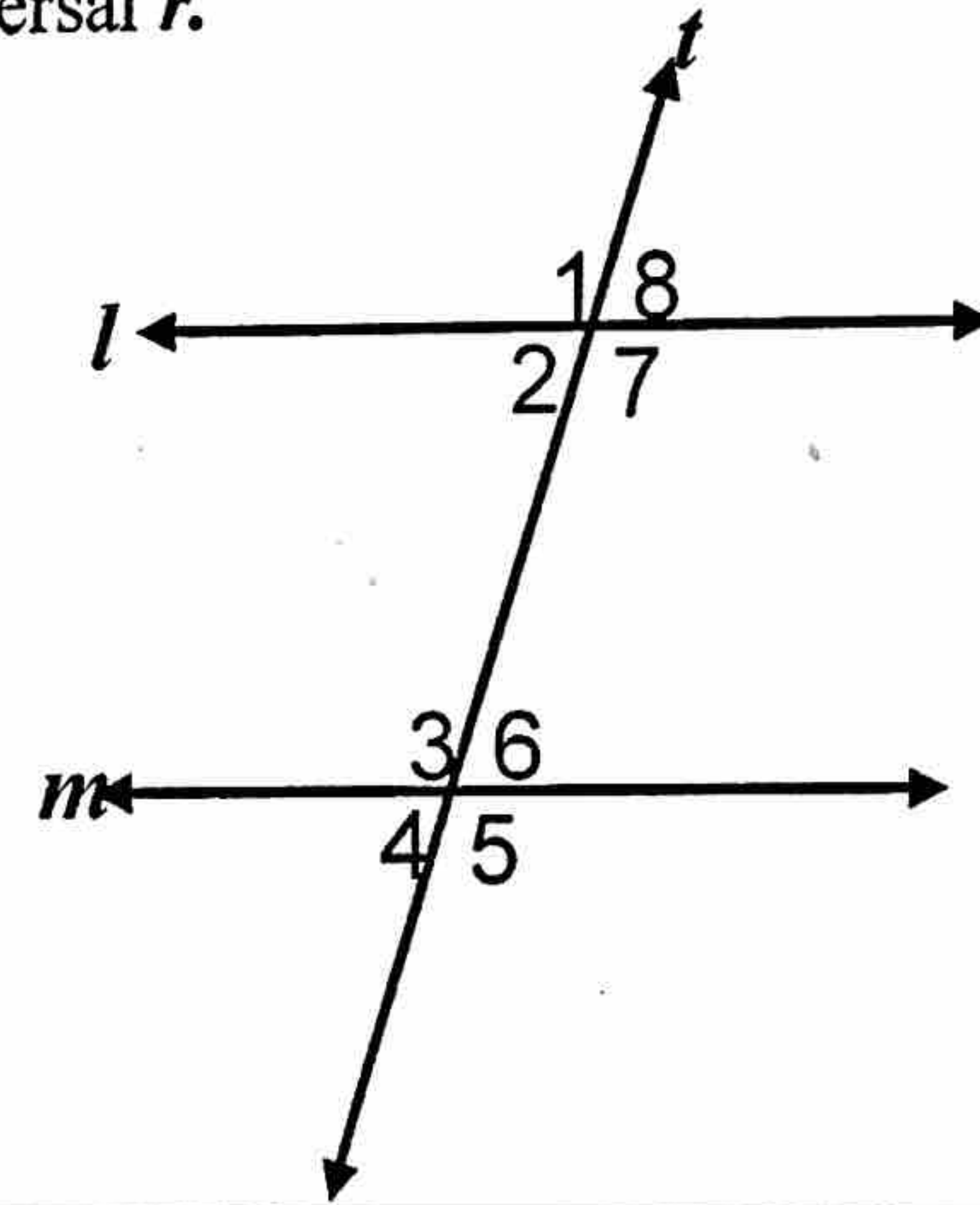
Solve for the missing angles.

7. $m\angle 3 = 48$ If $m\angle 1 = 48^\circ$, find $m\angle 3$.

8. $m\angle 4 = 55$ If $m\angle 7 = 125^\circ$, find $m\angle 4$.

9. $m\angle 3 = 90$ If $l \perp t$, find $m\angle 3$.

10. $m\angle 6 = 65$ If $m\angle 1 + m\angle 3 = 230^\circ$, find $m\angle 6$. $\frac{230}{2} = 115$



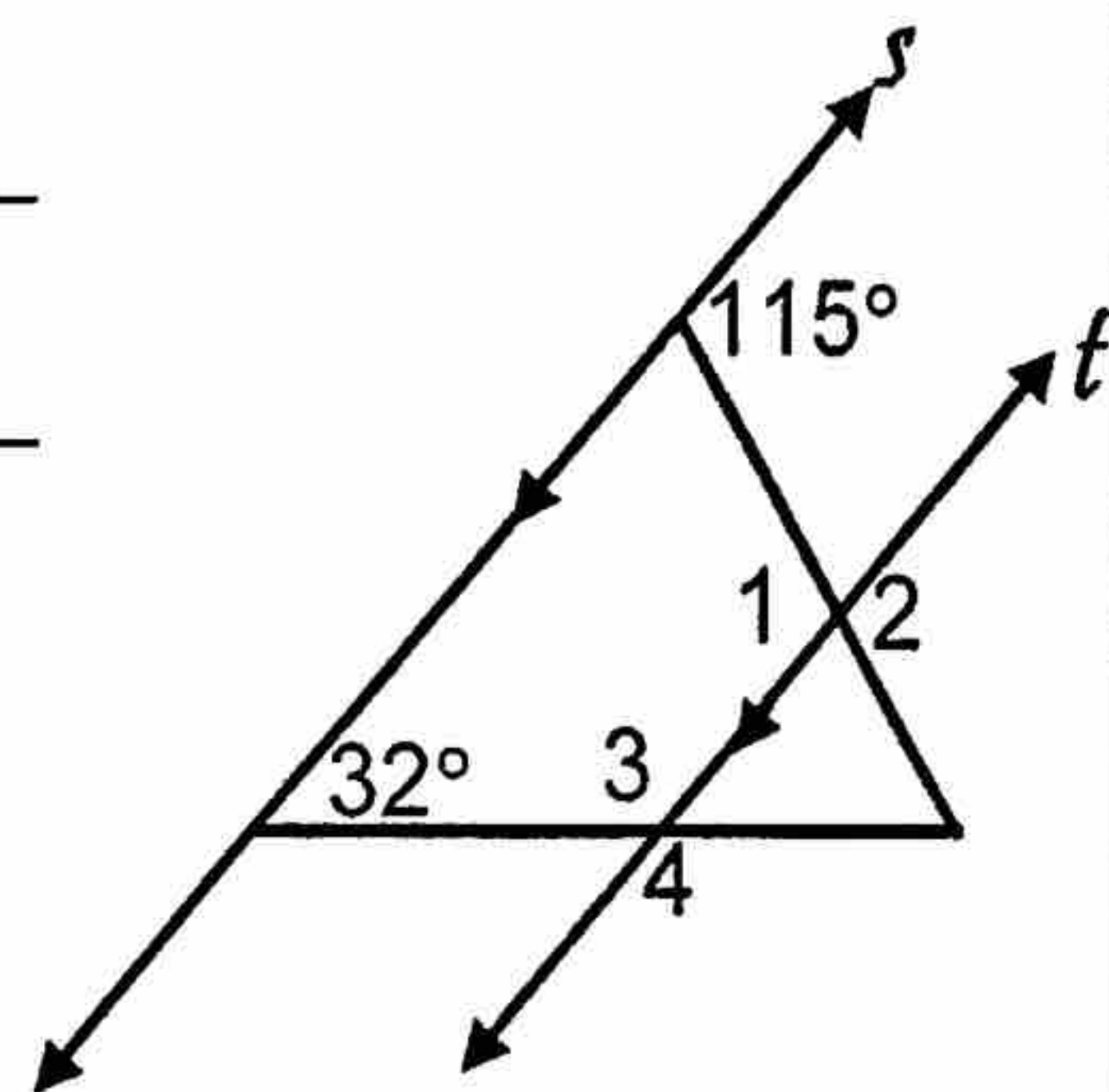
In the figure, $s \parallel t$. Find the measure of each angle.

11. $m\angle 1 =$ 115

12. $m\angle 2 =$ 115

13. $m\angle 4 =$ 148

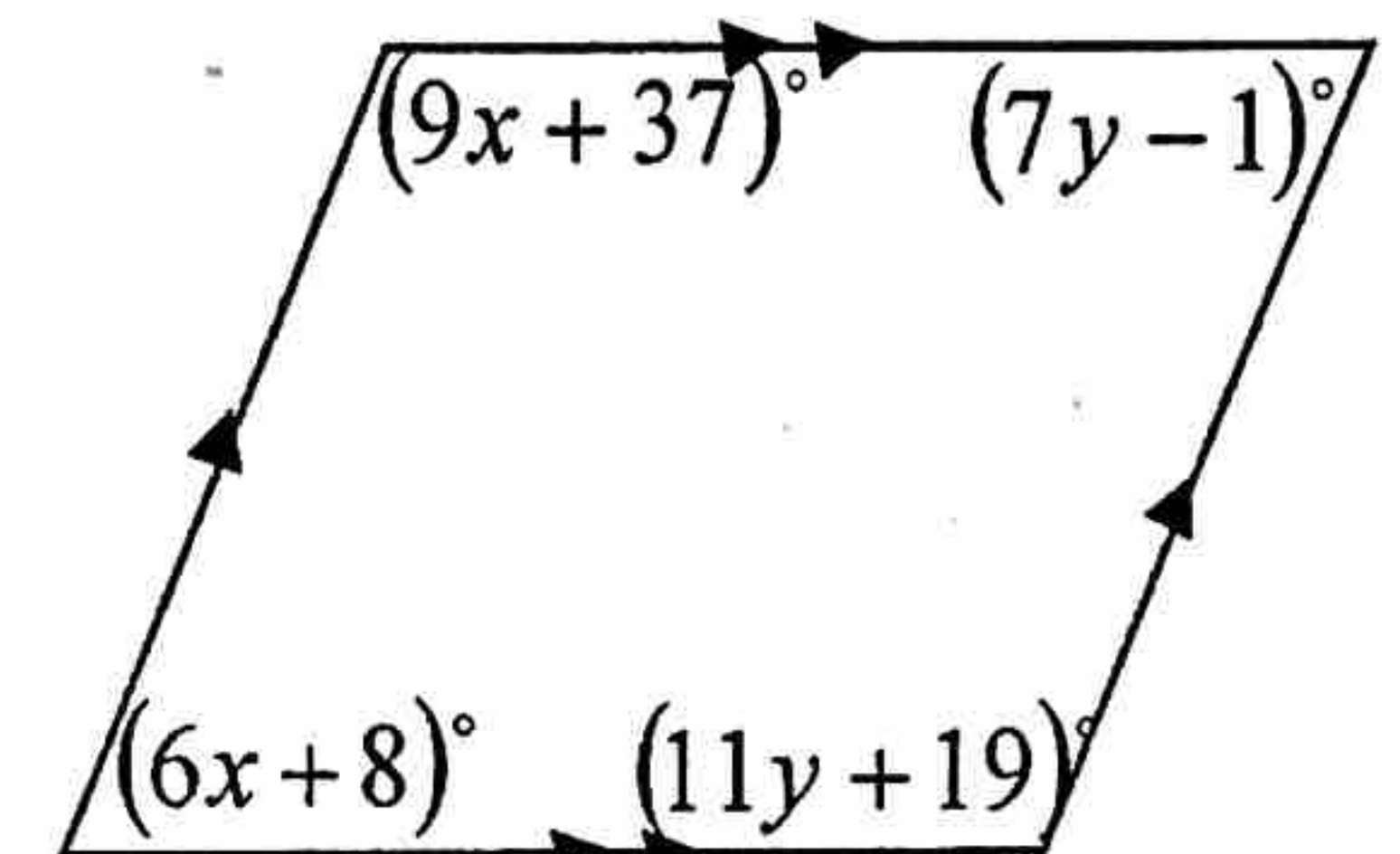
14. $m\angle 3 =$ 148



15.

$x =$ 9

$y =$ 9



$$9x + 37 + 6x + 8 = 180$$

$$15x + 45 = 180$$

$$15x = 135$$

$$x = 9$$

$$6x + 8 + 11y + 19 = 180$$

$$6(9) + 8 + 11y + 19 = 180$$

$$54 + 8 + 11y + 19 = 180$$

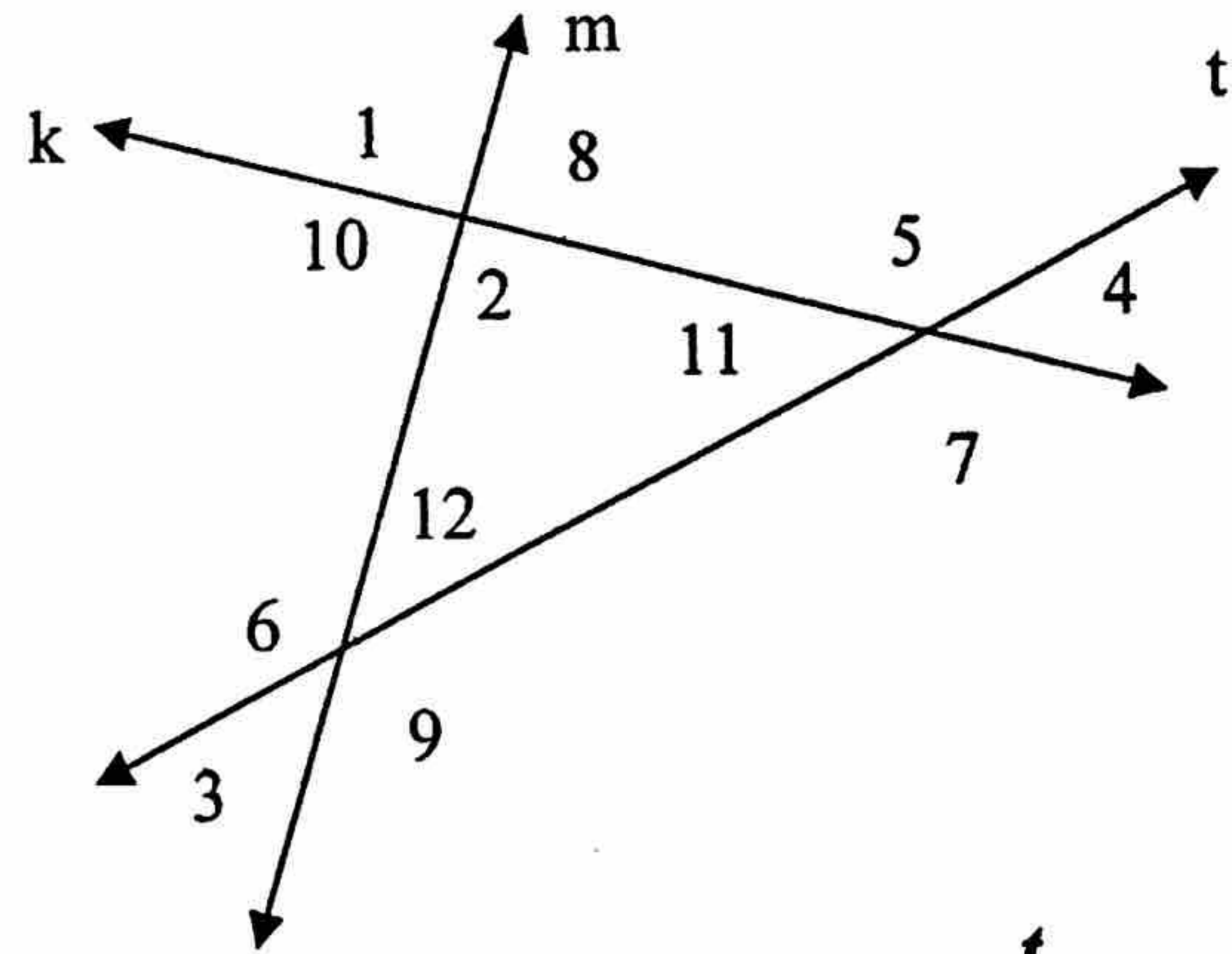
$$11y + 81 = 180$$

$$11y = 99$$

$$y = 9$$

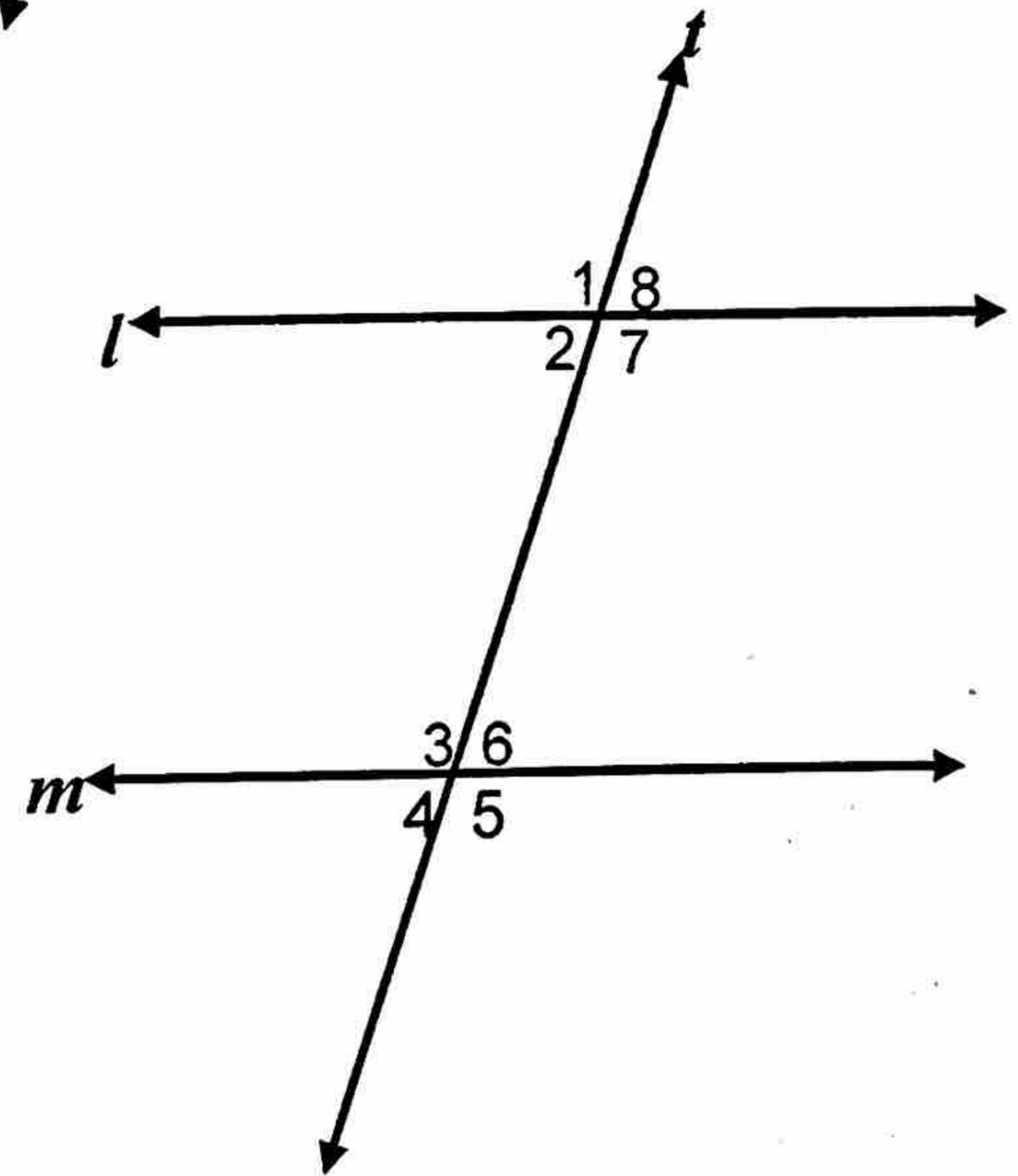
Identify each pair of angles as *alternate interior*, *alternate exterior*, *corresponding*, *same-side interior*, or *same-side exterior*.

16. $\angle 10$ and $\angle 12$ Alt. Int. Angles
 17. $\angle 7$ and $\angle 9$ SAME Side Int. Angles
 18. $\angle 1$ and $\angle 4$ SAME-Side Ext. Angles
 19. $\angle 11$ and $\angle 12$ SAME Side Int. Angles
 20. $\angle 3$ and $\angle 7$ Corresponding Angles
 21. $\angle 4$ and $\angle 8$ Corresponding Angles



22. In the figure, $l \parallel m$. Find the measure of each angle.

If $m\angle 7 = 100^\circ$, find $m\angle 3$:	100°
If $m\angle 7 = 95^\circ$, find $m\angle 6$:	85°
If $m\angle 1 = 120^\circ$, find $m\angle 5$:	60°
If $m\angle 4 = 20^\circ$, find $m\angle 7$:	160°
If $m\angle 3 = 140^\circ$, find $m\angle 8$:	40°
If $m\angle 4 = 30^\circ$, find $m\angle 1$:	150°
If $m\angle 4 = 40^\circ$, find $m\angle 2$:	40°



23. Find x and y. $x=15$, $y=19$

$$4x + 10 + 6y - 4 = 180$$

$$4(15) + 10 + 6y - 4 = 180$$

$$60 + 10 + 6y - 4 = 180$$

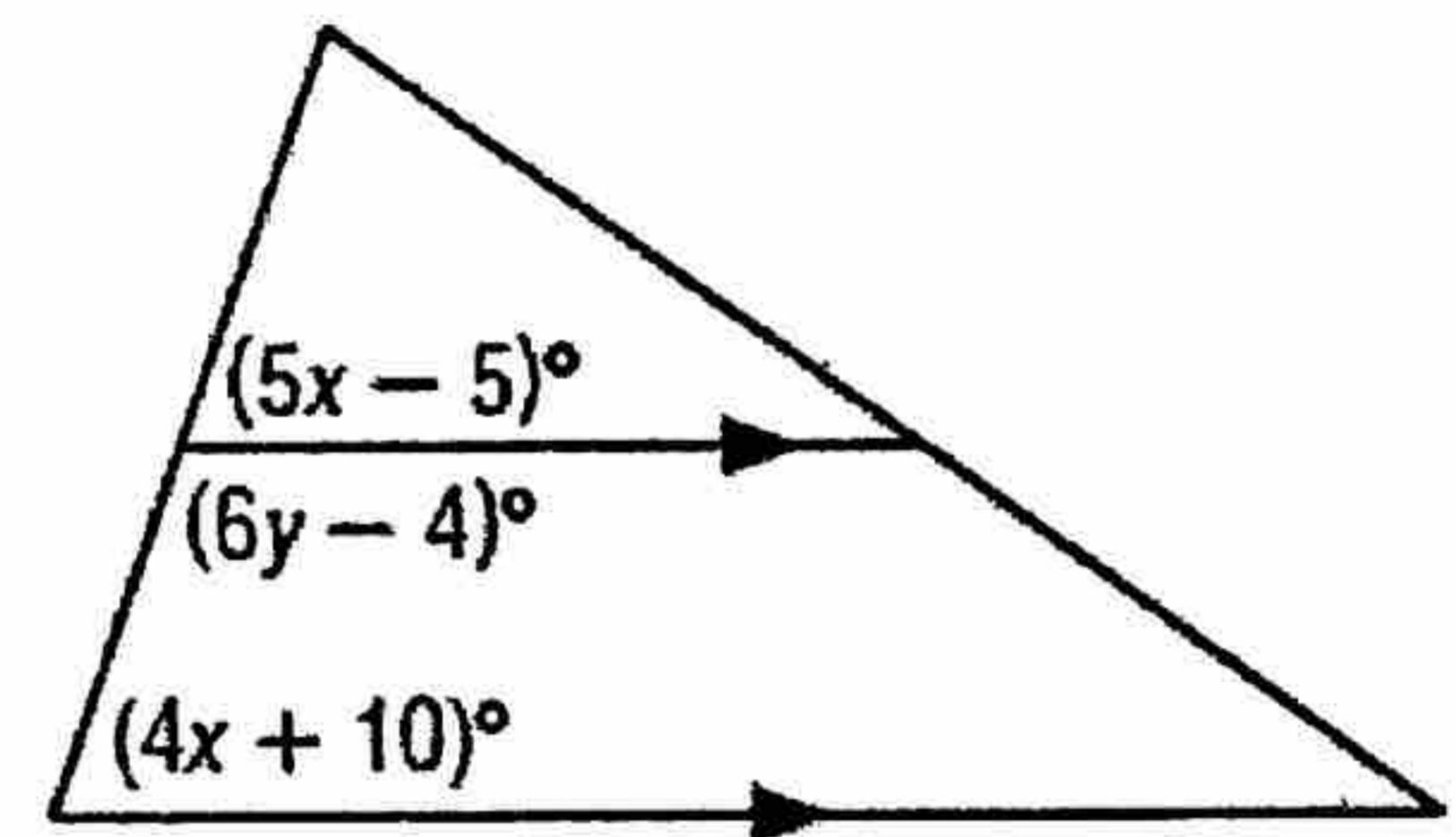
$$6y + 66 = 180$$

$$6y = 114$$

$$5x - 5 = 4x + 10$$

$$x - 5 = 10$$

$$x = 15$$



24. Find x and y. $x=10$, $y=25$

$$3x + 2y + 4y = 180$$

$$3(10) + 6y = 180$$

$$30 + 6y = 180$$

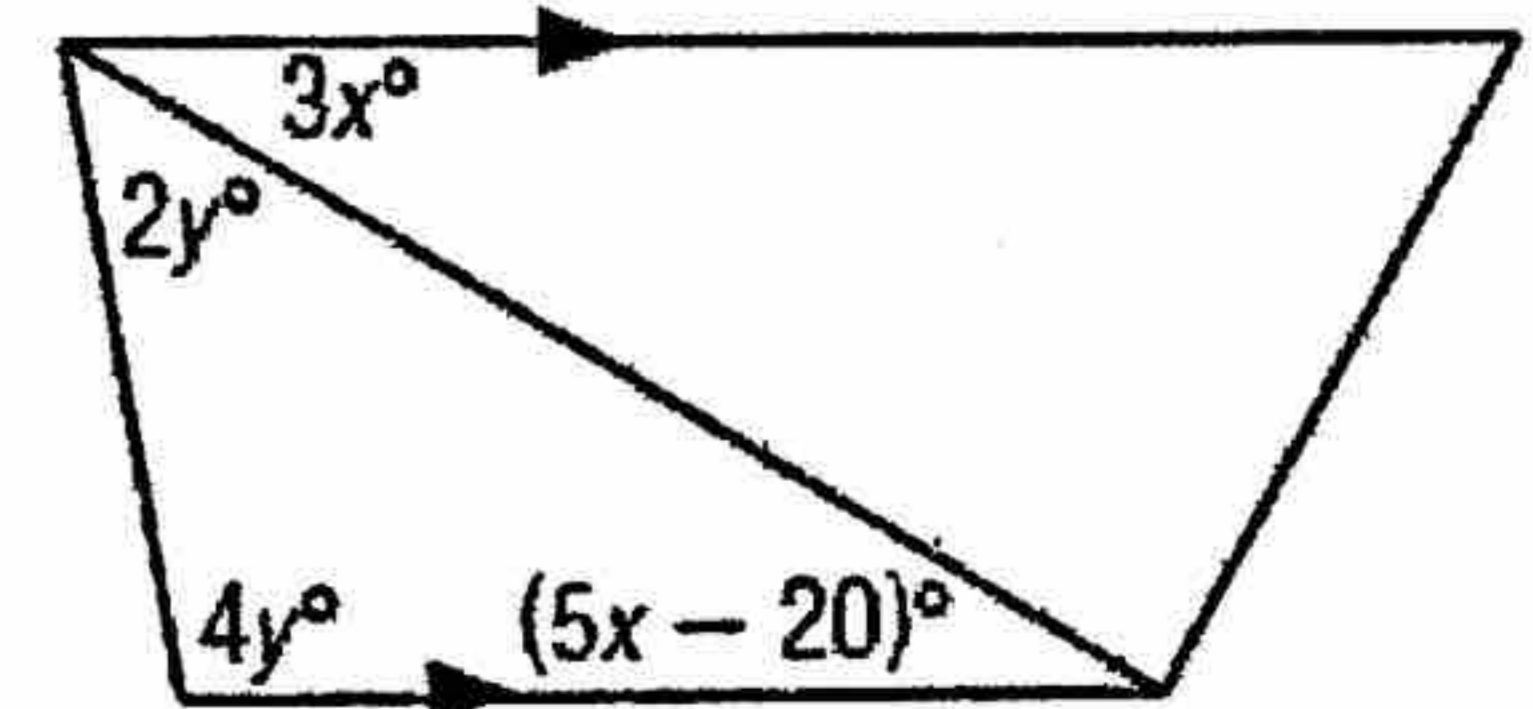
$$6y = 150$$

$$y = 25$$

$$3x = 5x - 20$$

$$-2x = -20$$

$$x = 10$$



25. Find x and y. $x=11$, $y=10$

$$5y + 5 + 13y - 5 = 180$$

$$18y = 180$$

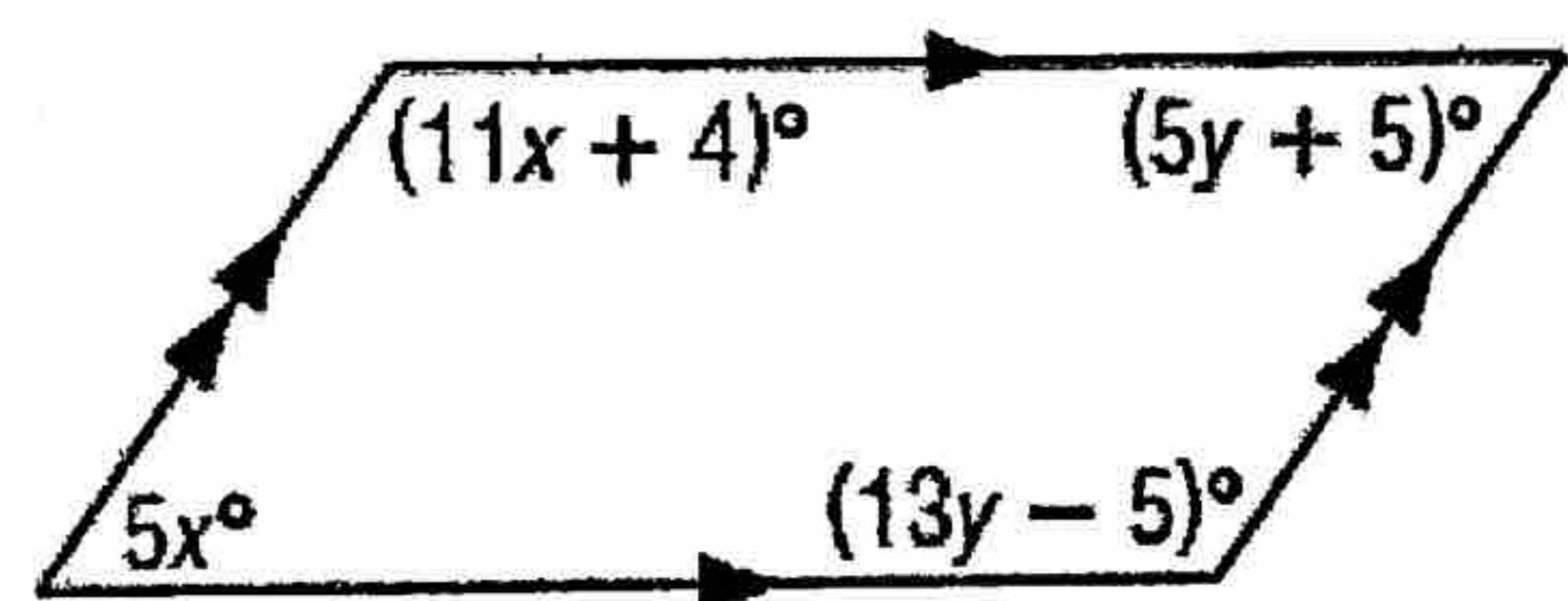
$$y = 10$$

$$5x + 11y + 4 = 180$$

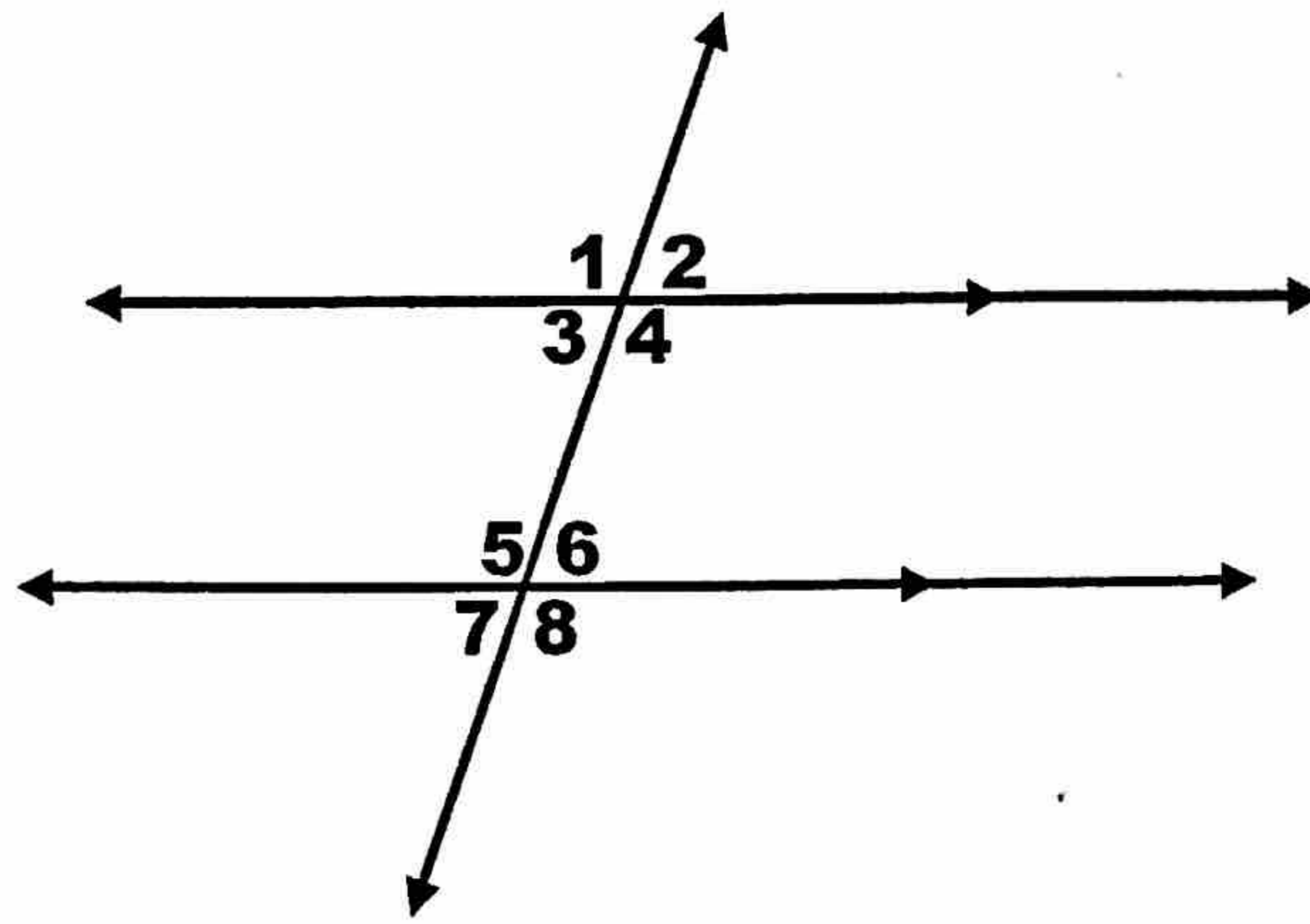
$$16x + 4 = 180$$

$$16x = 176$$

$$x = 11$$



Use the figure below to find the indicated values/measures in the problems that follow.



<p>26. $x = \underline{9}$</p> <p>$m\angle 6 = \underline{79}$</p>	<p>If $m\angle 1 = (11x + 2)^\circ$ and $m\angle 7 = (8x + 7)^\circ$, find the value of 'x' and the $m\angle 6$.</p> $11x + 2 + 8x + 7 = 180$ $19x + 9 = 180$ $19x = 171$ $x = 9$ $m\angle 6 = 8x + 7$ $= 8(9) + 7$ $= 72 + 7$ $= 79$
<p>27. $x = \underline{11}$</p> <p>$m\angle 5 = \underline{143}$</p>	<p>If $m\angle 2 = (4x - 7)^\circ$ and $m\angle 7 = (3x + 4)^\circ$, find the value of 'x' and the $m\angle 5$.</p> $4x - 7 = 3x + 4$ $x - 7 = 4$ $x = 11$ $m\angle 7 = 3x + 4$ $= 3(11) + 4$ $= 33 + 4$ $= 37$ $\begin{array}{r} 180 \\ - 37 \\ \hline 143 \end{array}$
<p>28. $x = \underline{4}$</p> <p>$m\angle 2 = \underline{32}$</p>	<p>If $m\angle 3 = (5x + 12)^\circ$ and $m\angle 7 = (8x)^\circ$ find the value of 'x' and $m\angle 2$.</p> $5x + 12 = 8x$ $12 = 3x$ $x = 4$ $m\angle 2 = 5x + 12$ $= 5(4) + 12$ $= 20 + 12$ $= 32$
<p>29. $x = \underline{7}$</p> <p>$m\angle 7 = \underline{50}$</p>	<p>If $m\angle 3 = (7x + 1)^\circ$ and $m\angle 8 = (19x - 3)^\circ$, find the value of 'x' and $m\angle 7$.</p> $7x + 1 + 19x - 3 = 180$ $26x - 2 = 180$ $26x = 182$ $x = 7$ $m\angle 7 = 7x + 1$ $= 7(7) + 1$ $= 49 + 1$ $= 50$

Solve the following for the missing values.

30. Find x , y , and z . $x=74$, $y=37$, $z=25$

$$x + 106 = 180$$

$$x = 74$$

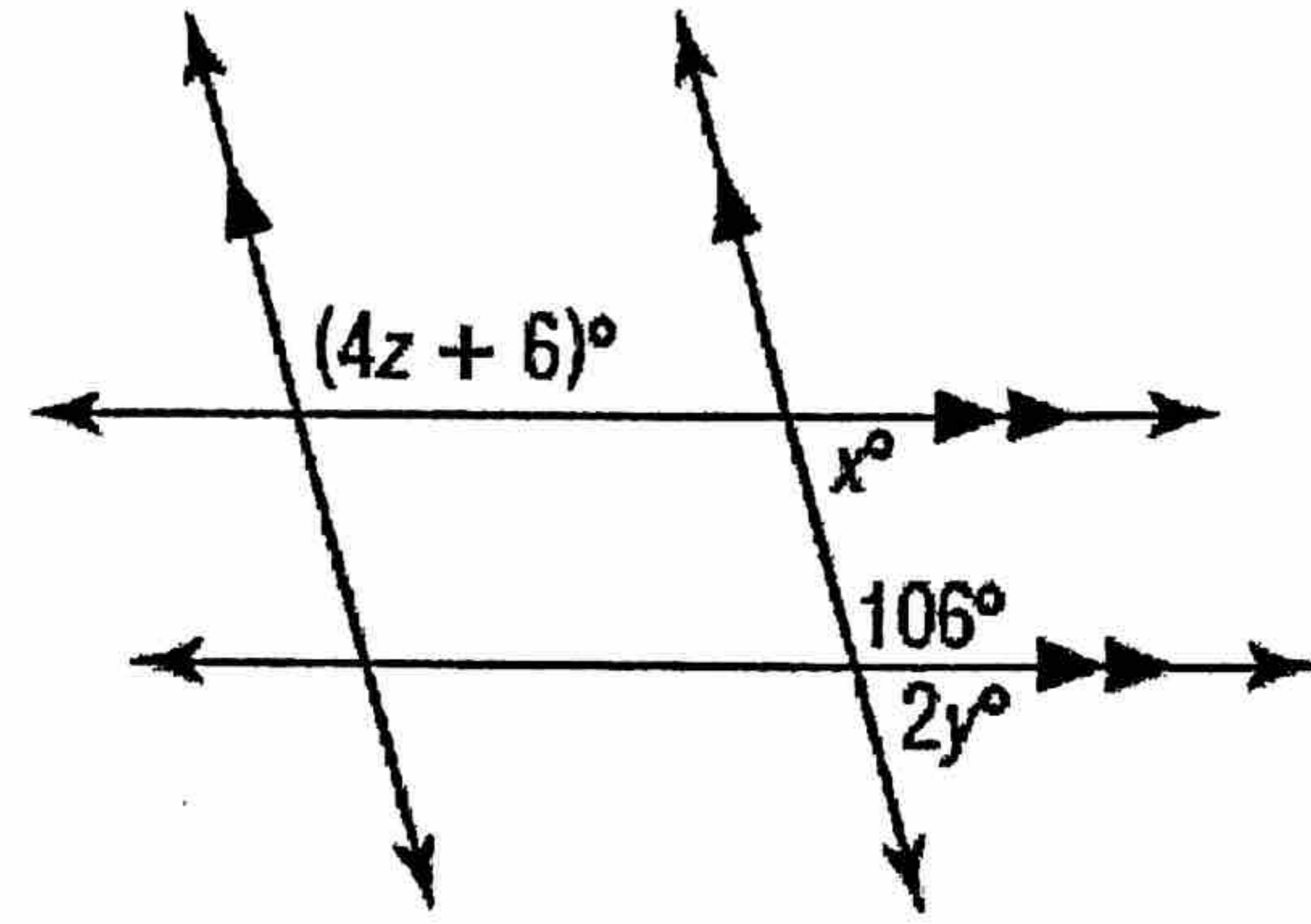
$$2y = 74$$

$$y = 37$$

$$4z + 6 = 106$$

$$4z = 100$$

$$z = 25$$



31. Find x , y , and z . $x=30$, $y=15$, $z=150$

$$2x + x + 90 = 180$$

$$2x + 90 = z$$

$$3x + 90 = 180$$

$$2(30) + 90 = z$$

$$3x = 90$$

$$60 + 90 = z$$

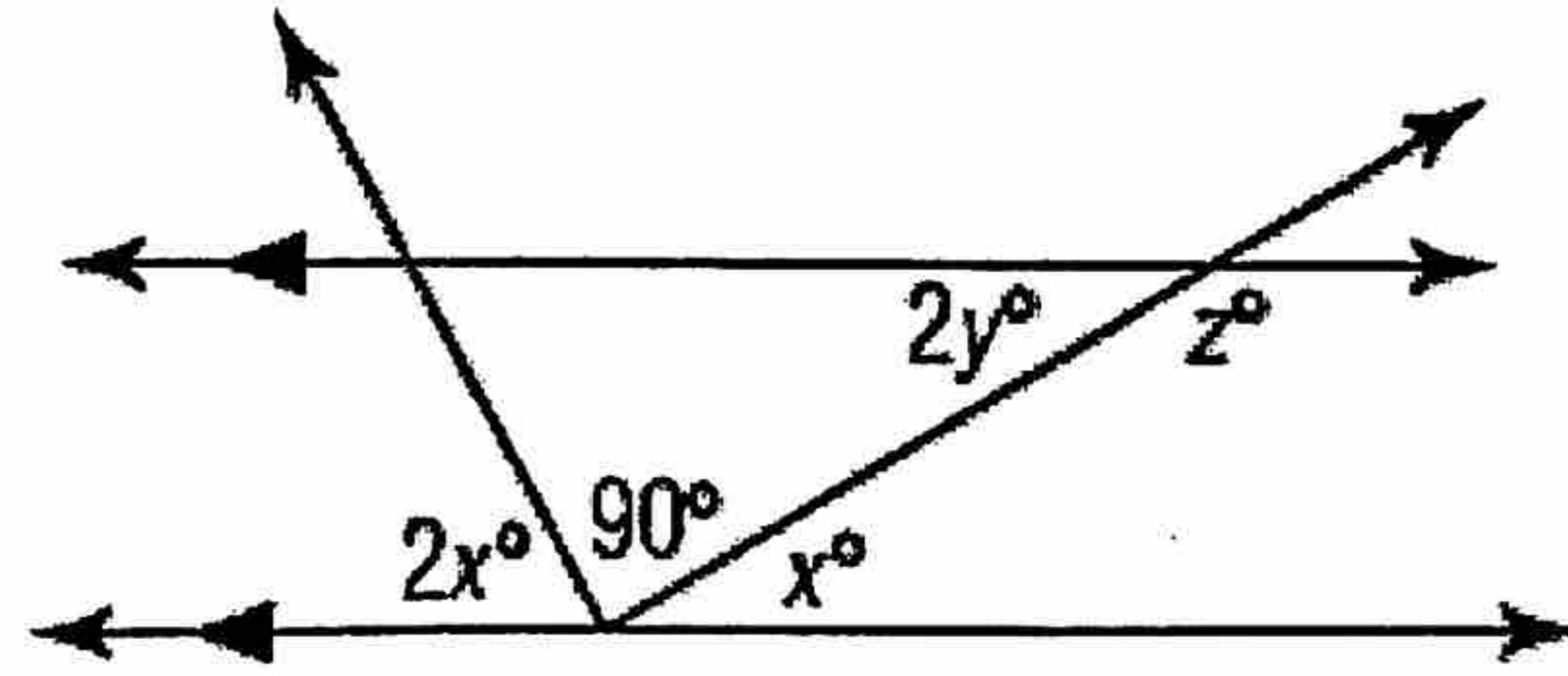
$$x = 30$$

$$150 = z$$

$$2y + 150 = 180$$

$$2y = 30$$

$$y = 15$$



32. Find x and y . $x=70$, $y=60$

$$y + 50 + 70 = 180$$

$$x + y + 50 = 180$$

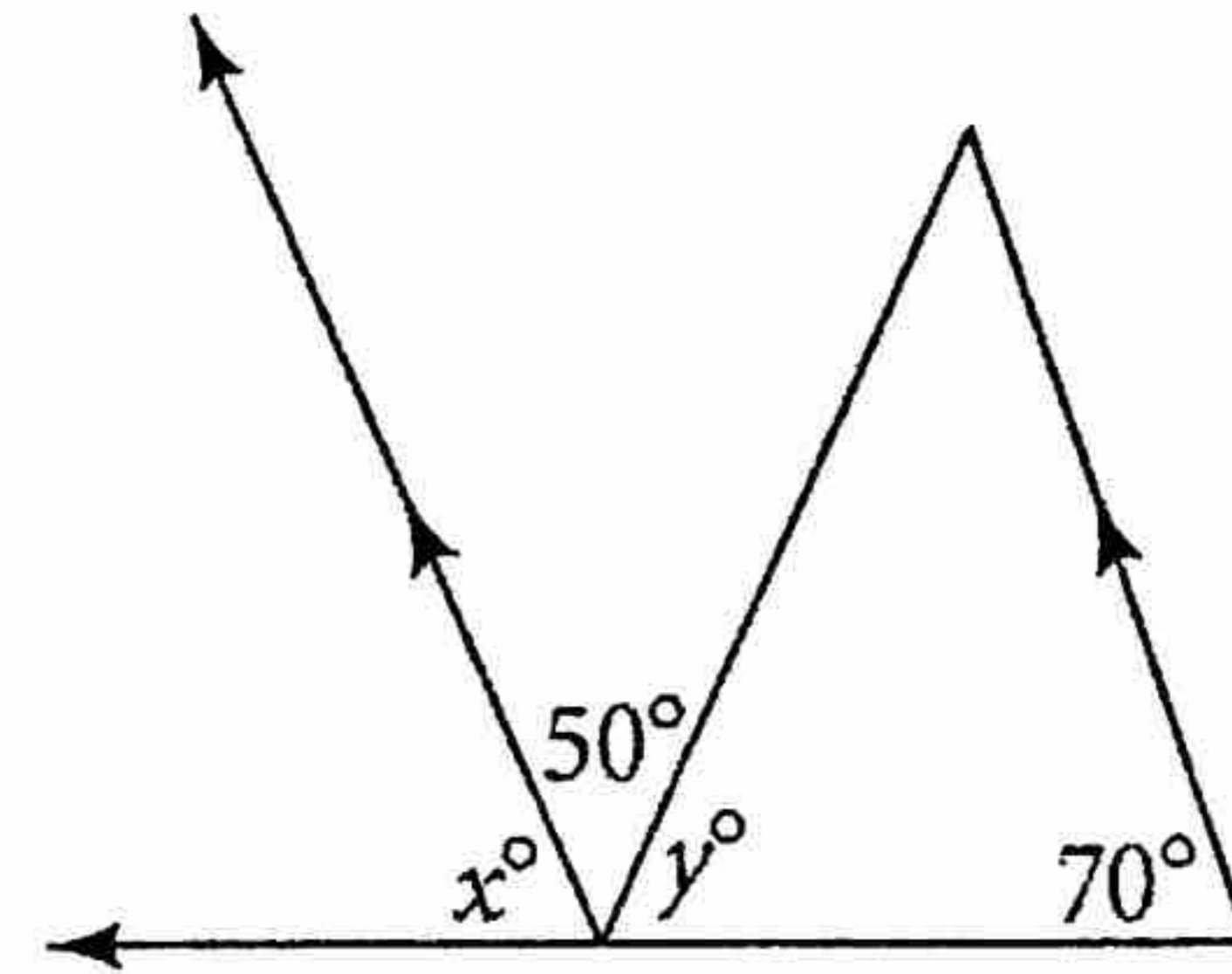
$$y + 120 = 180$$

$$x + 60 + 50 = 180$$

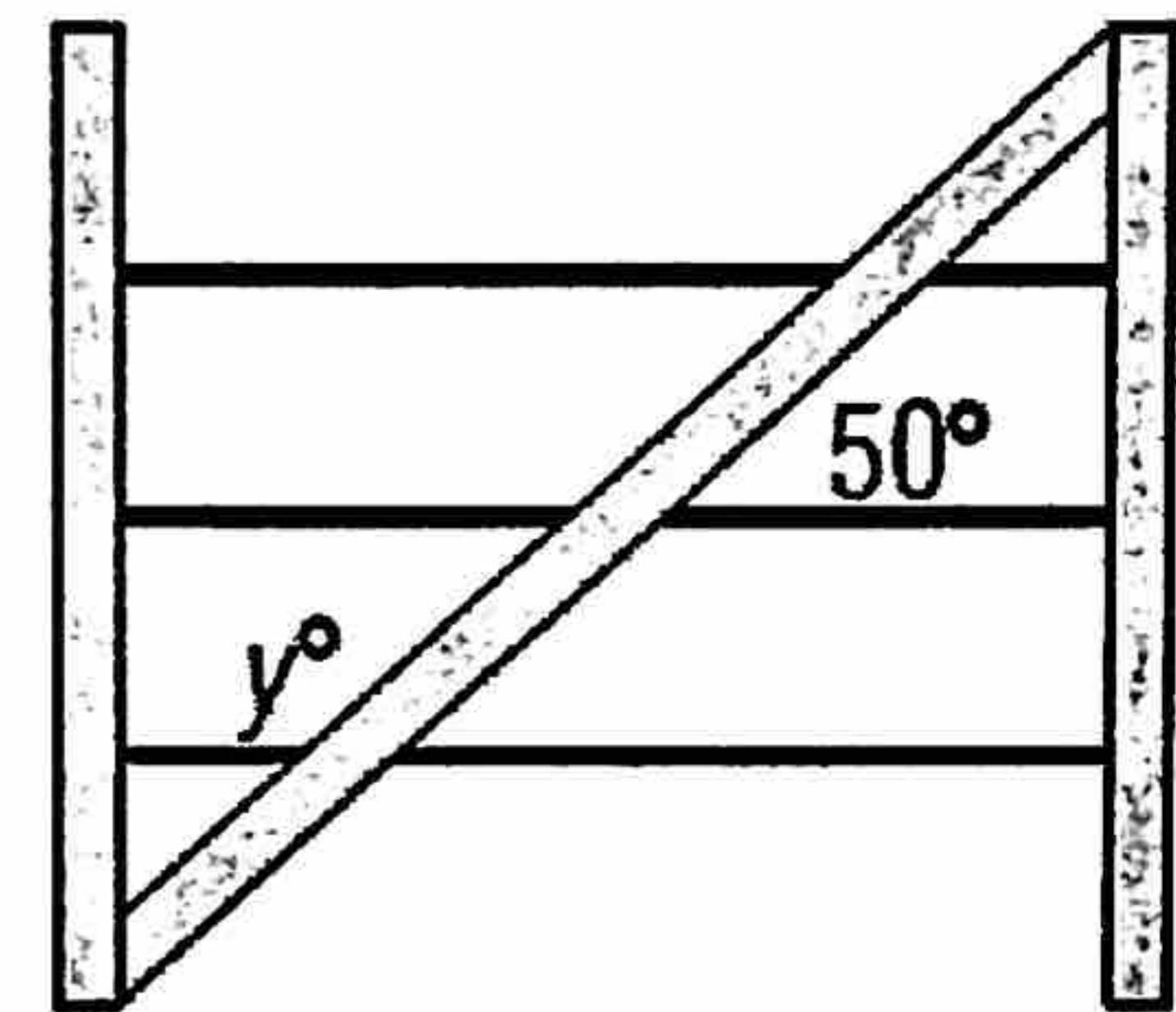
$$y = 60$$

$$x + 110 = 180$$

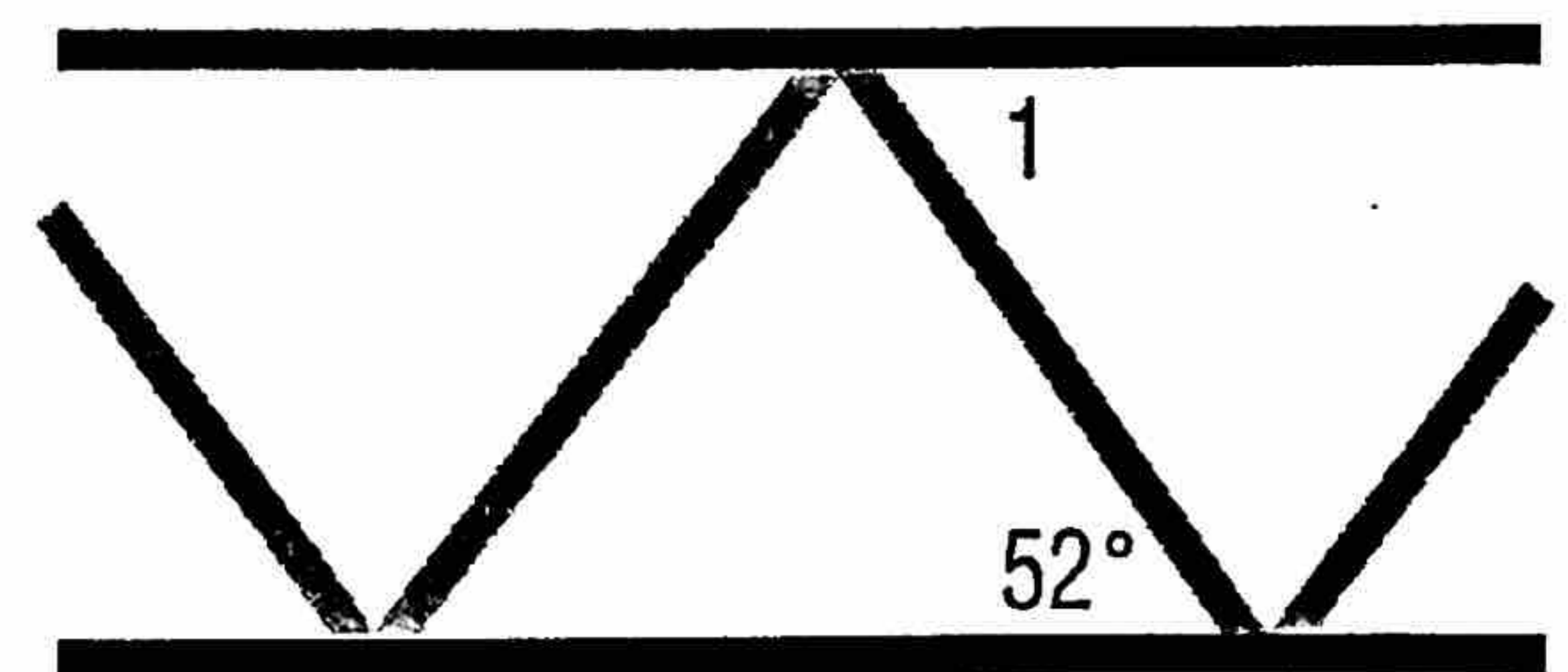
$$x = 70$$



$y=50$ 33. A diagonal brace strengthens the wire fence and prevents it from sagging. The brace makes a 50° angle with the wire as shown. Find y .



$m\angle 1 = 52$ 34. A double decker bridge has two parallel levels connected by a network of diagonal girders. One of the girders makes a 52° angle with the lower level as shown in the figure. What is the measure of angle 1?



SHOW ALL YOUR WORK TO RECEIVE FULL CREDIT

a) Find the slope of the line passing through each pair of points.

1. $(-1, 1), (-1, 9)$
 $\begin{matrix} x_1 & y_1 & x_2 & y_2 \\ -1 & 1 & -1 & 9 \end{matrix}$
 $\frac{y_2 - y_1}{x_2 - x_1} = \frac{9 - 1}{-1 - (-1)} = \frac{8}{0}$

2. $(0, -5), (-2, 4)$
 $\begin{matrix} x_1 & y_1 & x_2 & y_2 \\ 0 & -5 & -2 & 4 \end{matrix}$

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - (-5)}{-2 - 0} = \frac{9}{-2}$$

a) Undefined

a) $-\frac{9}{2}$

Graph the line given below and determine the x and y- intercepts.

3. $y = \frac{2}{5}x + 5$

x-int = -12.5

y-int = 5

$$0 = \frac{2}{5}x + 5$$

$$\frac{2}{5}x = -5$$

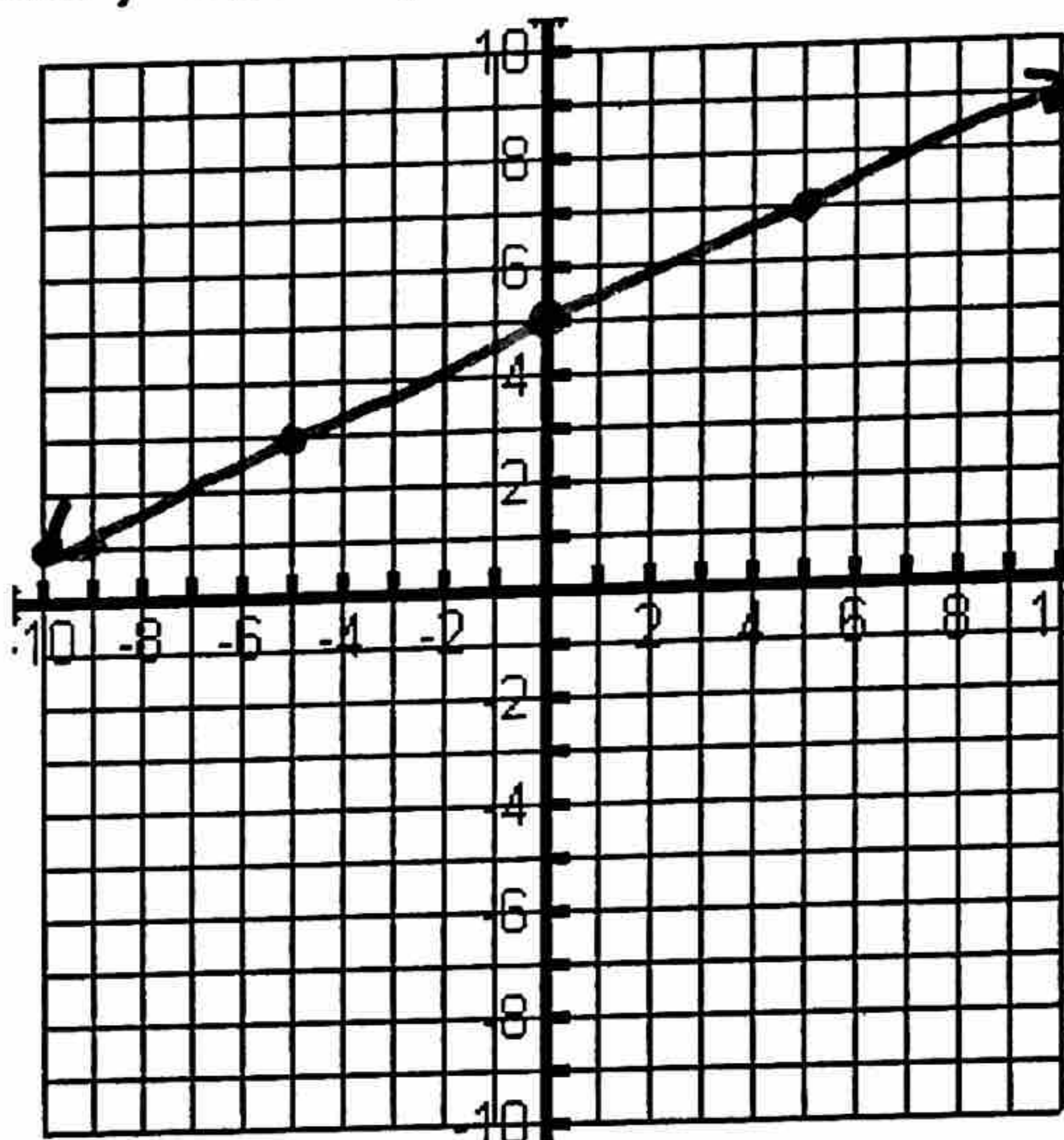
$$\frac{2x}{2} = \frac{-25}{2}$$

$$x = -12.5$$

$$y = \frac{2}{5}(0) + 5$$

$$y = 0 + 5$$

$$y = 5$$



4. Find the equation in slope intercept form for the line going through the points:

$(-1, 5), (-2, -3)$

$y - 5 = 8(x + 1)$ a) write equation in point-slope form $m = 8$

$$\frac{-3 - 5}{-2 - (-1)} = \frac{-8}{-1} = 8$$

$$y - y_1 = m(x - x_1) \quad y - 5 = 8(x + 1)$$

$y = 8x + 13$ b) Write equation in slope-intercept form

$$y - 5 = 8(x + 1)$$

$$y - 5 = 8x + 8$$

$$+5 \quad +5$$

$y = 7$ 5. Write the equation of the line with a zero slope containing $(-4, 7)$.