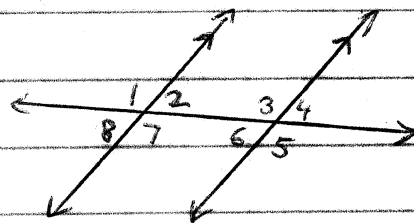


Geometry Ch 3-2 Exercises pg 149, #1-2, 4-7, 17-24, 27-33, 35-36

1. Draw a pair of parallel lines and a transversal. Label a pair of corresponding angles.



$\angle 1$ and $\angle 3$; $\angle 2$ and $\angle 4$; $\angle 8$ and $\angle 6$; $\angle 7$ and $\angle 5$

2. Two parallel lines are cut by a transversal. Which pairs of angles are \cong ? Supplementary?

\cong Angles: Alt Interior, Alt Exterior, Vertical, correspond'g.

Supplementary: Any adjacent angles, consecutive interior, exterior angles on the same side of the transversal, exterior to one of the parallel lines with the interior of the other parallel opposite the transversal.

Find the angle measure. Justify.

4. If $m\angle 4 = 65^\circ$, then $m\angle 1 = 45^\circ$

Vertical Angles

5. If $m\angle 7 = 110^\circ$, then $m\angle 2 = 110^\circ$

Alt. Exterior Angles

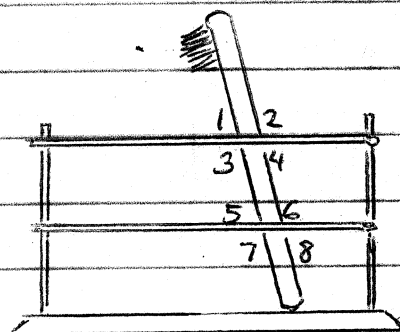
6. If $m\angle 5 = 71^\circ$, then $m\angle 4 = 71^\circ$ Alt Interior Angles

7. If $m\angle 3 = 117^\circ$, then $m\angle 5 = 63^\circ$

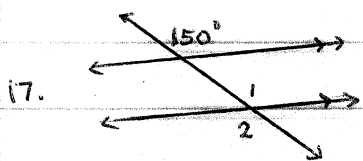
Consecutive Interior Angles

8. If $m\angle 8 = 54^\circ$, then $m\angle 1 = 54^\circ$

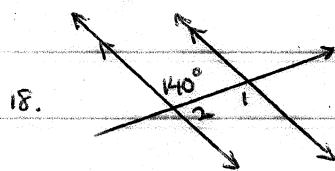
Alt Exterior Angles



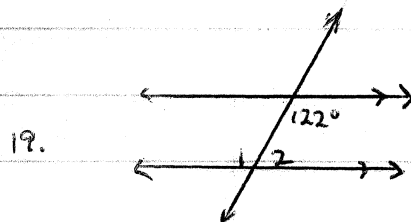
Find $m\angle 1$ and $m\angle 2$. Justify.



$m\angle 1 = 150^\circ$, corresponding
 $m\angle 2 = 30^\circ$, Alt Exterior

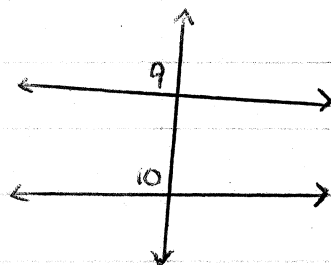


$m\angle 1 = 140^\circ$, Alt Interior
 $m\angle 2 = 40^\circ$, Linear Pair
w/ 140°



$m\angle 1 = 122^\circ$, Alt Interior
 $m\angle 2 = 58^\circ$, Consec Int.

20. A student concludes that from the diagram $\angle 9 \cong \angle 10$ by the Corresponding Angles Postulate. Describe/correct the error.



Positionally, the two angles are corresponding. However, there is no indication of parallel lines, thus we may not assume congruency.

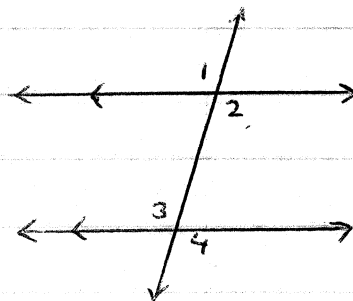
21. Given $p \parallel q$, describe two methods that show $\angle 1 \cong \angle 4$.

① $\angle 1 \cong \angle 4$ by Alt Exterior Angles.

② $\angle 1 \cong \angle 2$ by Vertical Angles.

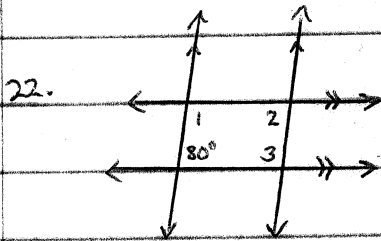
$\angle 2 \cong \angle 4$ by Corresponding Angles

Thus $\angle 1 \cong \angle 4$ by Transitive Property.



[Other correct combinations exist].

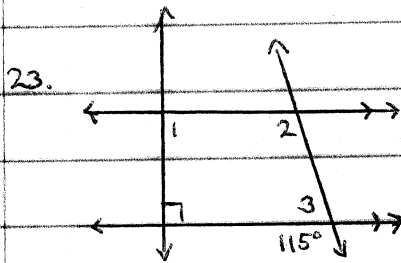
Find $m\angle 1$, $m\angle 2$, $m\angle 3$. Justify.



$\angle 1$ is a Consec. Interior with 80° . $\therefore m\angle 1 = 100^\circ$

$\angle 2$ is a Consec Interior with $\angle 1$, which was just show to equal 100° . $\therefore m\angle 2 = 80^\circ$

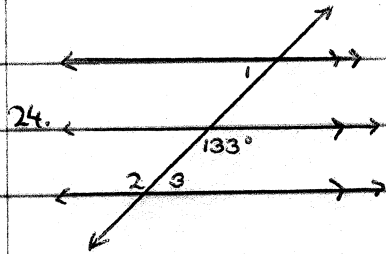
$\angle 3$ is a Consec Int with 80° . $\therefore m\angle 3 = 100^\circ$



$\angle 1$ is a Consec. Int. with a right angle, known to be 90° . $\therefore m\angle 1 = 90^\circ$

$\angle 2$ is corresponding to 115° . $\therefore m\angle 2 = 115^\circ$

$\angle 3$ is a linear pair with 115° . $\therefore m\angle 3 = 65^\circ$

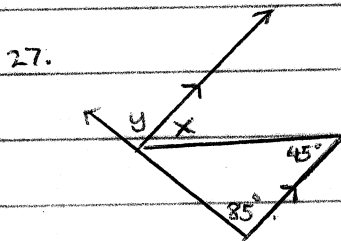


$\angle 3$ is consec interior to 133° . $\therefore m\angle 3 = 47^\circ$

$\angle 2$ is alt int. to 133° . $\therefore m\angle 2 = 133^\circ$

$\angle 1$ is an alt int to $\angle 3$, which was just ~~to~~ show to equal 47° . $\therefore m\angle 1 = 47^\circ$

ALGEBRA Find the values of x and y .



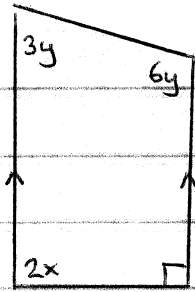
x is alt interior with 45°

$$\therefore m\angle x = 45^\circ$$

y is corresponding to 85°

$$\therefore m\angle y = 85^\circ$$

28.



$2x$ is a consec. interior angle with a right angle

$$2x + 90 = 180$$

$$2x = 90$$

$$x = 45$$

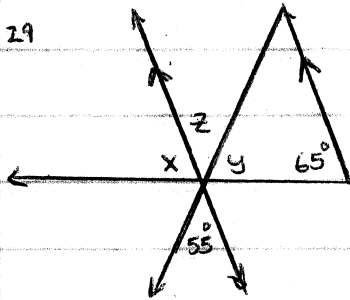
$3y$ and $6y$ are consec. interior angles

$$3y + 6y = 180$$

$$9y = 180$$

$$y = 20$$

29



x is corresponding to 65°

$$x = 65$$

z is vertical to 55°

$$x + z + y = 180$$

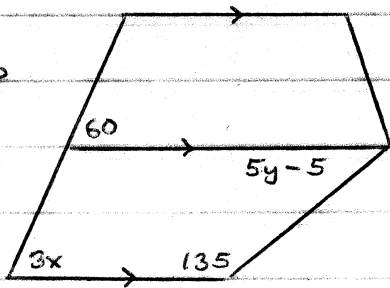
x, y, z form a "linear triple".

$$65 + 55 + y = 180$$

$$120 + y = 180$$

$$y = 60$$

30



$3x$ and 60° are

$$3x = 60$$

corresponding

$$x = 20$$

$5y-5$ and 135° are

$$5y-5 + 135 = 180$$

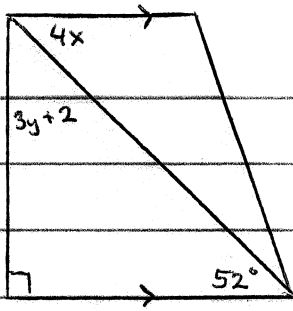
consec. interiors.

$$5y + 130 = 180$$

$$5y = 50$$

$$y = 10$$

31.



$4x$ and 52° are
alternating interiors

$$4x = 52$$

$$x = 13$$

Together, $4x$ and $3y+2$
are consec interiors
to a right angle.

$$(4x + 3y + 2) + 90 = 180$$

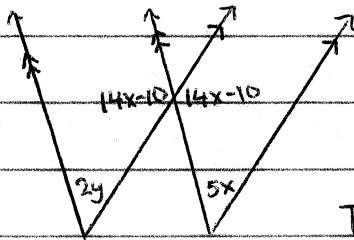
$$52 + 3y + 2 = 90$$

$$3y + 54 = 90$$

$$3y = 36$$

$$y = 12$$

32.



$14x-10$ and $5x$ are
consec. int angles.

$$14x - 10 + 5x = 180$$

$$19x = 190$$

$$x = 10$$

The measure of the $14x-10$ angle is

$$14(10) - 10 = 130$$

$2y$ and the vertical angle \cong to 130° form consecutive
interior angles.

$$2y + 130 = 180$$

$$2y = 50$$

$$y = 25$$

33. What is the value of y in the diagram?

a. 70

b. 75

c. 110

d. 115

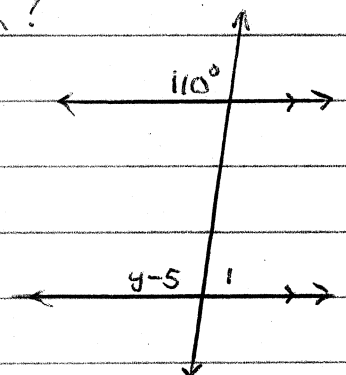
$$110 = \angle 1, \text{ Alt Ext.}$$

$$y - 5 + \angle 1 = 180, \text{ Linear Pair}$$

$$y - 5 + 110 = 180, \text{ Substitution}$$

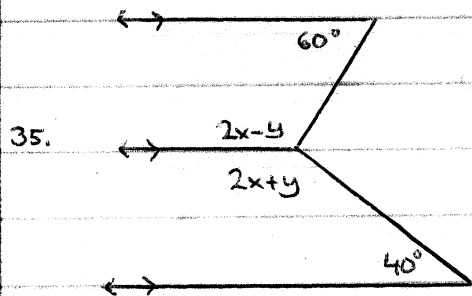
$$y + 105 = 180$$

$$y = 75$$



This reviews Systems of Equations from Algebra 1

Find the values of x and y .



$$2x - y + 60 = 180$$

Consec. Interior

$$2x - y = 120$$

$$-y = -2x + 120$$

$$y = 2x - 120$$

A second equation is needed to solve for x and y

$$2x + y + 40 = 180$$

Another pair of Consec. interiors

$$2x + y = 140$$

$$y = 140 - 2x$$

$$2x - 120 = 140 - 2x$$

Substitute expression from first set of consec. interiors.

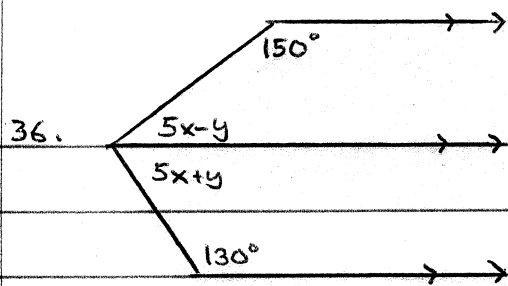
$$4x = 260$$

$$x = 65$$

$$y = 2(65) - 120$$

$$y = 130 - 120$$

$$y = 10$$



Algebraically, this problem is identical to #35.

$$150 + 5x - y = 180 \quad \text{Consec. Int.}$$

$$5x - y = 30$$

$$-y = -5x + 30$$

$$y = 5x - 30$$

$$5x + y + 130 = 180 \quad \text{2}^{\text{nd}} \text{ set of Consec. Interior Angles.}$$

$$5x + y = 50$$

$$y = 50 - 5x$$

$$5x - 30 = 50 - 5x$$

Substitution from 1st set of Consec. int.

$$10x = 80$$

$$\boxed{x = 8}$$

$$y = 5(8) - 30$$

$$y = 40 - 30$$

$$\boxed{y = 10}$$