Lessons 3-2 & 3-5

Angles and Parallel Lines

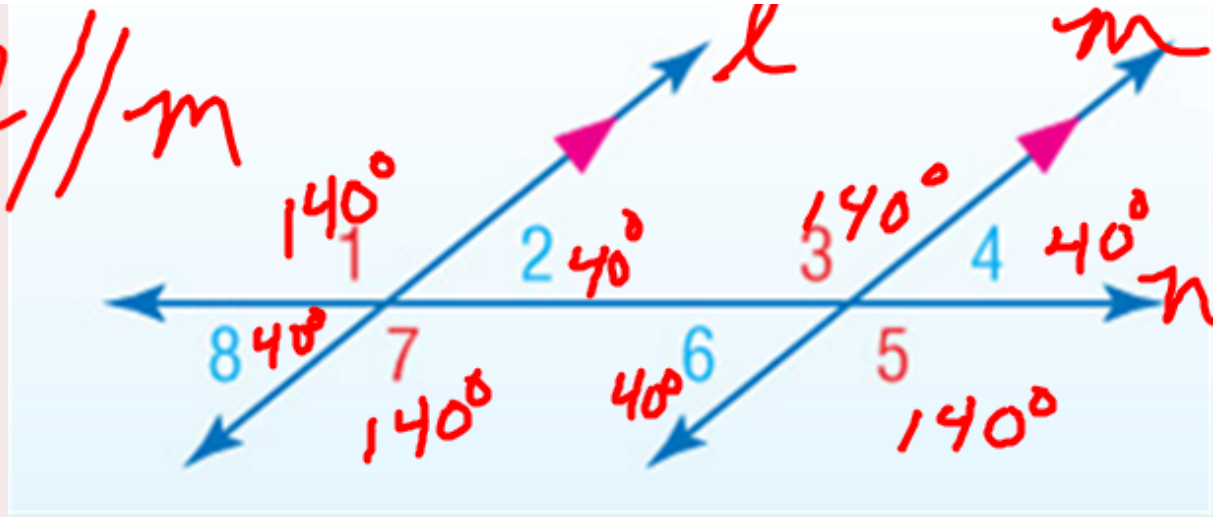
You will use theorems to determine the relationship between special angle pairs.

You will use algebra to find angle measures

You will recognize angle pairs that occur with parallel lines

You will prove that two lines are parallel

If 2 parallel lines are cut by a transversal...



Corresponding angles $\cong$

$\angle 1 \cong \angle 3$, $\angle 5 \cong \angle 7$, $\angle 8 \cong \angle 6$, $\angle 2 \cong \angle 4$

Alt Int angles $\cong$

$\angle 2 \cong \angle 6$ $\angle 7 \cong \angle 3$

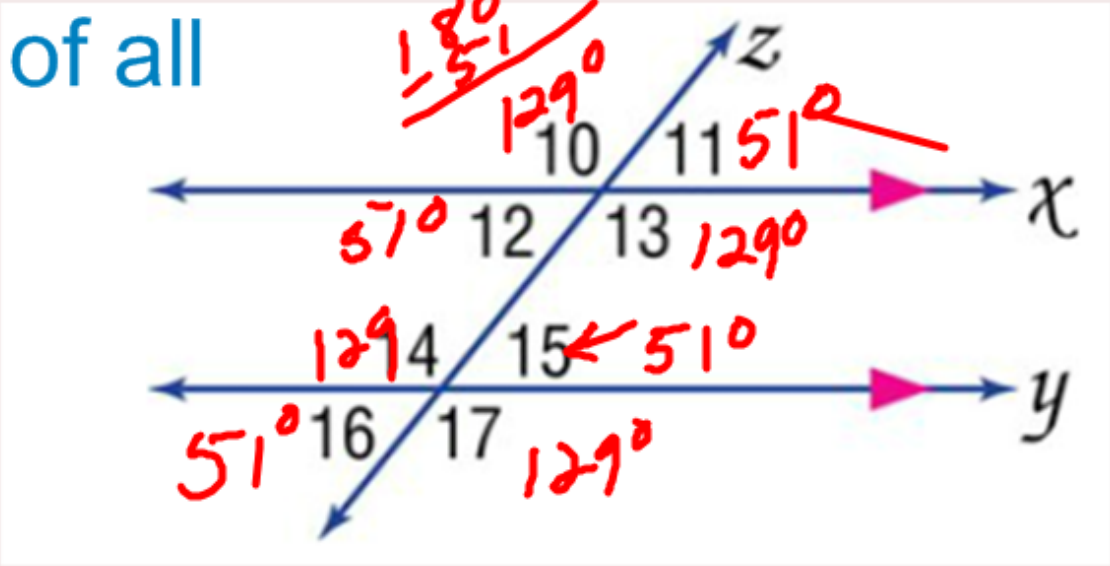
Alt Ext angles $\cong$

$\angle 8 \cong \angle 4$, $\angle 1 \cong \angle 5$

Consec Int Supplementary

$m\angle 2 + m\angle 3 = 180$ $m\angle 7 + m\angle 6 = 180°$

In the figure, m∠15 = 51, find the measures of all the other ∠'s.



m∠10 = 129°

m∠11 = 51°

m∠12 = 51°

m∠13 = 129°

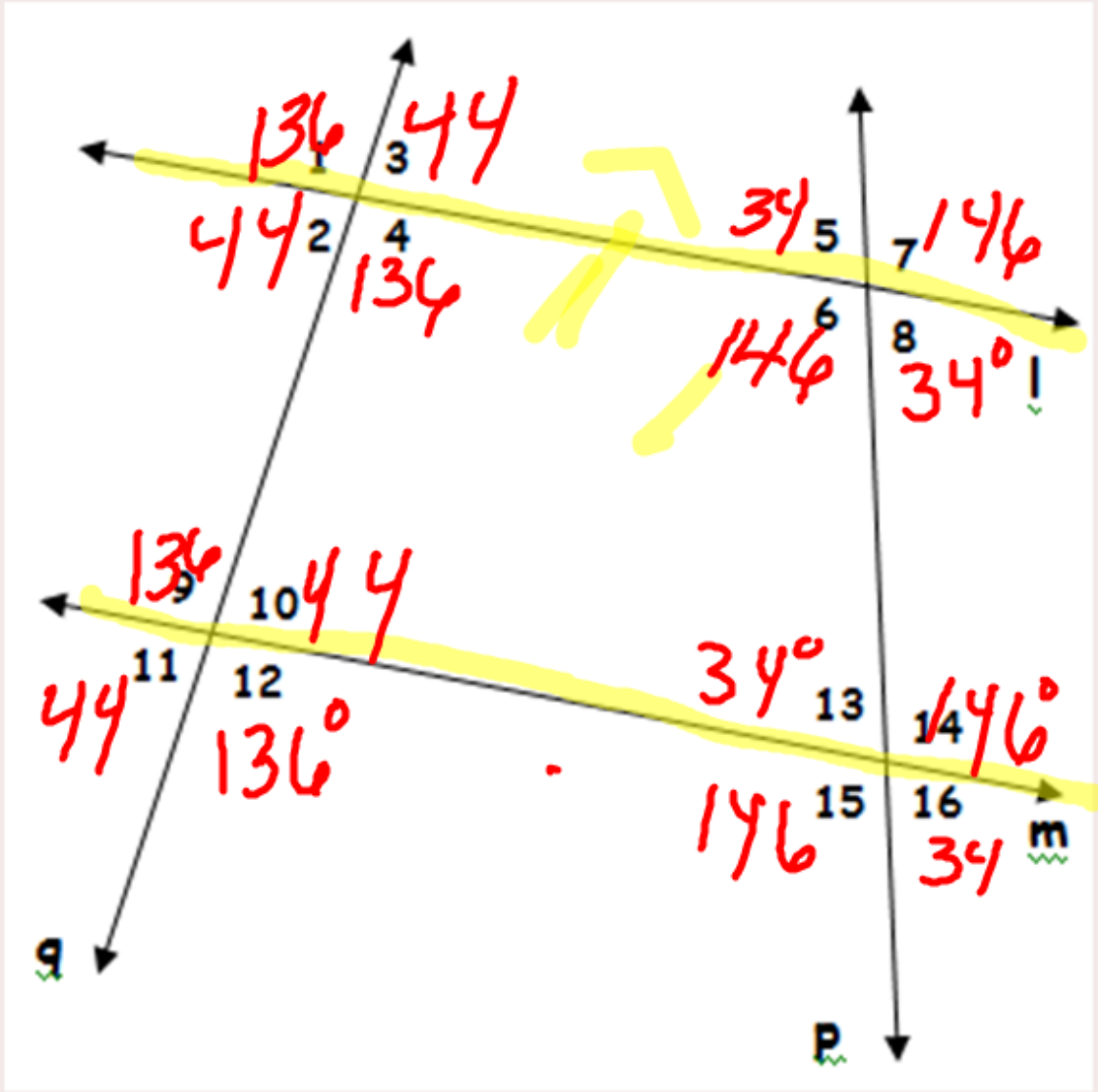
m∠14 = 129°

m∠16 = 51°

m∠17 = 129°

If l // m, m∠8=34° and m∠12=136°, find the measures of the following angles.

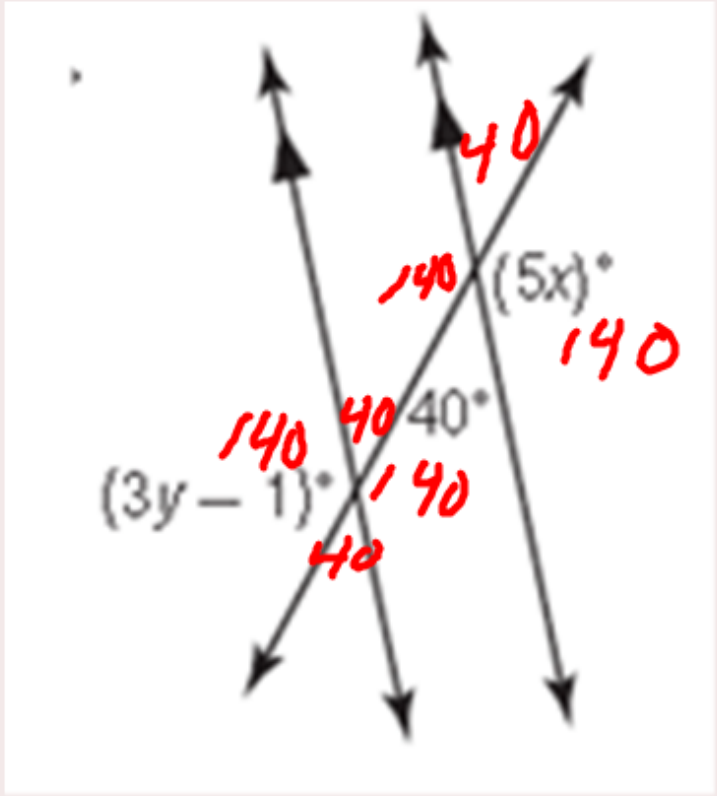
m∠1 = 136°
m∠2 = 44°
m∠3 = 44°
m∠4 = 136°
m∠5 = 34°
m∠6 = 146°
m∠7 = 146°
m∠9 = 136°
m∠10 = 44°
m∠11 = 44°
m∠13 = 34°
m∠14 = 146°
m∠15 = 146°
m∠16 = 34°



Find the value of the variable(s)

x = 28

y = 47



$5x + 40 = 180$

$-40 \quad -40$

$5x = 140$

$5x = 140$

$\frac{5}{5} \quad \frac{}{5}$

$x = 28$

$5x = 140$

$3y - 1 = 140$

$+1 \quad +1$

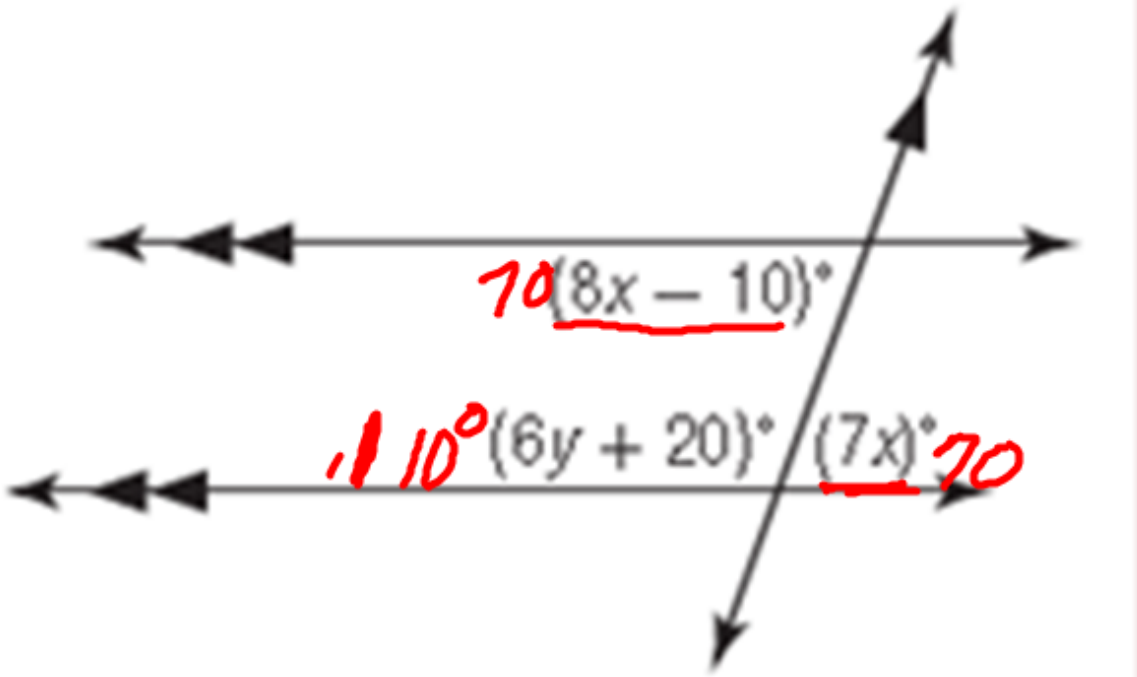
$3y = 141$

$\frac{3y}{3} = \frac{141}{3}$

$y = 47$

x = 10

y = 15



$8x - 10 = 7x$

$-8x \quad -8x$

$-10 = -1x$

$\frac{-10}{-1} = \frac{-1x}{-1}$

$10 = x$

$110 = 6y + 20$

$-20 \quad -20$

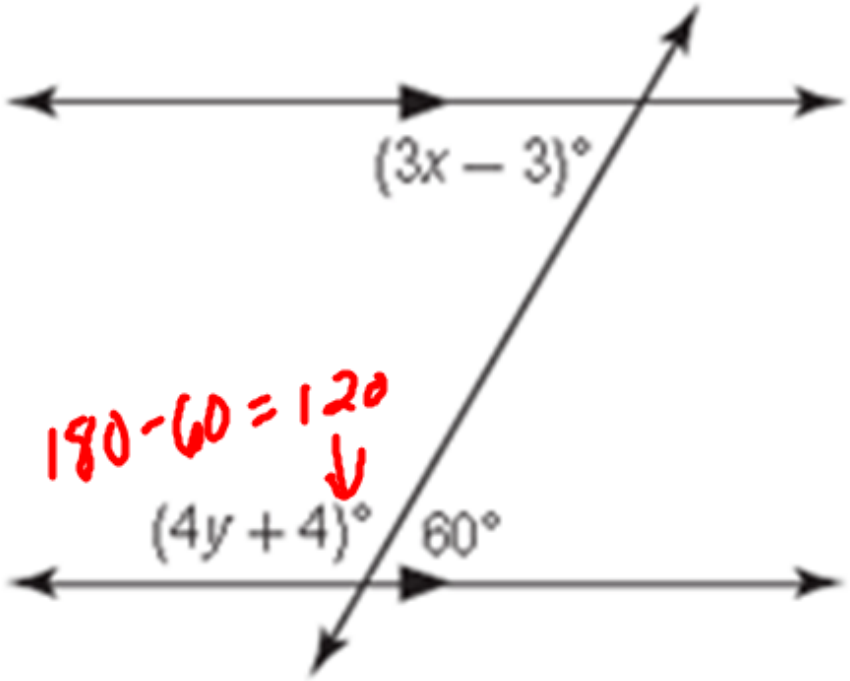
$90 = 6y$

$\frac{90}{6} = \frac{6y}{6}$

$15 = y$

x = 21

y = 29



$3x - 3 = 60$

$+3 \quad +3$

$\frac{3x}{3} = \frac{63}{3}$

$x = 21$

$4y + 4 = 120$

$-4 \quad -4$

$\frac{4y}{4} = \frac{116}{4}$

$y = 29$

Proving Lines Parallel

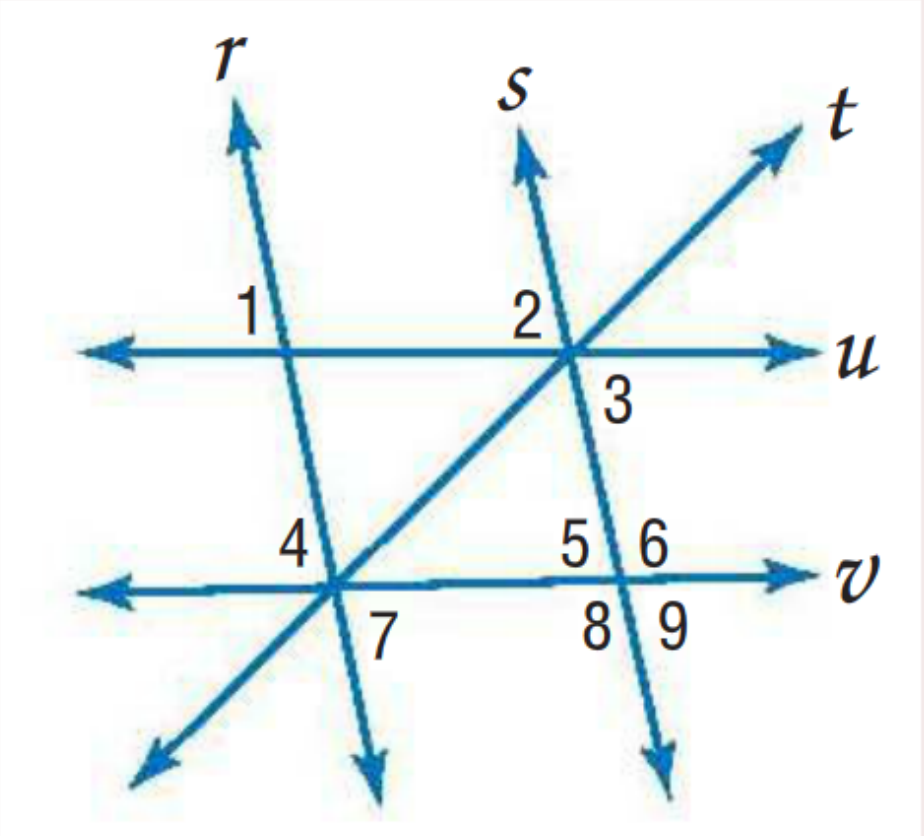
Given the following information, determine which lines, if any are parallel.

$\angle 1 \cong \angle 2$

yes $r \parallel s$

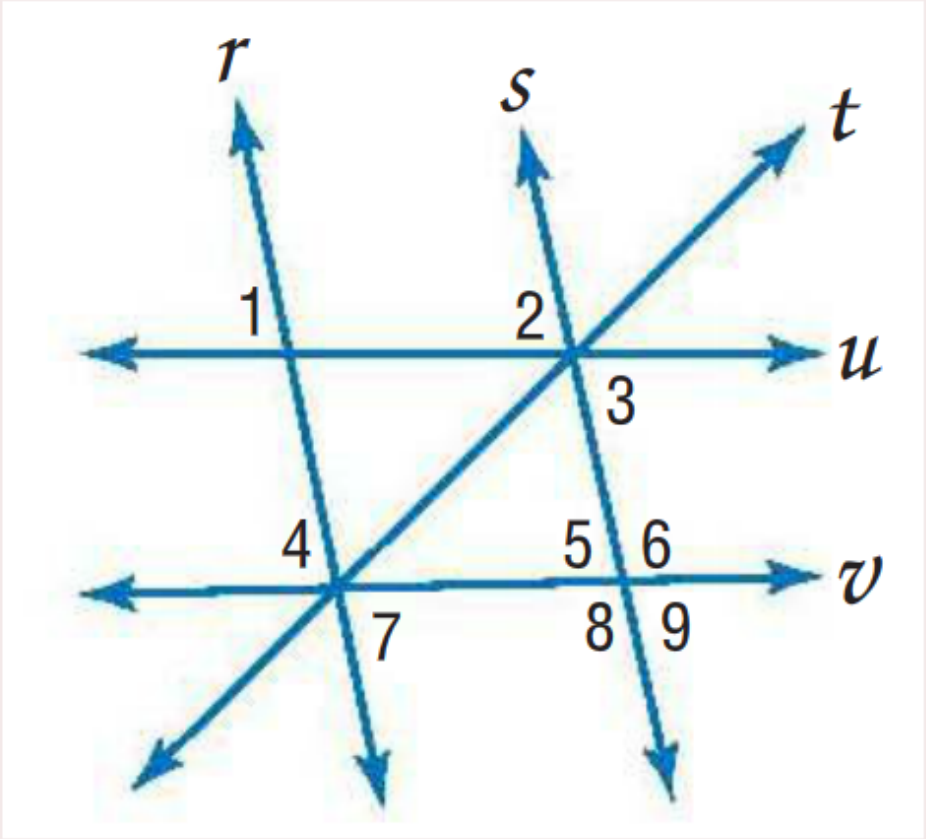
$\angle 5 \cong \angle 7$

yes $r \parallel s$



$m\angle 3 + m\angle 6 = 180$

$u \parallel v$

$\angle 3 \cong \angle 7$

Can't prove lines $\parallel$