NAME _____ DATE _____ PERIOD _____

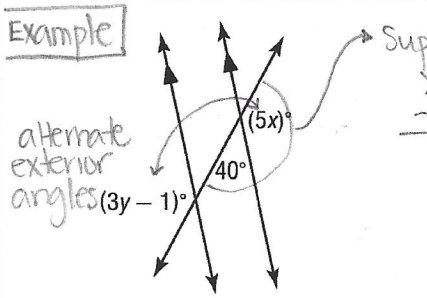
LT 1.2 Skills Practice #1: Algebra

Angles and Parallel Lines

Find the value of the variable(s) in each figure. Explain your reasoning (Justification).

1. What do we know from the picture?

Example



alternate exterior angles

Supplementary

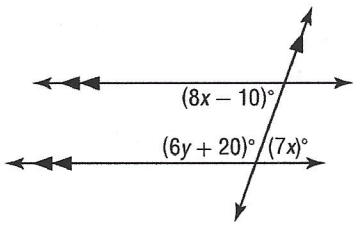
$40+5x=180$
$-40 \quad -40$
$\frac{5x}{5}=\frac{140}{5}$
$x=28$

alternate Exterior angles

$3y-1=5x$
$3y-1=5(28)$
$3y+1=140$
$+1 \quad +1$
$\frac{3y}{3}=\frac{141}{3}$
$y=47$

Statement	Justification
① $40+5x=180°$ $-40 \quad -40$	① Definition of supplementary *
② $\frac{5x}{5}=\frac{140°}{5}$	② subtraction (by 40)
③ $x=28$	③ Division by 5
④ $3y-1=5x$	④ Alternate Exterior ∠ Theorem *
$3y-1=5(28)$	⑤ substitution
⑥ $3y=141$	⑥ Addition
⑦ $y=47$	⑦ Division

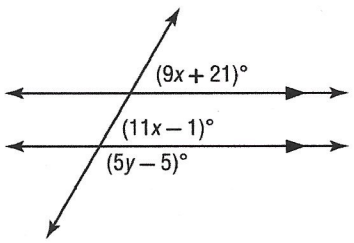
2. What do we know from the picture?



Statement	Justification
① $8x-10=7x$ $-7x \quad +10 \quad -7x \quad +10$ $x=10$	① Alternate Interior ∠ Post.
② $(8x-10)+(6y+20)=180$ $(8(10)-10)+6y+20=180$ $70+6y+20=180$ $90+6y=180$ $6y=90$ $y=15$	② Def. of supp. ∠s substitution

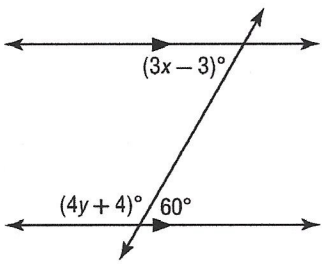
3. What do we know from the picture?

All x's together
Then x's & y's



Statement	Justification
① $9x+21=11x-1$ $21=2x-1$ $22=2x$ $11=x$	① Corresponding
② $(11x-1)+(5y-5)=180°$ $11x+5y-6=180$ $11(11)+5y=186$ $121+5y=186$ -121 $5y=65$ $y=13$	② Def. of supplementary

4. What do we know from the picture?



Statement	Justification
① $(3x-3)=60$ $3x=63$ $x=21$	① Alternate Interior ∠s
② $(3x-3)+(4y+4)=180$ $3x+4y+1=180$ $3(21)+4y=179$ $63+4y=179$ -63 $4y=116$ $y=29$	② consecutive interior ∠s