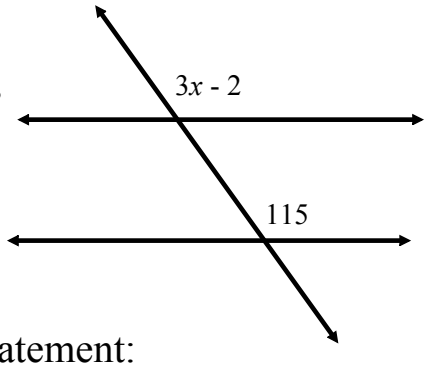
Warm Up

1. If the two horizontal lines are parallel, find the value of x.

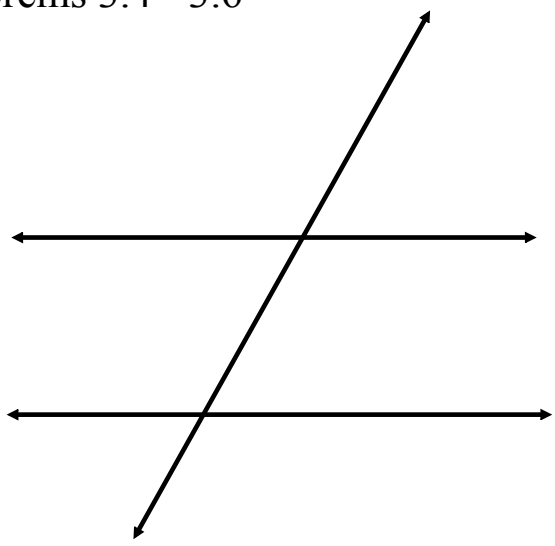


2. Write the converse of the following statement:
If it is raining, then Isaac needs an umbrella.

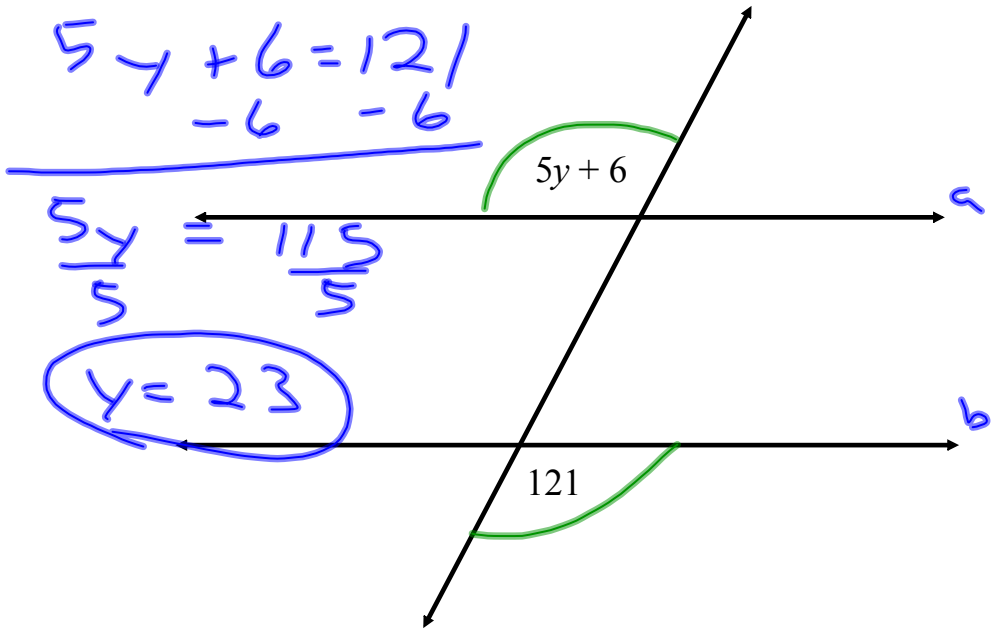
3. Solve for x: $5x - 17 = 2x - 5$

3-3 Proving Lines are Parallel

Check postulate #16 and theorems 3.4 - 3.6

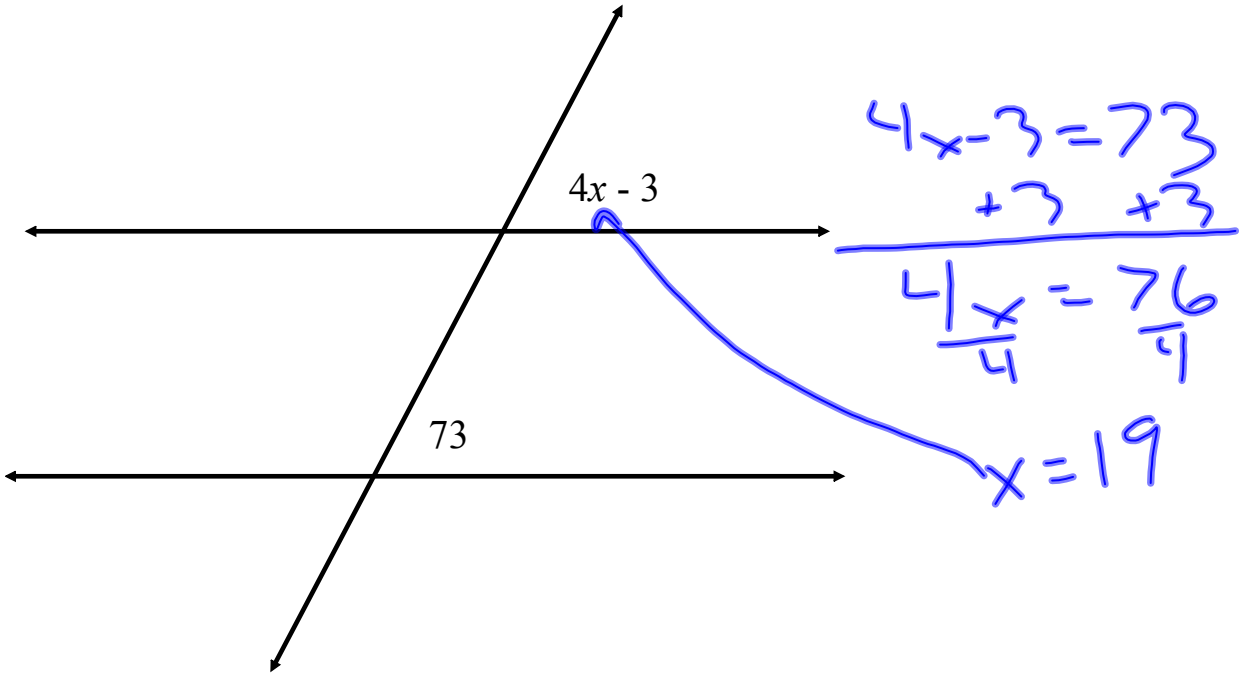


Ex 1 Find the value of y that makes line a parallel to line b



$5y + 6 = 121$
$-6 \quad -6$
$\frac{5y}{5} = \frac{115}{5}$
$y = 23$

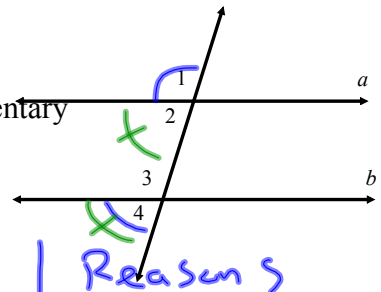
Ex 2 Find the value of x that makes line a parallel to line b



$4x - 3 = 73$
$+3 \quad +3$
$\frac{4x}{4} = \frac{76}{4}$
$x = 19$

Ex 3 Write a two column proof.

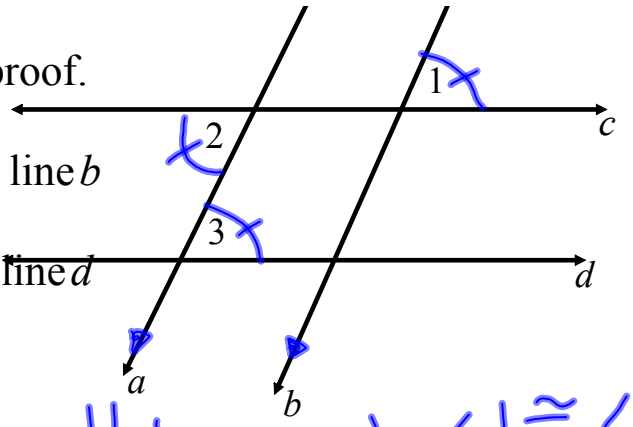
Given: angles 1 and 4 are supplementary
Prove: line a is parallel to line b



Statements	Reasons
$\angle 1 + \angle 4$ are supp.	Given
$m\angle 1 + m\angle 4 = 180^\circ$	Def. of supp.
$m\angle 1 + m\angle 2 = 180^\circ$	Lin. Pr. Post.
$m\angle 1 + m\angle 4 = m\angle 1 + m\angle 2$	Substitution
$m\angle 4 = m\angle 2$	Subtraction
$\angle 4 \cong \angle 2$	Def. of $\cong$
$a \parallel b$	Corr. $\angle$'s Conv.

Ex 4 Write a paragraph proof.

Given: line a is parallel to line b
$\angle 1 \cong \angle 3$
Prove: line c is parallel to line d



We're given $a \parallel b$ and $\angle 1 \cong \angle 3$

$\angle 1 \cong \angle 2$ by Alt. ext. $\angle$'s Thm.

So $\angle 2 \cong \angle 3$ by substitution

Therefore $c \parallel d$ by Alt. Int. Conv. Thm.

Ex. 5 On a ladder, each rung is parallel to the rung directly above it. Explain why the top rung is parallel to the bottom rung.

Transitive Prop. of ||
Lines

Bring a camera tomorrow!