Warmup 3/(A perfect game in bowling divided by 60) + 6

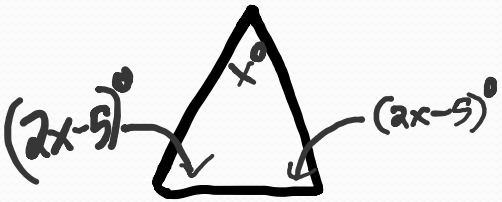
Created by Johnathan S.

In the equation below, *a* is a constant. For what value of a does the equation have an infinite number of solutions?

$$21x + 14 = 7(3x + a)$$

$a = 2$

In an isosceles triangle the base angle is five less than twice the vertex angle. What is the sum of the vertex angle and the base angle?



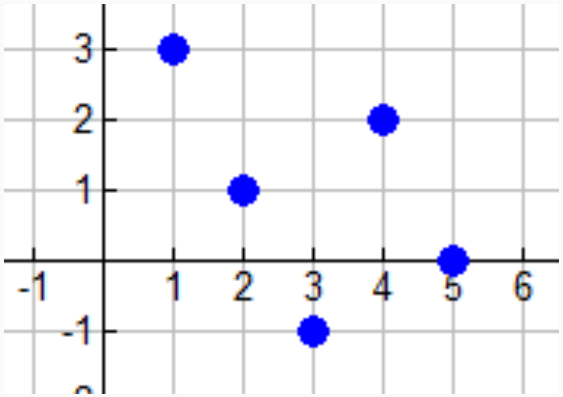
$5x - 10 = 180$

$x = 38$

$2 \cdot 38 - 5 = 71°$

$71° + 38° = \boxed{109°}$

Find the Domain and Range.



D: {1, 2, 3, 4, 5}

R: {-1, 0, 1, 2, 3}

What is the slope of any line parallel to the line $8x + 2y = 3$?

$-8x \quad -8x$

$\frac{2y}{2} = \frac{3 - 8x}{2}$

$y = \frac{3}{2} - 4x$

$\boxed{-4}$

Go over homework

TABLE OF CONTENTS: 2ND SEMESTER

Objective:

- Identify properties of parallelograms

What is a parallelogram?

- a quadrilateral with opposite sides parallel

Exploration: Parallelograms

- Come up with a list of **as many additional properties as you can** about parallelograms.

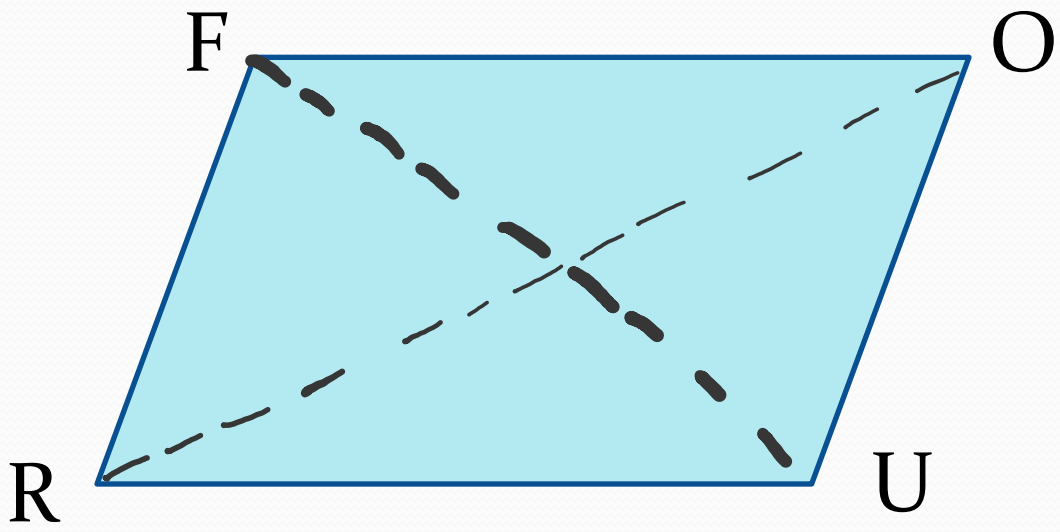
- What is true about the **sides** of a parallelogram?
- What is true about the **angles** of a parallelogram?
- Did anyone draw the **diagonals** through the middle and look at those?

Which sides are opposite sides? $\overline{FO}$ & $\overline{RU}$ | $\overline{FR}$ & $\overline{OU}$

Which angles are opposite angles? $\angle U$ & $\angle F$ | $\angle R$ & $\angle O$

Which angles are consecutive angles? $\angle F$ & $\angle O$ $\angle O$ & $\angle U$
$\angle F$ & $\angle R$ $\angle R$ & $\angle U$

What are diagonals? $\overline{UF}$ & $\overline{RO}$



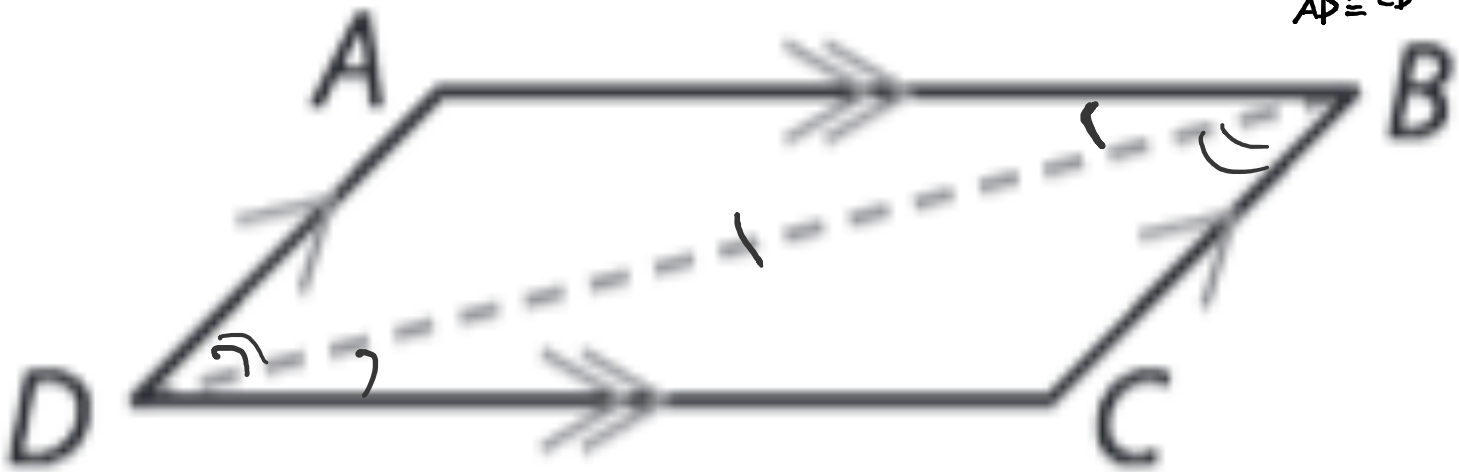
- **Parallelograms**
  - Opposite sides parallel
  - Opposite sides congruent
  - Opposite angles congruent
  - Consecutive angles are supplementary
  - Diagonals bisect each other

Given: $ABCD$ is a parallelogram.

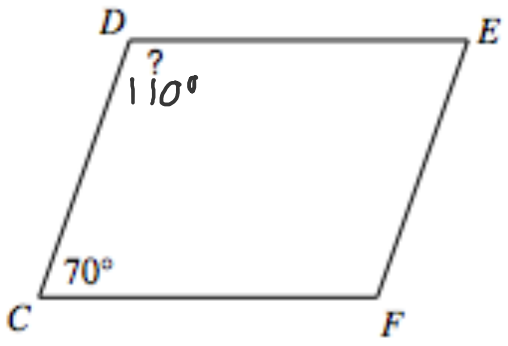
Prove: $\overline{AB} \cong \overline{CD}$ and $\overline{AD} \cong \overline{CB}$

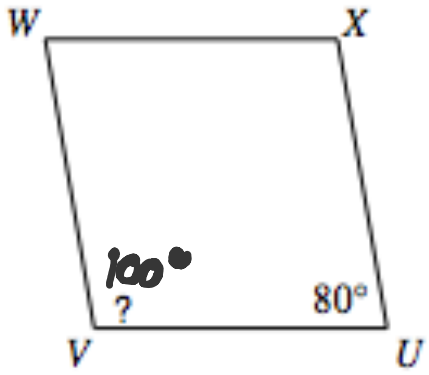
(Prove that opposite sides are congruent)

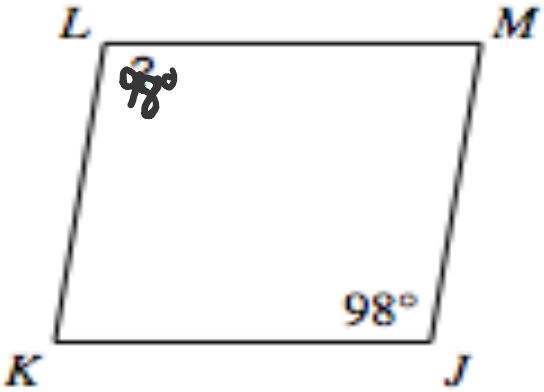
1) ABCD is a p-gram	Given
2) $\overline{AB} \parallel \overline{DC}$ & $\overline{AD} \parallel \overline{BC}$	Def. of p-gram
3) $\angle ABD \cong \angle CDB$, $\angle ADB \cong \angle CBD$	Alt Int $\angle$s Thm
4) $\overline{DB} \cong \overline{DB}$	Reflexive
5) $\triangle ABD \cong \triangle CDB$	ASA
6) $\overline{AB} \cong \overline{CD}$ & $\overline{AD} \cong \overline{CB}$	CPCTC

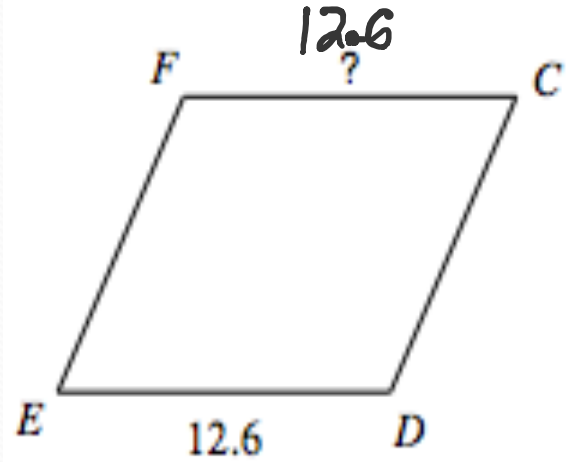


Practice Problems



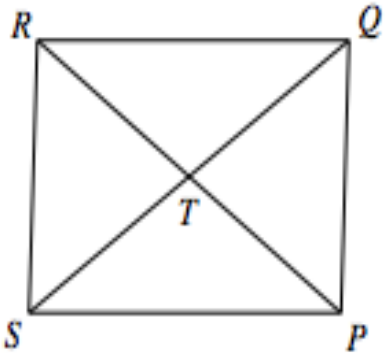






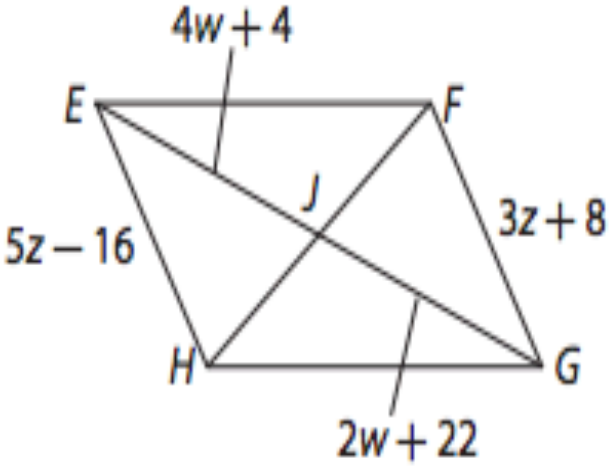
$RT = 19.8$

Find RP



39.6

EFGH is a parallelogram. Find each measure.



6. *FG*

$3z+8=5z-16$

$\vdots$

$x=12 \rightarrow FG=3\cdot12+8=44$

7. *EG*

$4w+4=2w+22$

$\vdots$

$w=9$

$\downarrow$

$EJ=4\cdot9+4=36+4=40$

so

$EG=80$

***ABCD* is a parallelogram. Find each measure.**

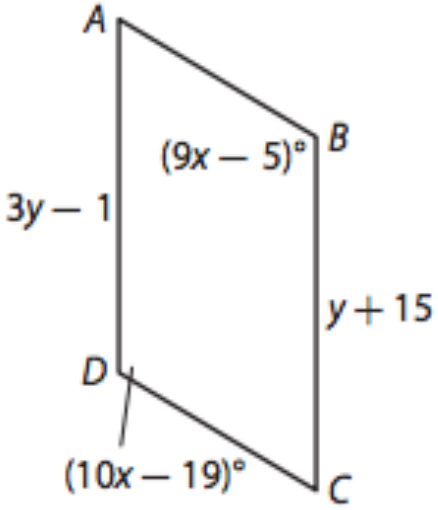
8. $m\angle B$ $9x-5=10x-19$

$14=x \rightarrow m\angle B = 9\cdot 14-5 = 121°$

9. AD

$3y-1=y+15$

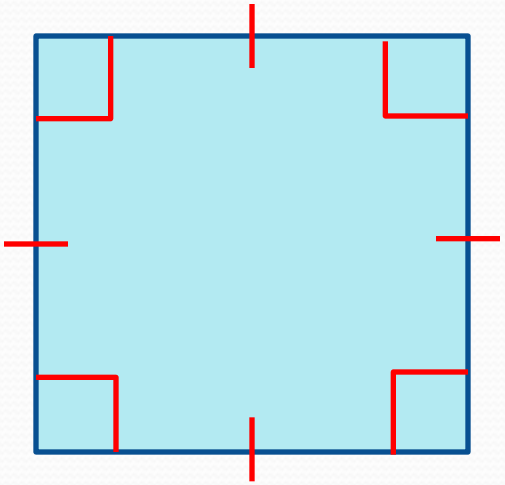
$y=8 \rightarrow AD=3\cdot 8-1=23$



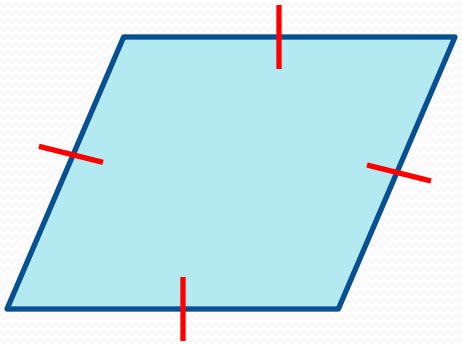
- Can you think of any special parallelograms?

- **Rectangle**
  - Has 4 right angles
  - (Plus it has all the properties of a parallelogram)

- **Square**
  - Has 4 right angles AND 4 congruent sides
  - (Plus it has all the properties of a parallelogram)



- **Rhombus (basically a diamond)**
  - Has 4 congruent sides
  - (Plus it has all the properties of a parallelogram)



Homework

Worksheet