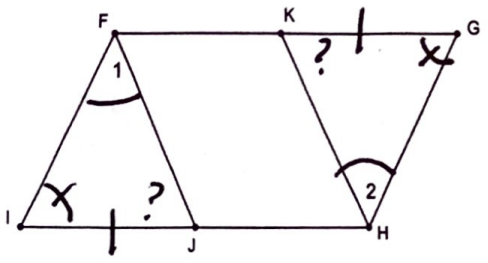
Unit 5 Day 1 Warmup

1. Given: $\angle I \cong \angle G$
   $\angle 1 \cong \angle 2$
   $\overline{JI} \cong \overline{KG}$



Prove: $\angle HKG \cong \angle FJI$

Given: $\angle I \cong \angle G$ — Given: $\angle 1 \cong \angle 2$ — Given: $\overline{JI} \cong \overline{KG}$

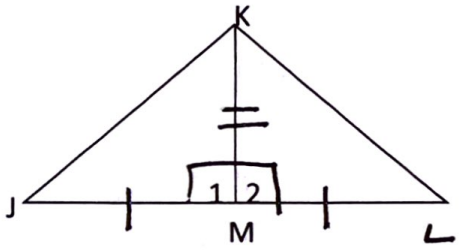
AAS

$\triangle IFJ \cong \triangle GHK$

CPCTC

$\angle HKG \cong \angle FJI$

2. Given: $\overline{KM} \perp \overline{JL}$
   M is the midpoint of $\overline{JL}$
   Prove: $\triangle JKM \cong \triangle LKM$



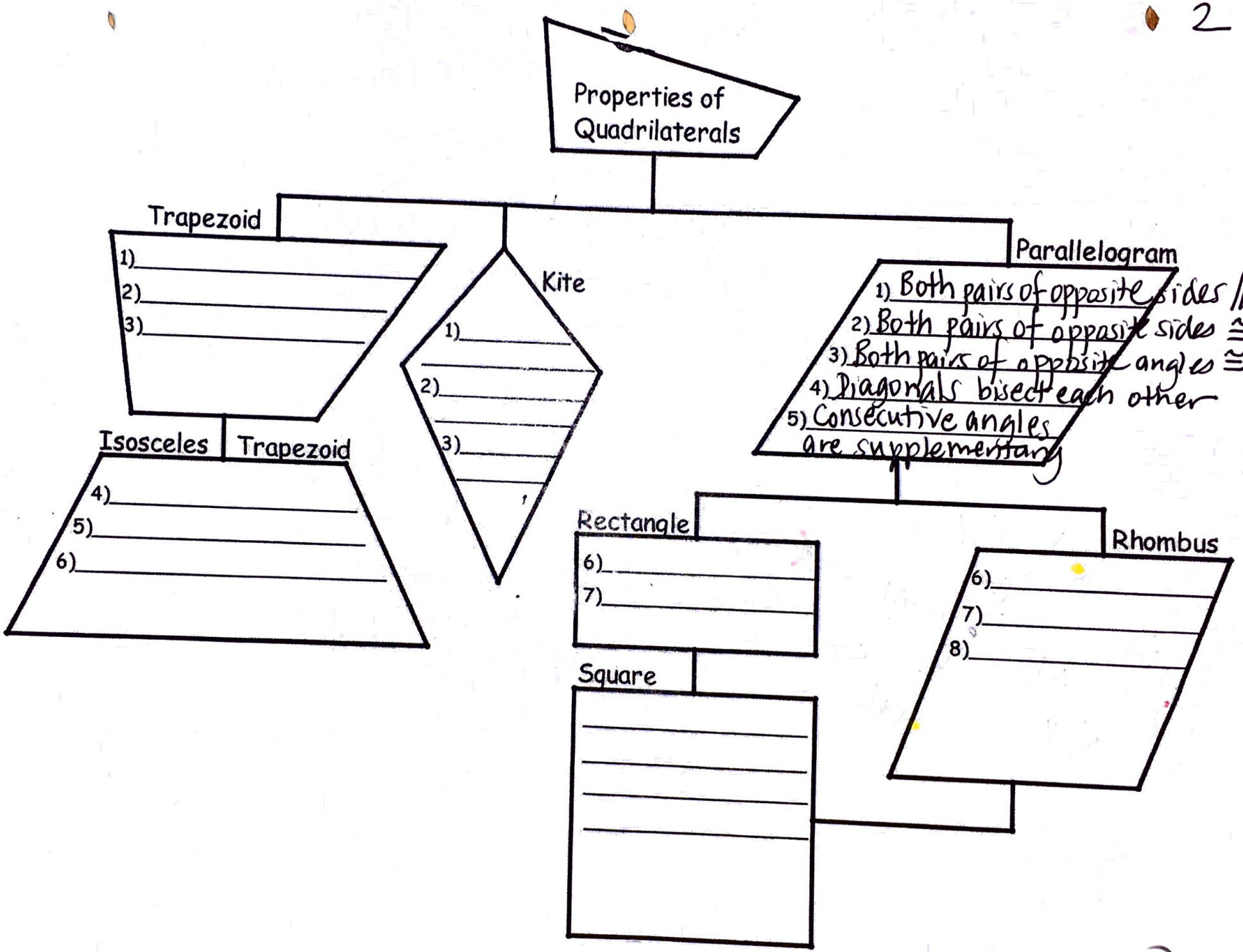
Given: $\overline{KM} \perp \overline{JL}$ — Defn $\perp$ lines: $\perp$ lines $\rightarrow$ right $\angle$s — $\angle 1, \angle 2$ are right $\angle$s — all right $\angle$s $\cong$ — $\angle 1 \cong \angle 2$

Given: M midpt. $\overline{JL}$ — Defn of midpoint — $\overline{JM} \cong \overline{ML}$

Reflexive Prop. — $\overline{KM} \cong \overline{KM}$

SAS

$\triangle JKM \cong \triangle LKM$

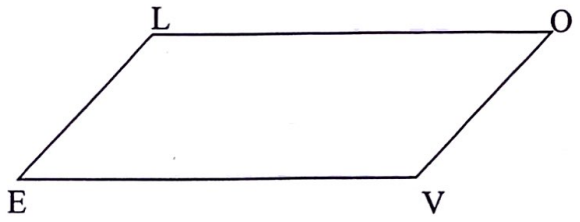

Properties of Quadrilaterals
Trapezoid
1)
2)
3)
Isosceles Trapezoid
4)
5)
6)
Kite
1)
2)
3)
Parallelogram
1) Both pairs of opposite sides ∥
2) Both pairs of opposite sides ≅
3) Both pairs of opposite angles ≅
4) Diagonals bisect each other
5) Consecutive angles are supplementary
Rectangle
6)
7)
Square
Rhombus
6)
7)
8)

Honors Math 3 - Unit 5 Day 1
Parallelograms

Define:

QUADRILATERAL - 4-sided polygon

PARALLELOGRAM - a quadrilateral with both pairs of opposite sides parallel.



Using parallelogram LOVE:

The side opposite $\overline{LO}$ = $\overline{VE}$

The side opposite $\overline{VO}$ = $\overline{LE}$

The angle opposite $\angle O$ = $\angle E$

Name a consecutive angle for $\angle L$ = $\angle O$ or $\angle E$

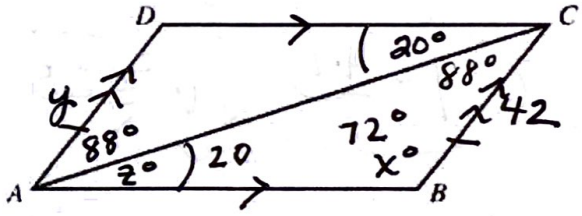
Parallelogram examples:

#1: For the parallelogram, find the values of x, y and z.

$y = 42$

$z = 20°$

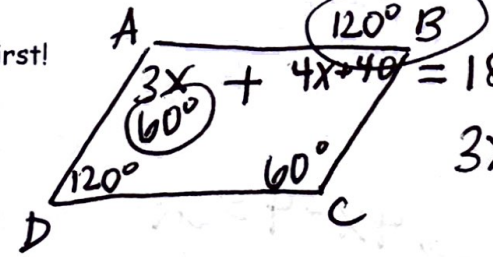
$x = 72°$



#2:

In parallelogram ABCD, $m\angle A = 3x$ and $m\angle B = 4x + 40$. Find the ~~measure~~ of angles A, B, C, D.

Draw a parallelogram and label it first!



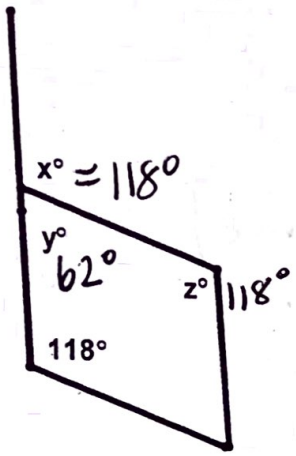
$3x + 4x + 40 = 180$

$7x = 140$

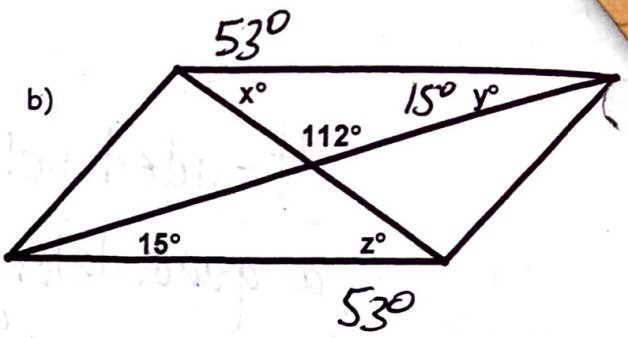
$x = 20$

#3 For the parallelograms, find the values of x, y and z.

a)

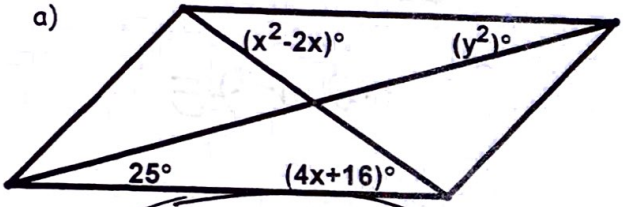


b)



#4 Given the parallelograms, solve for x and y.

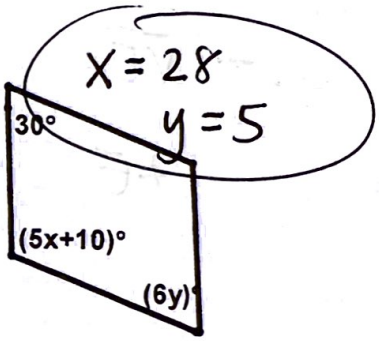
a)



$x = 8, -2$

$y = \pm 5$ $\sqrt{y^2} = \sqrt{25}$

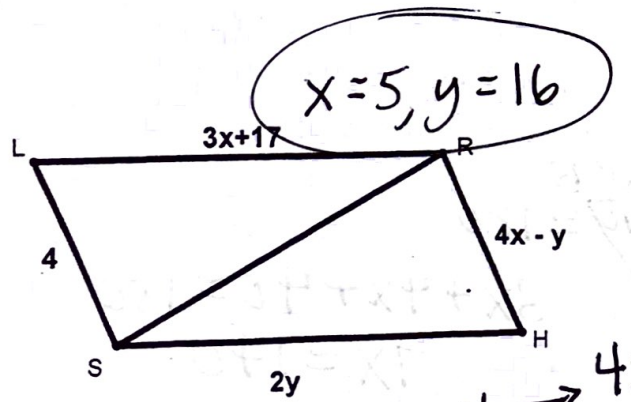
b)



$x = 28$

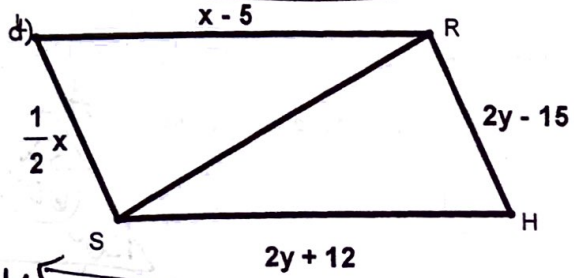
$y = 5$

c)



$x = 5, y = 16$

d)



$x = 64, y = 23.5$

$4x - y = 4 \rightarrow 4x - 4 = y$

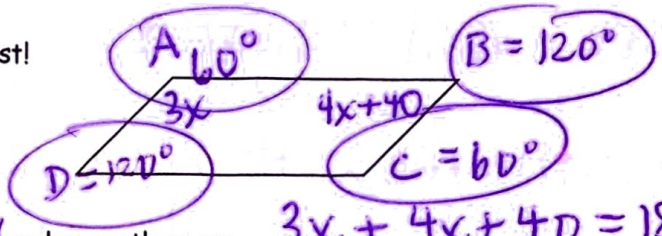
$3x + 17 = 2y \rightarrow 3x + 17 = 2(4x - 4)$

$x = 5$

#2:

In parallelogram ABCD, $m\angle A = 3x$ and $m\angle B = 4x + 40$. Find the measure of angles A, B, C, D.

Draw a parallelogram and label it first!



$3x + 4x + 40 = 180$

$7x + 40 = 180$

$7x = 140$

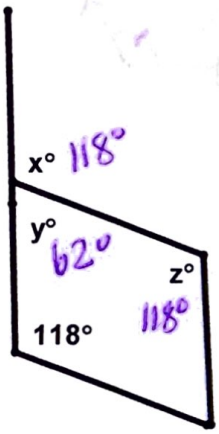
$x = 20$

$\angle A$ and $\angle B$ are supplementary (consecutive $\angle$s) angles, so they are

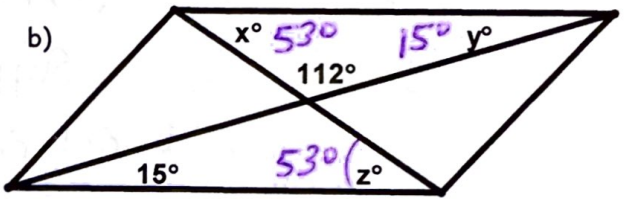
==========

#3 For the parallelograms, find the values of x, y and z.

a)

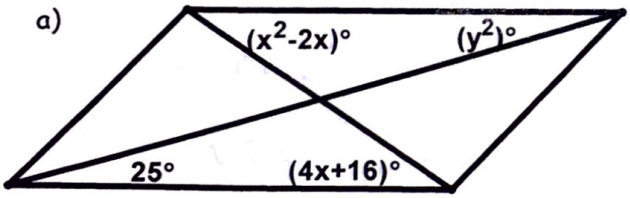


b)



#4 Given the parallelograms, solve for x and y.

a)



$y^2 = 25$

$y = \pm 5$

$x^2 - 2x = 4x + 16$

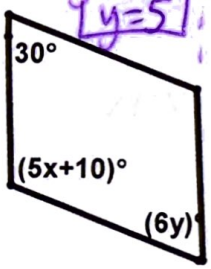
$x^2 - 2x - 4x - 16 = 0$

$x^2 - 6x - 16 = 0$

$(x+2)(x-8) = 0$

$x = -2, 8$

b)



$6y = 30$

$y = 5$

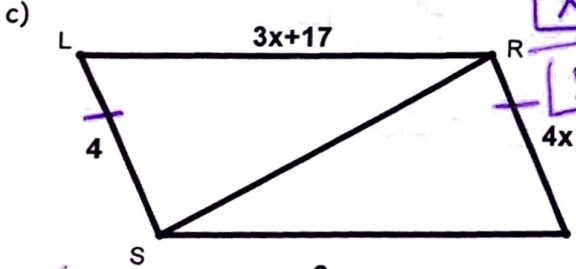
$5x + 10 + 30 = 180$

$5x + 40 = 180$

$5x = 140$

$x = 28$

c)



$x = 5$

$y = 16$

$-2(4x - y = 4)^{2y}$

$3x - 2y = -17$

$3x + 17 = 2y$

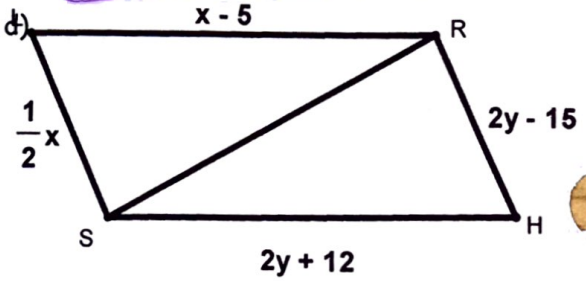
$-8x + 2y = -8$

$+ 3x - 2y = -17$

$-5x = -25$

$x = 5$

d)



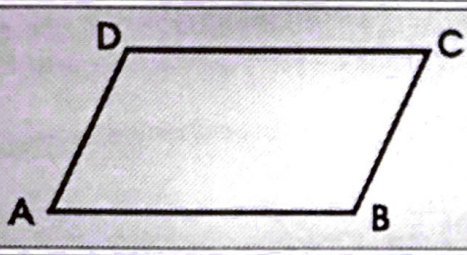
$x = 64 \mid y = 23.5$

D1 ex.

Quadrilaterals

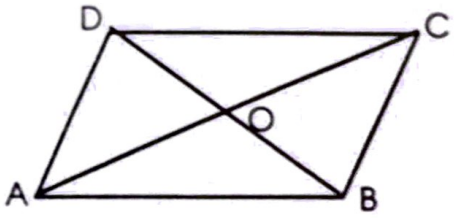
Keep in mind...
If you put forth $^1/_2$ the effort, you only get a fraction of the results.

Properties of Parallelograms



- Four sides.
- Both pair of opposite sides are parallel.
- Both pair of opposite sides are congruent.
- Both pair of opposite angles ar e congruent.
- Diagonals bisect each other .

Complete the following ▱ABCD.

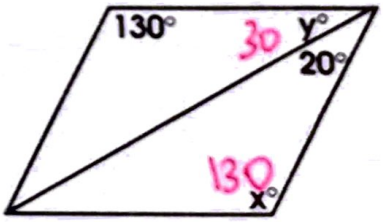


1. $\overline{AB} \parallel$ $\overline{DC}$
2. $\overline{AB} \cong$ $\overline{DC}$
3. $\angle A \cong$ $\angle C$
4. $\overline{OA} \cong$ $\overline{OC}$
5. $\overline{OB} \cong$ $\overline{OD}$
6. $\overline{AD} \cong$ $\overline{BC}$

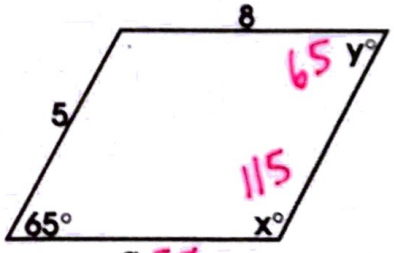
Find the missing values for each parallelogram.

7.

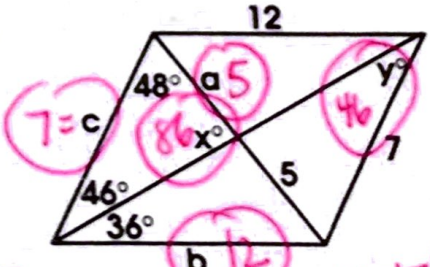
8.



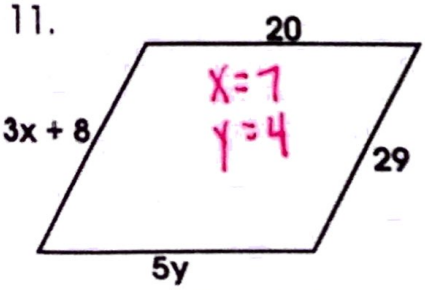
9.



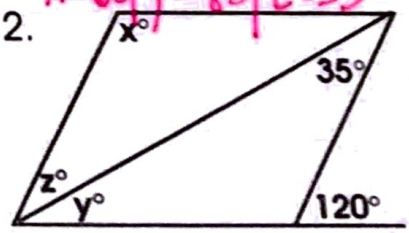
10.



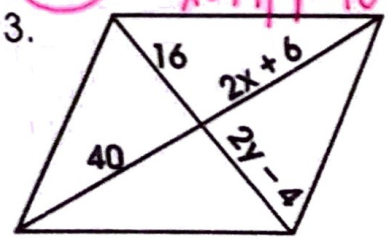
11.



12. x=60 | y=85 | z=35



13. x=17 | y=10

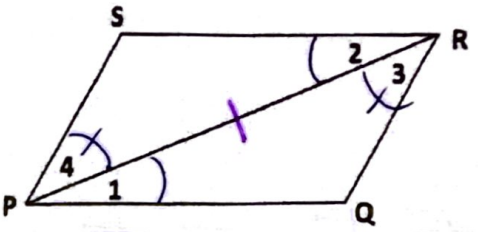


Name:_____

Date:_____ Period:_____

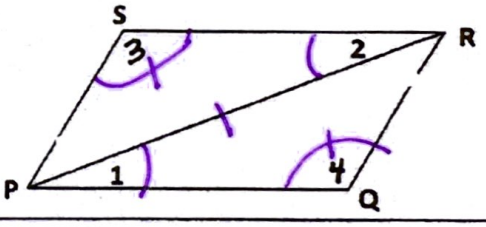
Quadrilaterals Jumble Proofs

1. Given: $\angle 1 \cong \angle 2$
   $\angle 3 \cong \angle 4$
   Prove: PQRS is a parallelogram



Statements	Reasons
① $\angle 1 \cong \angle 2$, $\angle 3 \cong \angle 4$	① Given
② $\overline{PR} \cong \overline{PR}$	② Reflexive Property of $\cong$
③ $\triangle PSR \cong \triangle RQP$	③ Angle-Side-Angle (ASA)
④ $\overline{PS} \cong \overline{RQ}$, $\overline{SR} \cong \overline{QP}$	④ CPCTC
⑤ PQRS is parallelogram	⑤ if both pairs of opp. sides of quad. $\cong$, then it is a parallelogram

2. Given: $\angle 1 \cong \angle 2$
   $\angle 3 \cong \angle 4$
   Prove: PQRS is a parallelogram



Statements	Reasons
① $\angle 1 \cong \angle 2$, $\angle 3 \cong \angle 4$	① Given
② $\overline{PR} \cong \overline{PR}$	② Reflexive Prop. of $\cong$
③ $\triangle PSR \cong \triangle RQP$	③ AAS
④ $\overline{PS} \cong \overline{RQ}$, $\overline{SR} \cong \overline{QP}$	④ CPCTC
⑤ PQRS is parallelogram	⑤ if both pairs of opp. sides of quad. $\cong$, then it is a parallelogram.