Warm up Problems

For 1 and 2, refer to rhombus $QUAD$

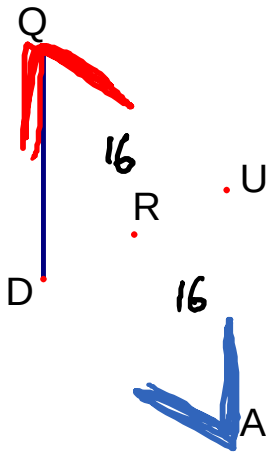
1) If $m\angle DAU = 10x - 6$ and $m\angle UQD = 5x + 9$, find x.

$10x - 6 = 5x + 9$

$5x - 6 = 9$

$5x = 15$

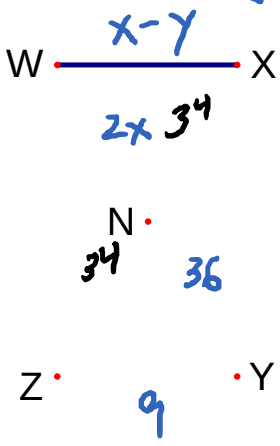
$x = 3$



2) If $RA = 16$, find QA. $= 32$

For 3 and 4, refer to rectangle $WXYZ$.

3) If $XN = 34$, find WY. $= 68$



4) If $WN = 2x$, $NY = 36$, $WX = x - y$, and $ZY = 9$, find x and y.

$2x = 36$

$x = 18$

$x - y = 9$

$18 - y = 9$

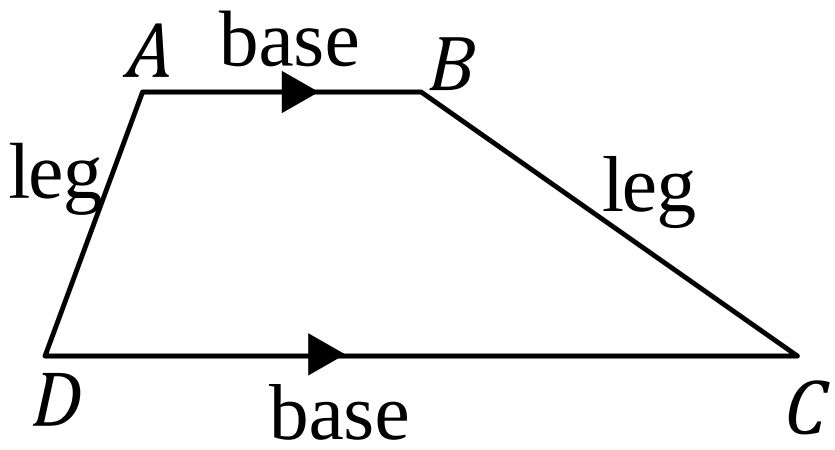
$-y = -9$

$y = 9$

Trapezoids and Kites

Trapezoid: Quadrilateral with one pair of opposite sides parallel

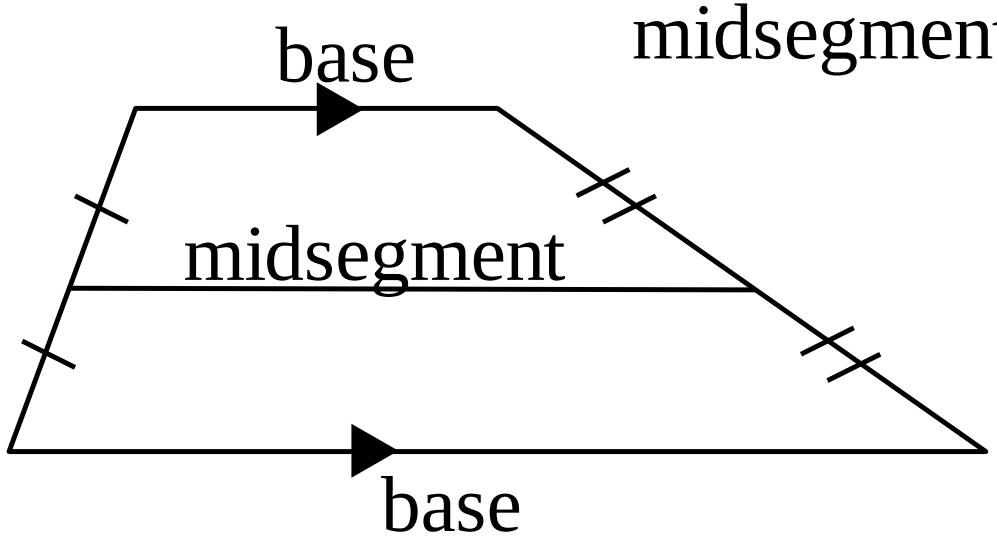
- Same-side interior angles are supplementary



$$m\angle A + m\angle D = 180°$$
$$m\angle B + m\angle C = 180°$$

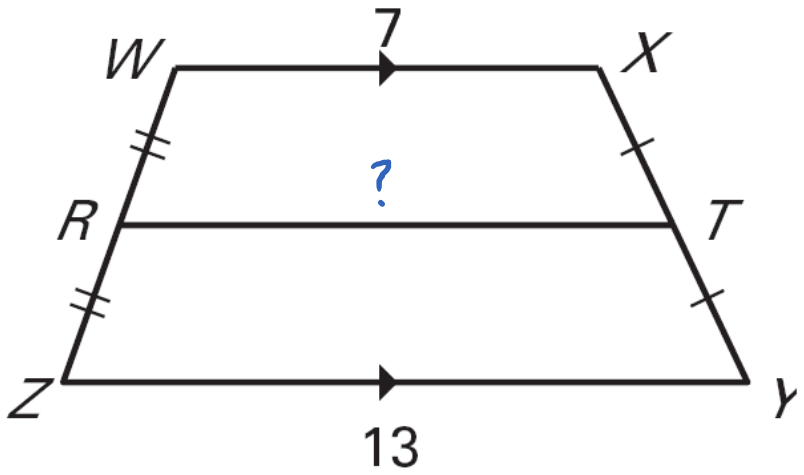
Midsegment of a Trapezoid:

Def. Connects the midpoints of the legs of a trapezoid



$$\text{midsegment} = \frac{\text{base} + \text{base}}{2}$$

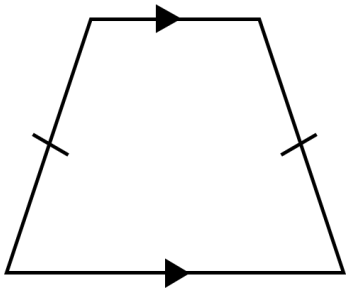
Ex. Find the length of the midsegment.



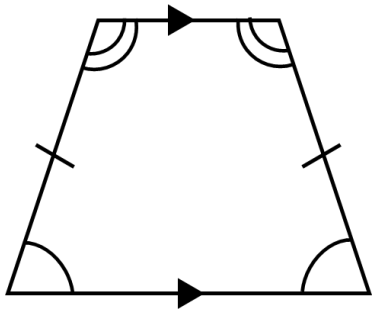
$$\frac{7+13}{2} = \frac{20}{2} = 10$$

Isosceles Trapezoid:

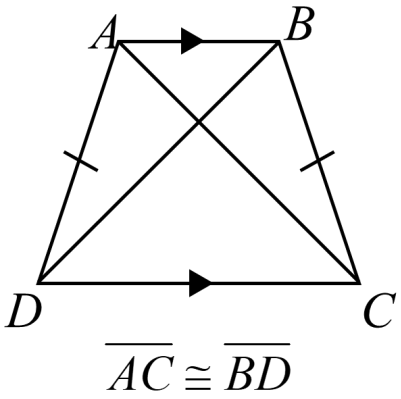
Nonparallel sides (legs) are congruent



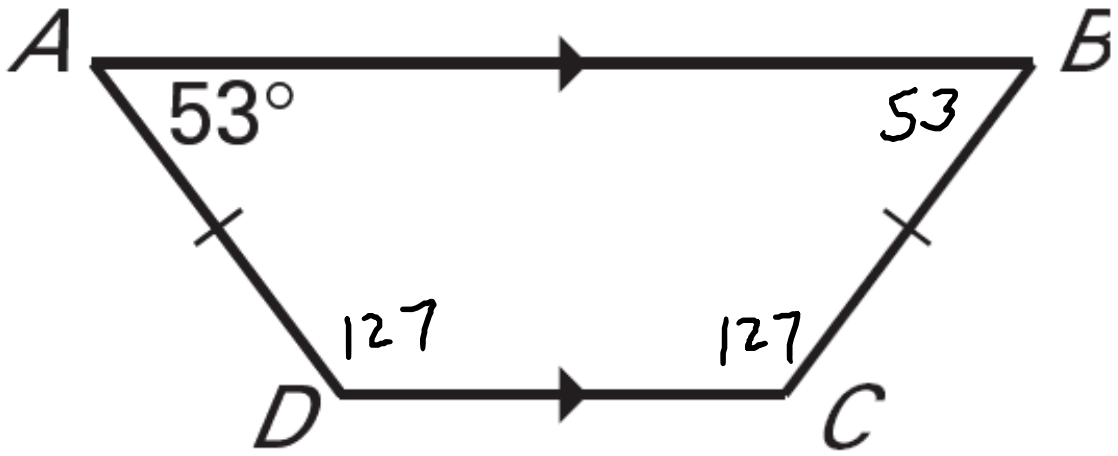
- The base angles are congruent



- The diagonals are congruent

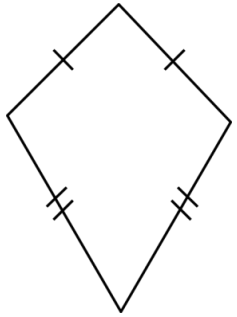


Ex. Find the $m\angle B$, $m\angle C$, $m\angle D$.

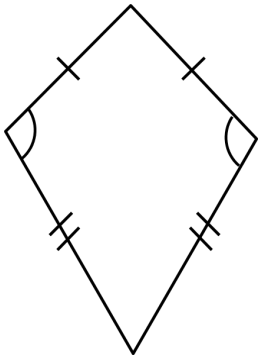


180
−53
127

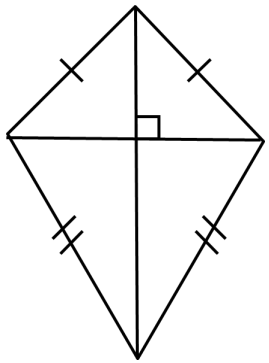
Kite: Quadrilateral that has two pairs of consecutive congruent sides



- Exactly one pair of opposite angles are ≅

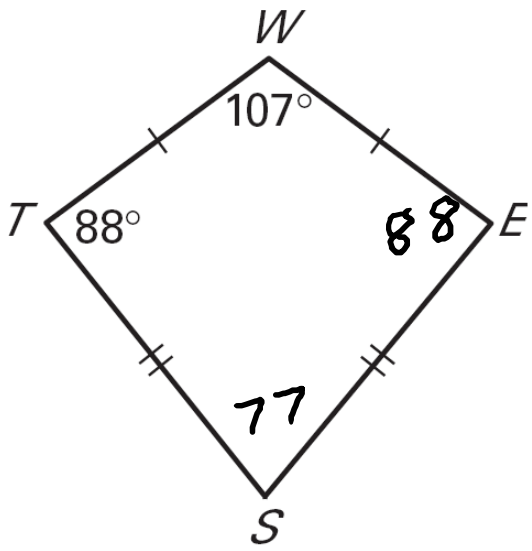


- Its diagonals are perpendicular



- Non-congruent angles are bisected by diagonals

Ex. $WEST$ is a kite. Find the missing angles.



$88 + 107 + 88 + S = 360$

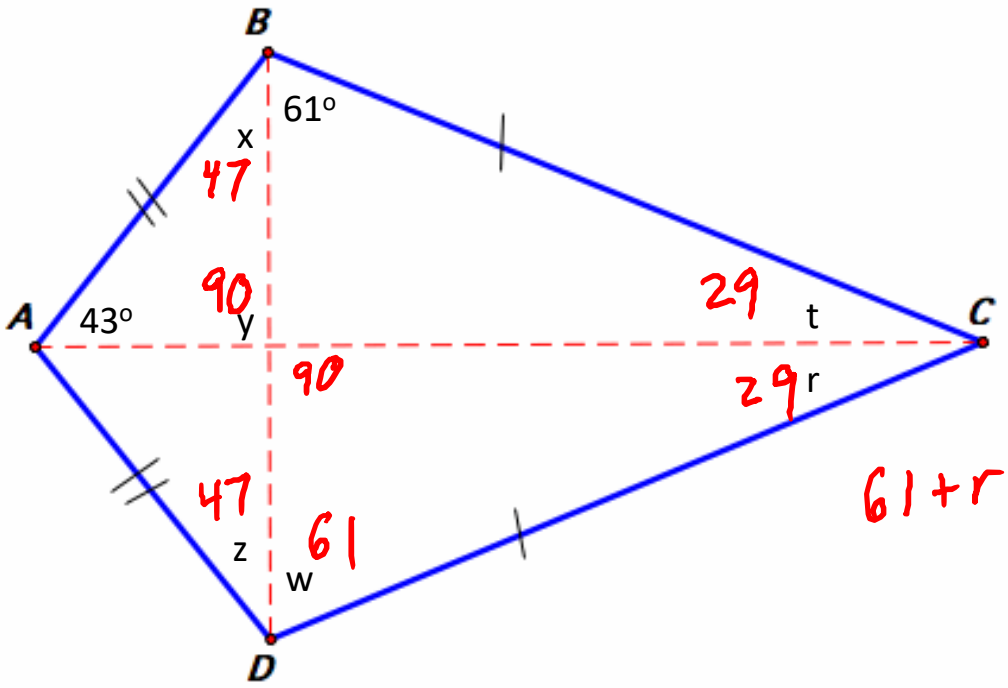
$S = 77$

Pencils Down!

How would you find the missing angles in the kite?

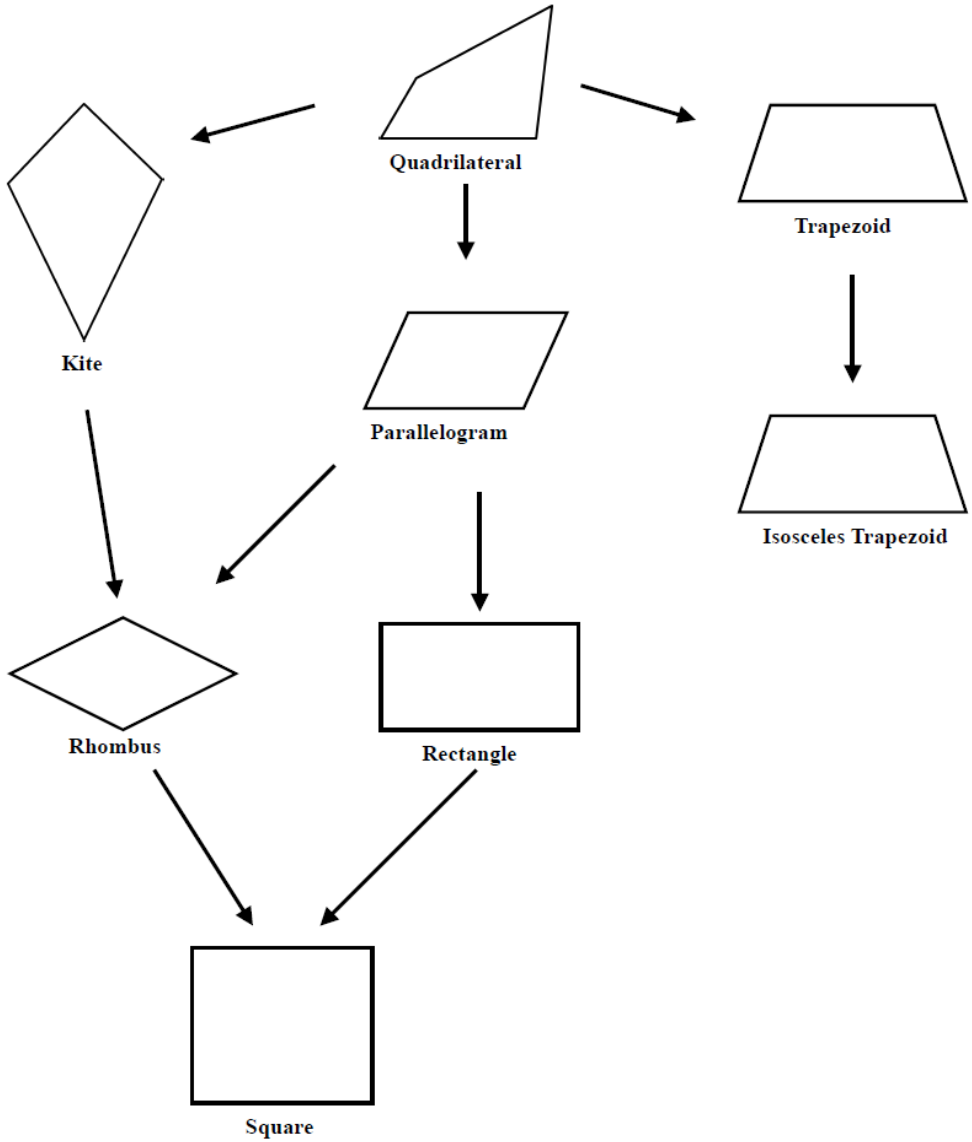
$43 + 90 + x = 180$

$x = 47$



$61 + r + 90 + 180$

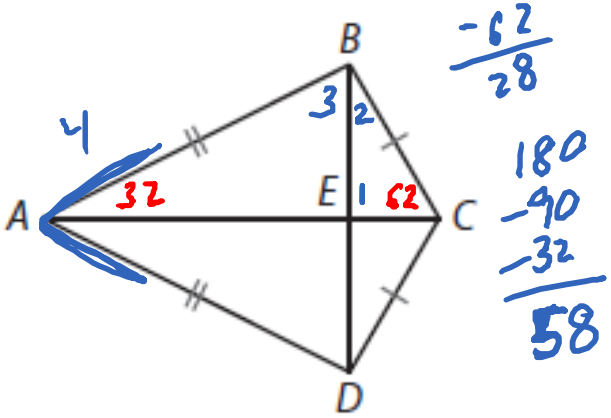
$r = 29$


Quadrilateral
Kite
Trapezoid
Parallelogram
Isosceles Trapezoid
Rhombus
Rectangle
Square

1. kite $ABCD$

$m\angle BAE = 32°$

$m\angle BCE = 62°$



180 − 90 − 62 = 28

180 − 90 − 32 = 58

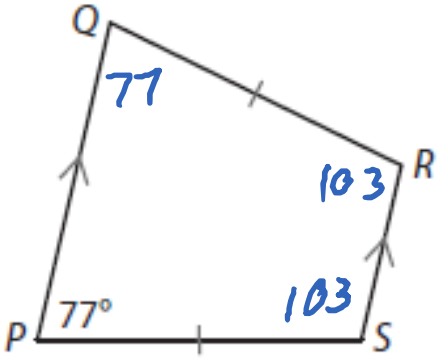
1 $m\angle CEB =$ 90

2 $m\angle CBE =$ 28

3 $m\angle ABE =$ 58

4 $m\angle BAD =$ 64

2. isos. trap. $PQRS$



180 − 77 = 103

$m\angle Q =$

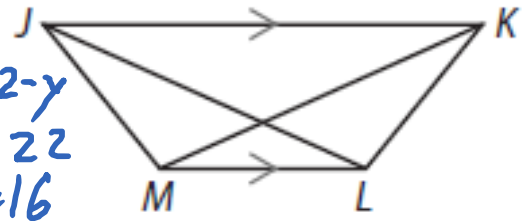
$m\angle R =$

$m\angle S =$

3. isos. trap. $JKLM$

$JL = 3y + 6$

$KM = 22 - y$



$3y+6=22-y$

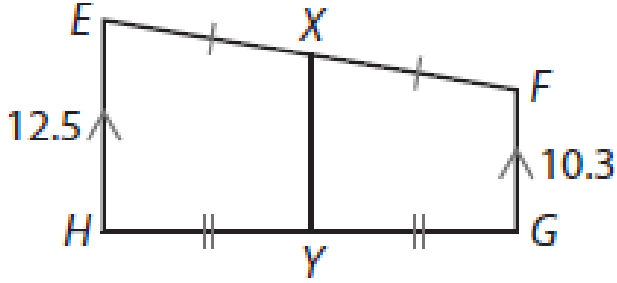
$4y+6=22$

$4y=16$

$y=4$

$y =$

4. trap $EFGH$ with midseg. XY



$\frac{12.5+10.3}{2}$

11.4

$XY =$