

$\overline{LM}$  is a  
midsegment

$$2 \text{ midseg} = 1 \text{ base}$$

$$2(2x-11) = x+8$$

$$4x - 22 = x + 8$$

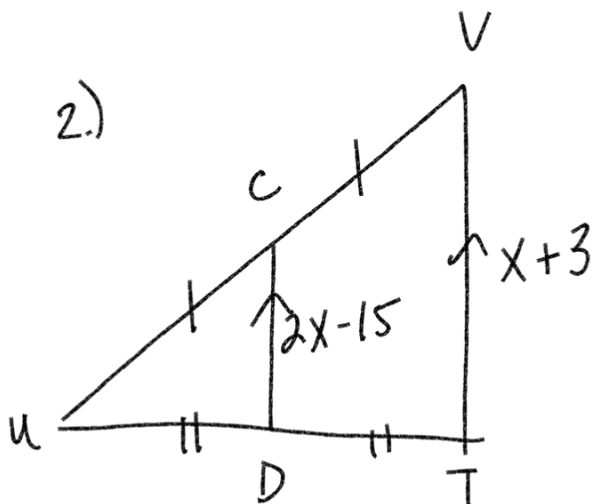
$$+22 \quad +22$$

$$4x = x + 30$$

$$-x \quad -x$$

$$\frac{3x}{3} = \frac{30}{3}$$

$$x = 10$$



$\overline{CD}$  is midsegment

$$2(2x-15) = x+3$$

$$4x - 30 = x + 3$$

$$+30 \quad +30$$

$$4x = x + 33$$

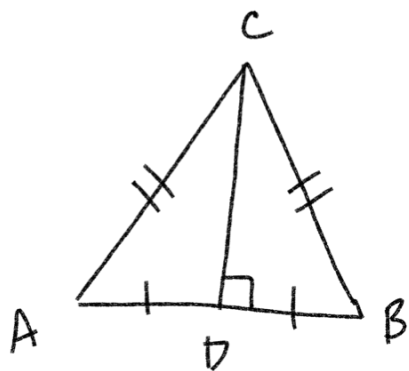
$$-x \quad -x$$

$$\frac{3x}{3} = \frac{33}{3}$$

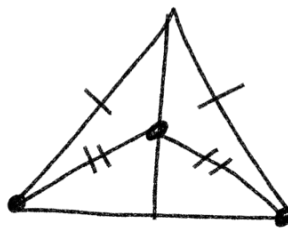
$$x = 11$$

# Perpendicular Bisector

$\overline{CD}$  is perpendicular bisector



$$\overline{AC} \cong \overline{CB}$$



Distance Formula

$(7, -2)$   $(-5, 3)$

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

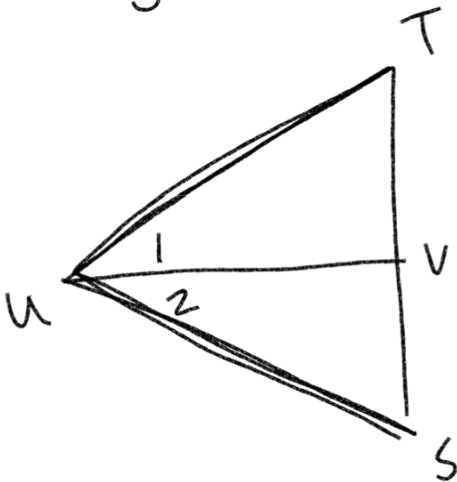
$$\sqrt{(-5 - 7)^2 + (3 - (-2))^2}$$

$$\sqrt{(-12)^2 + (5)^2}$$

$$= \sqrt{144 + 25}$$

$$= \sqrt{169} = \boxed{13}$$

# Angle Bisector



$\overline{UV}$  is an angle bisector

$$\angle 2 = 2x + 9 \quad \angle SUT = 7x - 6$$

$$\angle 1 = \angle 2$$

$$2(\angle 2) = \angle SUT$$

$$2(2x + 9) = 7x - 6$$

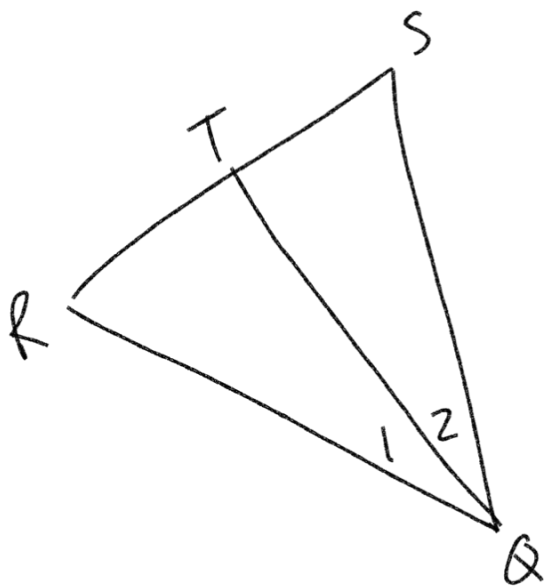
$$4x + 18 = 7x - 6$$

$$4x + 24 = 7x$$

$$-4x \quad -4x$$

$$\frac{24}{3} = \frac{3x}{3}$$

$$x = 8$$



$$\angle 1 = 7x - 7 \quad \angle 2 = 5x + 13$$

$\overline{TA}$  an angle bisector

$$\angle 1 = \angle 2$$

$$7x - 7 = 5x + 13$$

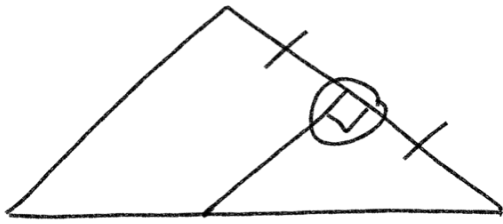
$$-5x \quad -5x$$

$$2x - 7 = 13$$

$$+7 \quad +7$$

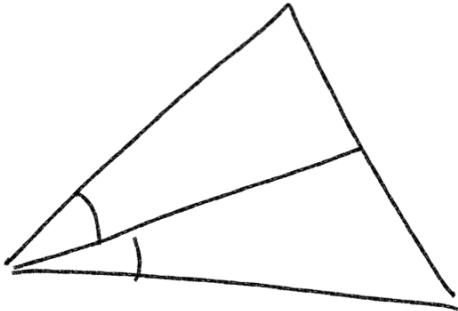
$$\frac{2x}{2} = \frac{20}{2}$$

$$x = 10$$



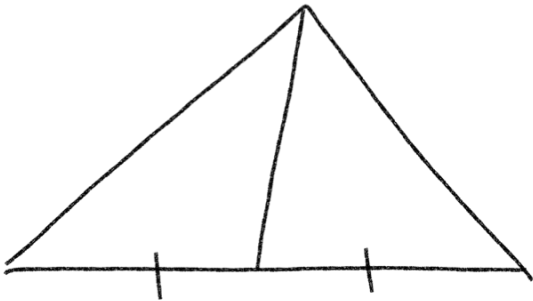
## Perpendicular Bisector

- Divides opposite segment in half
- Forms  $90^\circ$  angle



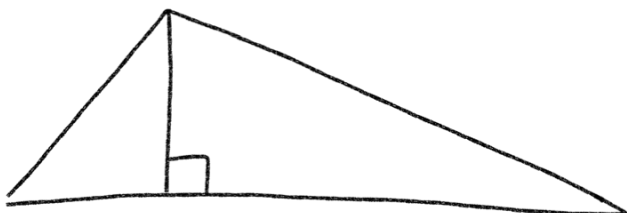
## Angle Bisector

- Divides angle into two equal pieces



## Median

- Divides opposite side into equal pieces.
- Does not form  $90^\circ$  angle



does not bisect

## Altitude (Height)

from vertex to opposite side forming  $90^\circ$  angle

4 sides



quadrilateral

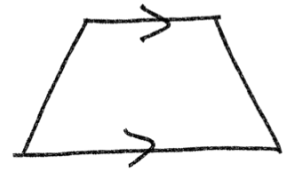
0 parallel sides



kite

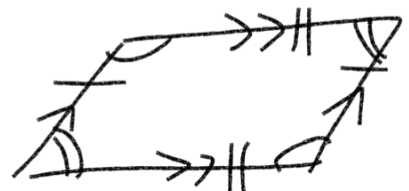
adjacent sides equal

1 parallel side



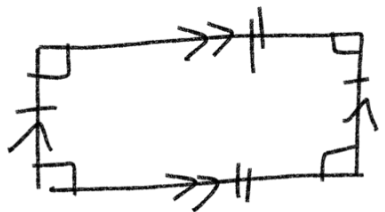
trapezoid

2 parallels



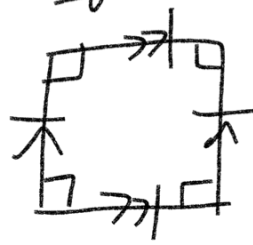
opposite sides  
opposite angles  
congruent

parallelogram



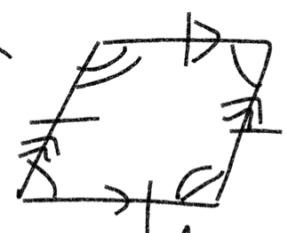
4 equal angles  
Rectangle

square



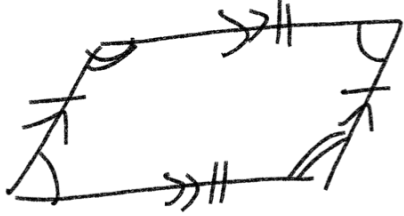
4 equal angles

4 equal sides

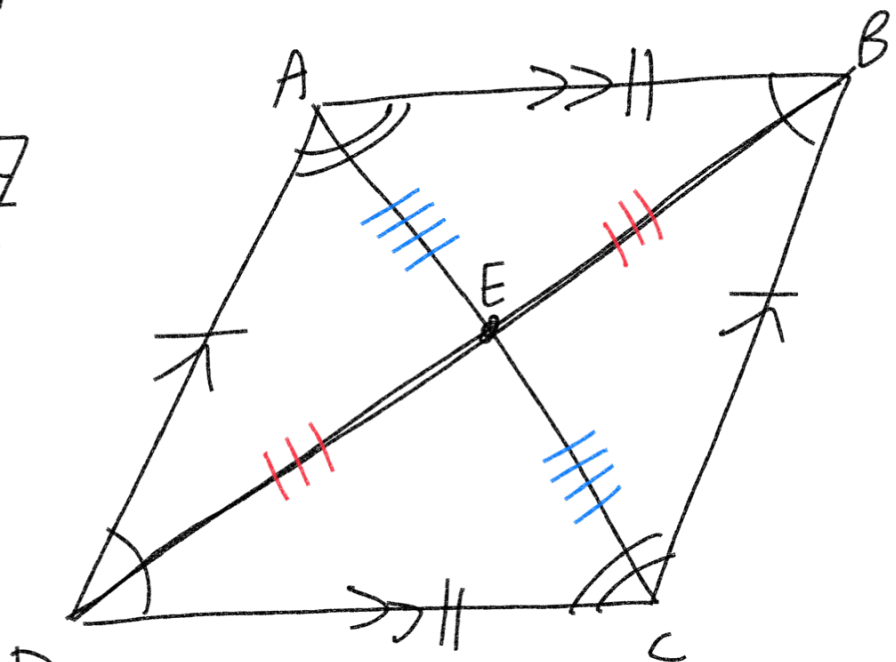


4 equal sides  
Rhombus

# Parallelogram



Diagonals are not equal, but they bisect each other



$$\overline{DE} \cong \overline{EB}$$

$$\overline{AE} \cong \overline{EC}$$

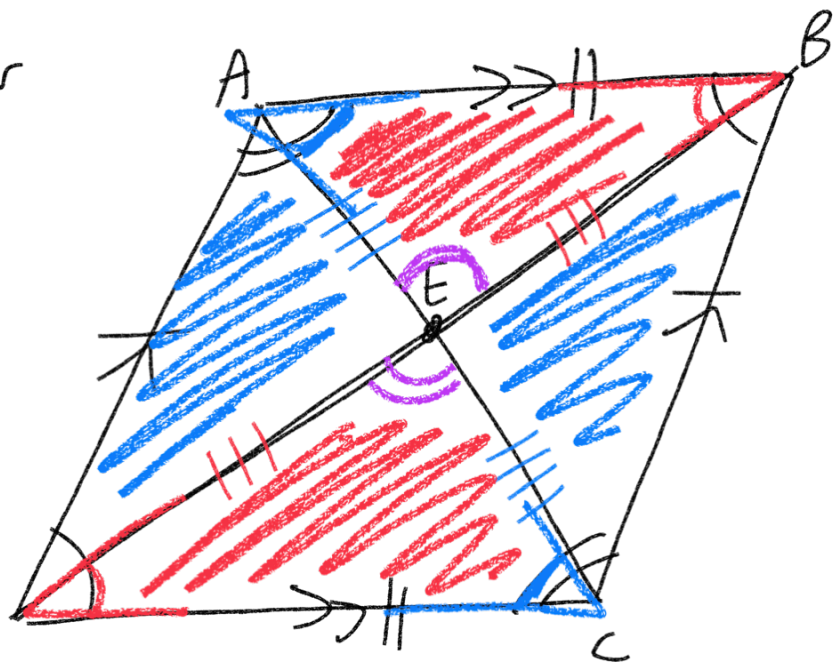
## Alternate Interior Angles

$$\angle ABE \cong \angle CDE$$

$$\angle BAE \cong \angle DCE$$

Vertical Angles

$$\angle BEA \cong \angle DEC$$



2 pairs of congruent triangles

