

Name \_\_\_\_\_ Per \_\_\_\_\_

**LO:** I can prove statements by first proving that triangles are congruent and then using the corresponding parts to prove other relationships.

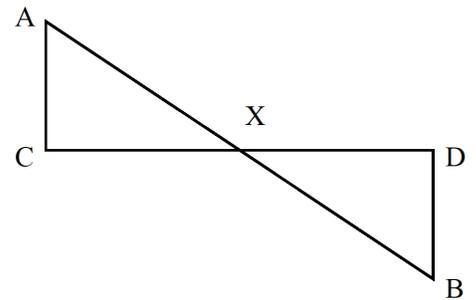
**DO NOW** On the back of this packet

- (1) **Need to Know:** If it is known that two triangles are congruent, then it is known that the corresponding angles and corresponding sides are congruent. These congruent parts can be used to prove many things. Some of the things that can be proven are: an angle was bisected, a segment was bisected, a point is a midpoint, and that lines are parallel.

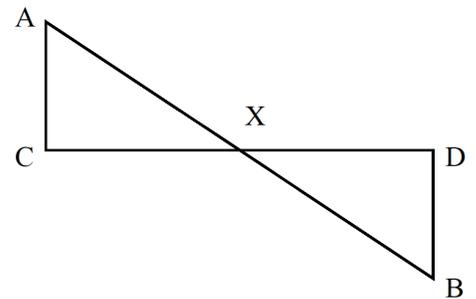
THINK: What congruent segments or angles will help me prove that?

- (2) **Use Congruent Triangles to prove something more**

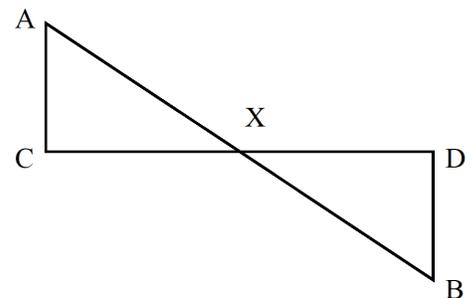
(a) Given:  $\triangle ACX \cong \triangle BDX$  Prove: X is the midpoint of  $\overline{CD}$



(b) Given:  $\triangle ACX \cong \triangle BDX$  Prove:  $\overline{CD}$  bisects  $\overline{AB}$



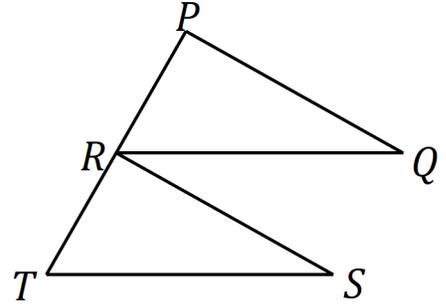
(c) Given:  $\triangle ACX \cong \triangle BDX$  Prove:  $\overline{AC} \parallel \overline{DB}$



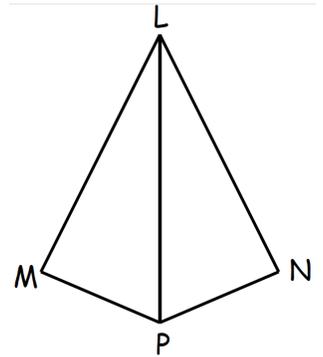
□ (2) Use Congruent Triangles to prove something more

cont.

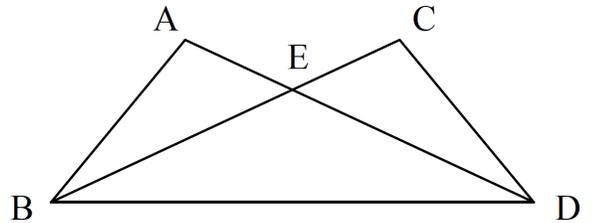
(d) Prove: If  $\triangle PRQ \cong \triangle RTS$ , then  $\overline{PQ} \parallel \overline{RS}$ .



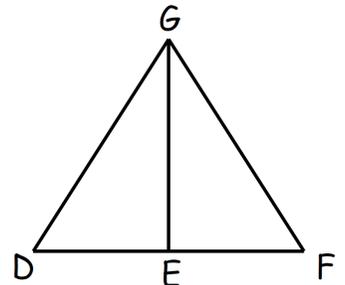
(e) Prove: If  $\triangle PML \cong \triangle PNL$ , then  $\overline{PL}$  bisects  $\angle MPN$ .



(f) Prove: If  $\triangle ABE \cong \triangle CDE$ , then  $\triangle EBD$  is isosceles.



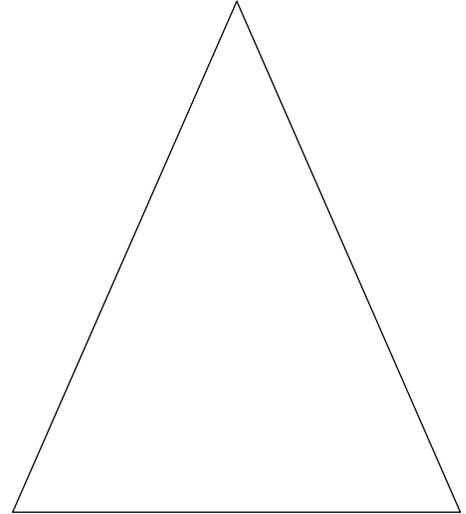
(g) Prove: If  $\triangle GDE \cong \triangle GFE$ , then  $\overline{GE} \perp \overline{DF}$ .



(3) **Congruence: Proving properties – base angles of an isosceles triangle**

Prove: If a triangle is isosceles then the base angles are congruent.

(Add an auxiliary line that bisects the vertex angle.)

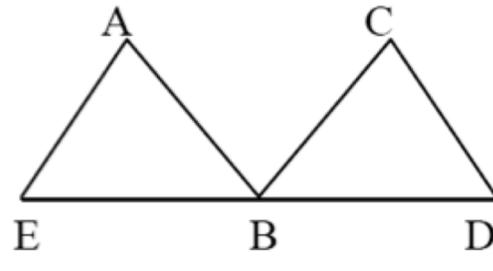


I know that . . .	because . . .

□ (4) **Prove Congruent Triangles to prove something more**

Focus on the shaded triangle and the large triangle (bold sides).

If  $\overline{AE} \cong \overline{CB}$ ,  $\overline{AB} \cong \overline{CD}$  and B is the midpoint of  $\overline{ED}$ , then  $\overline{AE} \parallel \overline{CB}$ .

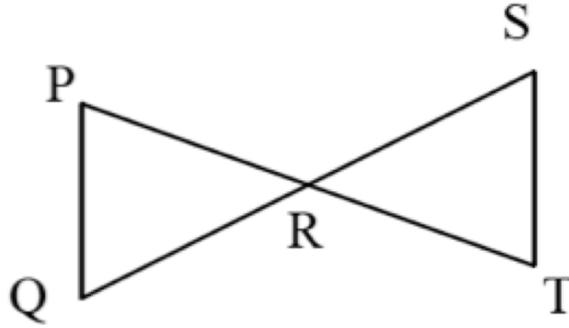


(5) **Exit Ticket**

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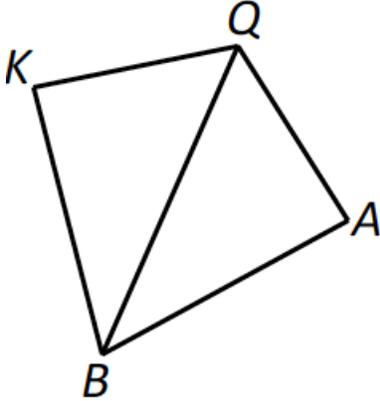
 (6) **Homework**

(1) Write a series of "I know that . . . because . . ." statements to prove the statement below.

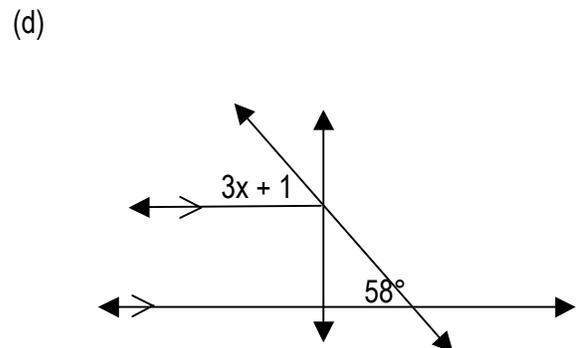
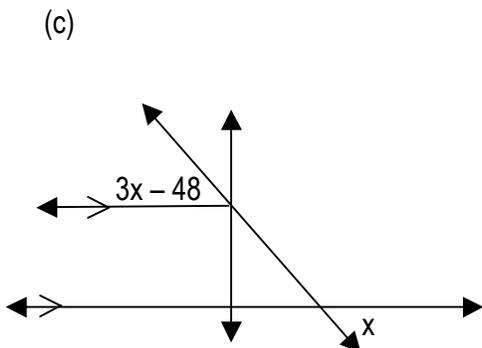
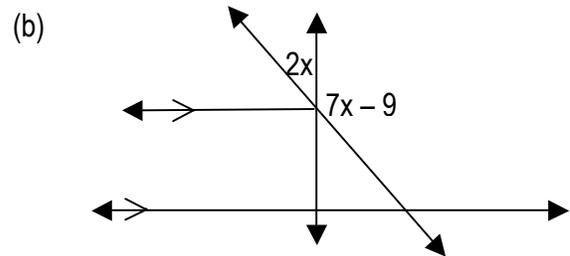
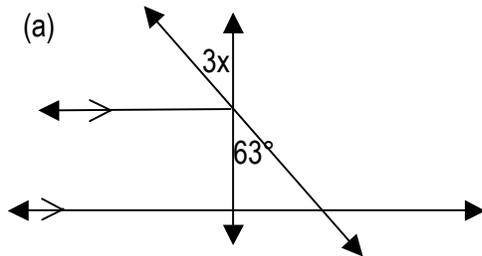
If R is the midpoint of both  $\overline{PT}$  and  $\overline{QS}$ , then  $\overline{PQ} \parallel \overline{ST}$ .

## □ (6) Homework

(2) Given:  $\overline{QK} \cong \overline{QA}$  and  $\overline{QB}$  bisects  $\angle KQA$ . Prove:  $\overline{KB} \cong \overline{AB}$



(3) Find the measure of  $x$  in each diagram. Name a relationship for every angle measure that you find.



**Exit Ticket**    **Name** \_\_\_\_\_ **Date** \_\_\_\_\_ **Per** \_\_\_\_\_

**4.6R**

(1) The LO (Learning Outcomes) are written below your name on the front of this packet. Demonstrate your achievement of these outcomes by doing the following:

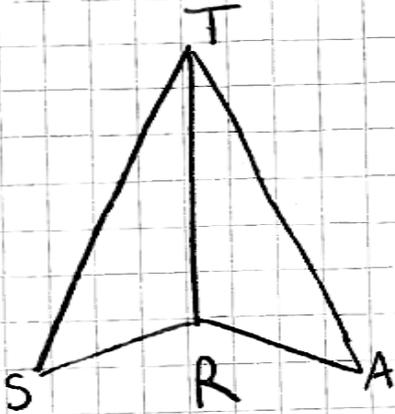
No exit ticket. Proof Progress only

(1) PROOF PROGRESS C:

Write a proof for #1 or #2.

Attach this to the top of your "Proof Progress" packet with a paper clip.

①  
 Given:  $\overline{RT}$  bisects  $\angle STA$   
 $\overline{ST} \cong \overline{AT}$   
 Prove:  $\triangle SRT \cong \triangle ART$



②  
 4.2 #3.5 C  
 Given:  $\overline{IT} \parallel \overline{GH}$   
 I is the midpoint of  $\overline{LG}$   
 $\overline{IT} \cong \overline{GH}$   
 Prove:  $\triangle LIT \cong \triangle IGH$

