1. Fill in the blanks below using the properties of parallelograms. These may be used in the following two proofs as reasons for statements you may need to make.

   a. Parallelogram → _____ sides are _____

   b. Parallelogram → _____ sides are _____

   c. Parallelogram → _____ angles are _____

   d. Parallelogram → _____ angles are _____

   e. Parallelogram → diagonals _____

2. **Complete the following proof.**

   Given: Parallelogram $ABCD$ with diagonals $\overline{AC}$ and $\overline{BD}$
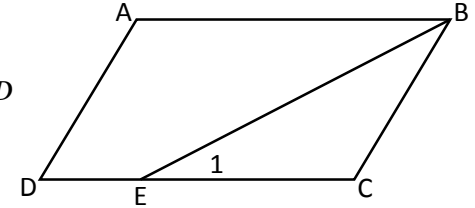
   Prove: $EG \cong FG$
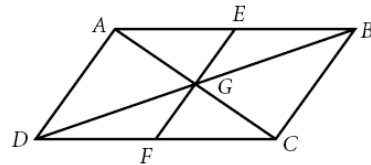
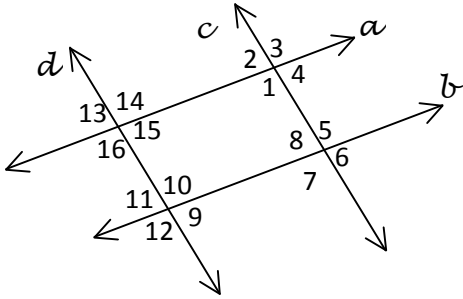| Statements	Reasons
	Given
$\angle BAC \cong DCA$	...
$\overline{AG} \cong \overline{CG}$	
	Vertical angles are congruent.
	ASA

3. Given: ABCD is parallelogram; $BE \cong AD$

   Prove: $\angle 1 \cong \angle C$

Statements	Reasons

4. Using the diagram below, identify which lines are parallel if the information given is true. Write a reason to support your conclusion. If the information is not enough to prove any lines are parallel, just write NONE.

a. ∠2≅∠6: _____ _____

b. ∠8 supp ∠10: _____ _____

c. ∠13≅∠10: _____ _____

d. ∠12≅∠7: _____ _____

e. ∠1≅∠14: _____ _____

f. ∠13≅∠15: _____ _____

g. ∠11 supp ∠5: _____ _____

5. Given: A(-4, -8), B(-2, 4), C(3,10), and D(1, -2)

a. Using the definition of a parallelogram, determine whether the figure is one.

b. Find AD. (length)

c. Find the equation of the line going through points A and B.

d. Find the equation of a line perpendicular to AB, passing through (6,-5).

e. Find the equation of a line parallel to AB, passing through (3, 7).