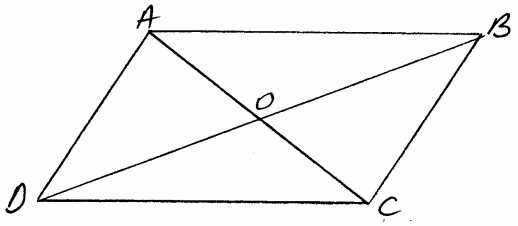
Math 61 Spring 2006 **QUIZ #3 @ 30 points** Name: SOLUTIONS

Write in a neat and organized fashion. Use a pencil. Show all work to get credit.

1. First, draw a parallelogram. Then answer the following questions. Write all your answers using mathematical notation pertinent to your drawing.



a) How are the sides of a parallelogram? Write all the relationships between the sides of a parallelogram.

$\overline{AB} \parallel \overline{DC}$ $\overline{AB} \cong \overline{DC}$ (opposite sides ∥)

$\overline{AD} \parallel \overline{BC}$ $\overline{AD} \cong \overline{BC}$ (opposite sides ∥)

b) How are the angles of a parallelogram? Write all the relationships between the angles of a parallelogram. Which angles are congruent? Which angles are supplementary? What is the sum of the measures of all angles?

$\angle A \cong \angle C$

$\angle D \cong \angle B$

(opposite ∠'s are ≅)

$m\angle A + m\angle B = 180^\circ$

$m\angle B + m\angle C = 180^\circ$

$m\angle C + m\angle D = 180^\circ$

$m\angle D + m\angle A = 180^\circ$

$m\angle A + m\angle B + m\angle C + m\angle D = 360^\circ$

c) How are the diagonals of a parallelogram? They bisect each other.

$\overline{AO} \cong \overline{CO}$ $\overline{DO} \cong \overline{BO}$

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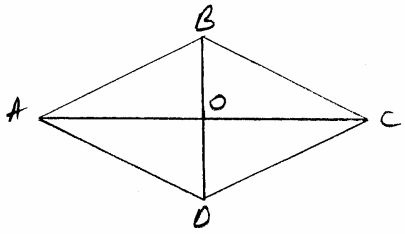
2. First, draw a rhombus. Then answer the following questions. Write all your answers using mathematical notation pertinent to your drawing.



a) How are the sides of a rhombus? Write all the relationships between the sides of a rhombus.

$\overline{AB} \parallel \overline{DC}$ $\overline{BC} \parallel \overline{AD}$

$\overline{AB} \cong \overline{BC} \cong \overline{CD} \cong \overline{DA}$

b) How are the angles of a rhombus? Write all the relationships between the angles of a rhombus.

$\angle A \cong \angle C$

$\angle B \cong \angle D$

(opposite ∠'s are ≅)

$m\angle A + m\angle B = 180^\circ$

$m\angle B + m\angle C = 180^\circ$

$m\angle C + m\angle D = 180^\circ$

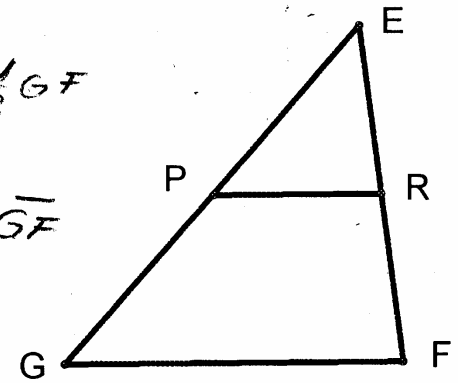
$m\angle D + m\angle A = 180^\circ$

$m\angle A + m\angle B + m\angle C + m\angle D = 360^\circ$

c) How are the diagonals of a rhombus? They are perpendicular and bisect each other

$\overline{AC} \perp \overline{BD}$ $\overline{AO} \cong \overline{CO}$ $\overline{BO} \cong \overline{DO}$

3. Use the figure to answer the questions.



Given: P, R midpoints → $\overline{PR} \parallel \overline{GF}$ and $PR = \frac{1}{2}GF$

a) What is PRFG? Why?

PRFG = Trapezoid because $\overline{PR} \parallel \overline{GF}$

b) If PR = 6 cm, find GF.

$PR = \frac{1}{2}GF \Rightarrow GF = 2PR$

$GF = 2(6) = 12$ cm

c) If GF = 26 in, find PR. $PR = \frac{1}{2}GF = \frac{1}{2}(26) = 13$ in

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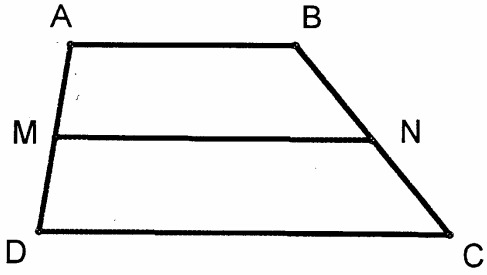
4. Use the figure to answer the questions.



Given: ABCD trapezoid
M, N midpoints

a) What relationship exists between the bases of the trapezoid? (use mathematical notation)

$\overline{AB} \parallel \overline{DC}$

b) What is the median of the trapezoid? $\overline{MN}$

c) If AB = 5 in, DC = 8 in, find MN. $MN = \frac{1}{2}(AB + DC) = \frac{1}{2}(5+8) = \frac{13}{2} = 6.5$ in

$MN = 6.5$ in

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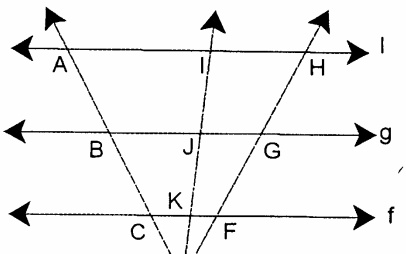
5. Use the figure to answer the questions.



(if 3 $\parallel$ lines cut $\cong$ segs on 1 trans, then $\cong$ segs on every trans.)

Given: $l \parallel g \parallel f$

$\overline{IJ} \cong \overline{JK}$

a) If AB = 11 cm, find AC. $AC = AB + BC$

but $BC = AB = 11$

$\Rightarrow AC = 2(11) = 22$ cm

b) If FH = 32 in, find FG.

$FH = FG + GH$

but $FG = GH$

$FH = 2FG \Rightarrow FG = \frac{1}{2}FH$

$FG = \frac{1}{2}(32)$

$FG = 16$ in