

Math 366

NEATLY PRINT NAME: _____

Exam 2

STUDENT ID: _____

Fall 2005

DATE: _____

Scarborough

PHONE: _____

EMAIL: _____

SECTION (circle one): 502_{TR3:55pm} 503_{TR5:30pm}

"On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."

Signature of student

Academic Integrity Task Force, 2004

<http://www.tamu.edu/aggiehonor/FinalTaskForceReport.pdf>

WRITE ALL SOLUTIONS IN THE SPACE PROVIDED; FULL CREDIT WILL NOT BE GIVEN WITHOUT CORRECT ACCOMPANYING WORK. FULLY SIMPLIFY ALL ANSWERS AND GIVE EXACT ANSWERS UNLESS OTHERWISE STATED. WHERE PROVIDED, PUT YOUR FINAL ANSWER IN THE BLANK PROVIDED. POINTS WILL BE DEDUCTED FOR SPELLING ERRORS. REMEMBER YOUR UNITS!

1. (10pts – 1pt each) True/False. Write 'true' or 'false;' do not abbreviate.

- _____ a. A rhombus has all the properties of a parallelogram, a kite, and a square.

- _____ b. Similar figures are always congruent.

- _____ c. Any point that is equidistant from the sides of an angle is on the angle bisector of the angle.

- _____ d. The diagonals of a kite are perpendicular bisectors of each other.

- _____ e. For every isosceles triangle, the angle bisector of an angle formed by two sides contains an altitude of the triangle and is the perpendicular bisector of the third side of the triangle.

- _____ f. If a line bisects one side of a triangle and is parallel to the second side, then it bisects the third side and therefore contains the midsegment.

- _____ g. Any pair of parallel lines have equal slopes.

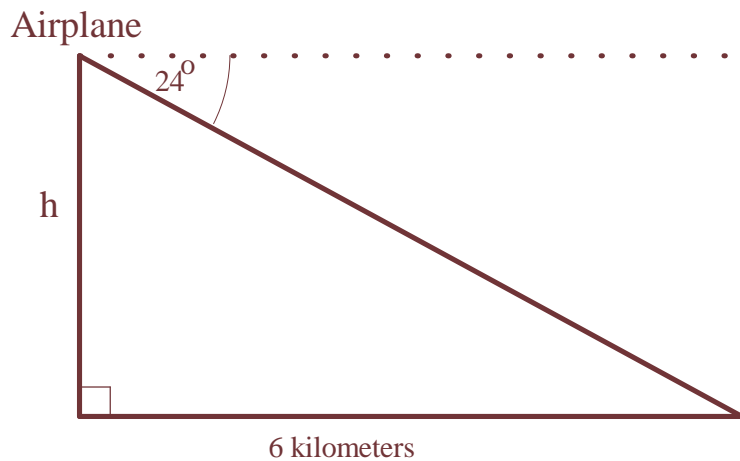
- _____ h. For each parallelogram, consecutive sides are supplementary.

- _____ i. A semi-circle is any part of a circle that can be drawn without lifting a pencil.

- _____ j. The circumcenter is the center of the circle inscribed in a triangle.

2. (5pts) _____ The lengths of two sides of a triangle are 14 and 20. If x is the length of the third side, use the Triangle Inequality to find the range of real-number values for x .

3. (4pts) _____ With the given angle of depression, find the exact height of the airplane.



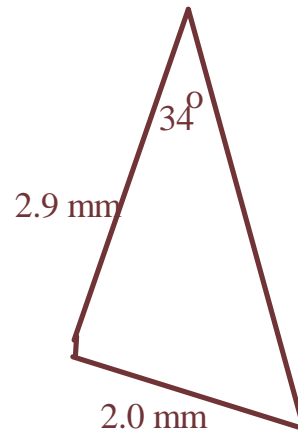
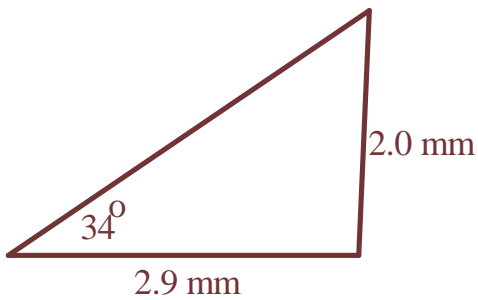
4. (4pts) $y =$ _____ Find the slope-intercept equation of the line that passes through the points $(5, -2)$ and $(-4, 1)$

5. (5pts) _____ Solve the system of equations.

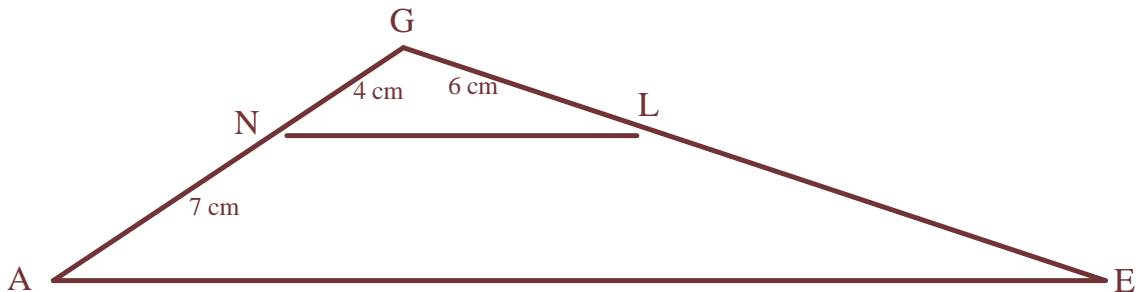
$$10y = 30x - 45$$

$$42x - 14y = 63$$

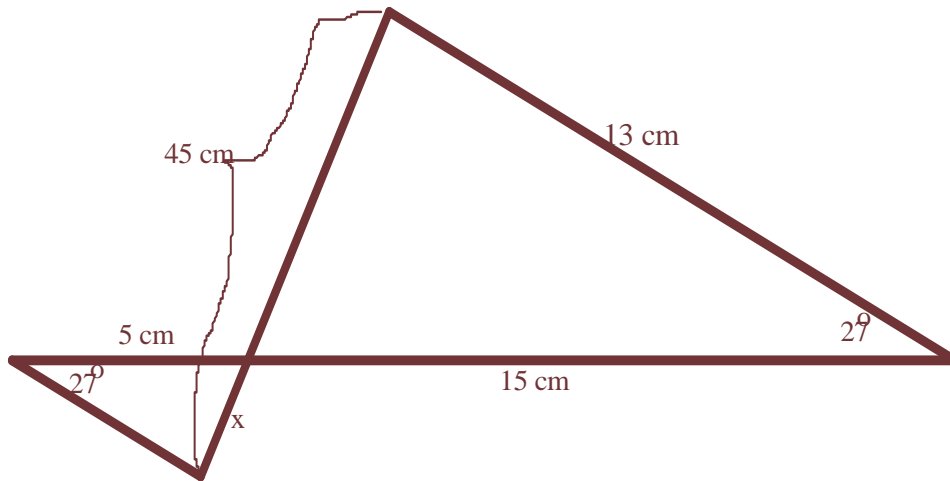
6. (4pts) _____ Identify the property that would prove the pair of triangles congruent. If no such property exists, write "none."



7. (5pts) _____ If $\overline{NL} \parallel \overline{AE}$ what is LE?



8. Solve for x. What theorem (give a complete sentence) and what property (give its name) did you use before you knew you could solve for x?



a. (3pts) _____ = x

b. (1pt) _____ is theorem used.

c. (1pt) _____ is name of property.

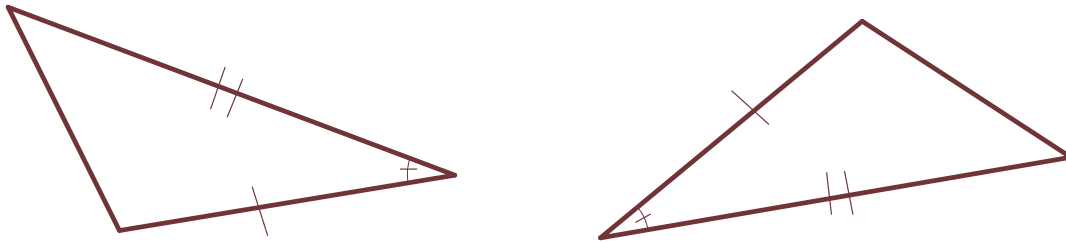
9. Exactly find the following.

a. (2pts) $\tan 60^\circ =$ _____

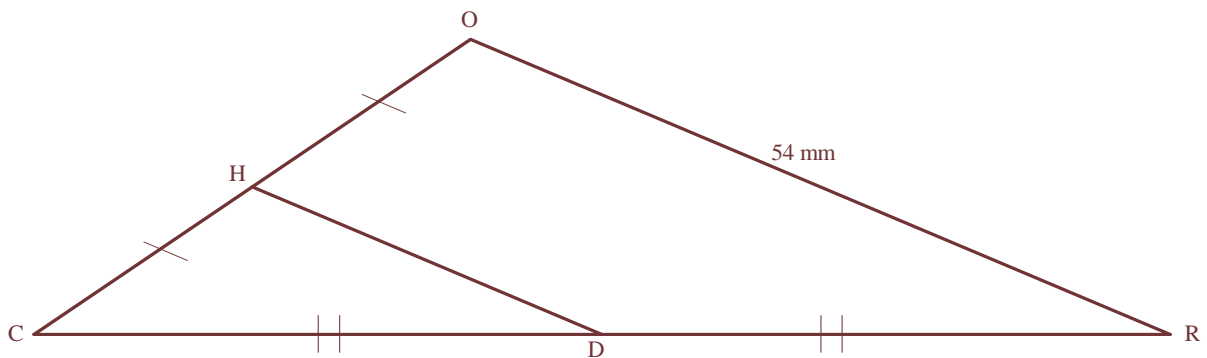
b. (2pts) $\cos 45^\circ =$ _____

c. (2pts) $\sin^{-1} \frac{\sqrt{3}}{2} =$ _____

10. (4pts) _____ Identify the property that would prove the pair of triangles congruent. If no such property exists, write “none.”



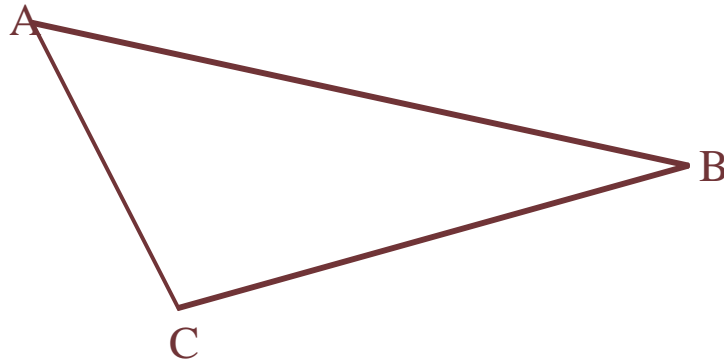
11. (5pts) _____ What is the length of \overline{HD} ?



12. (4pts) _____ In a $30^\circ - 60^\circ - 90^\circ$ triangle, if the leg across from the 60° angle has length $\frac{\sqrt{7}}{3}$ cm, what is the length of the hypotenuse?

13. (2pts) What does CPCTC stand for? Make a complete, grammatical correct sentence.

14. (4pts) Construct the altitude from vertex B in the given triangle. Then by construction, bisect angle A.

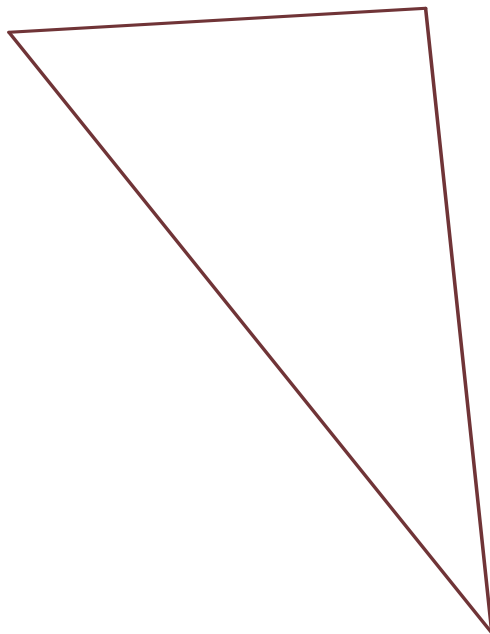


15. (4pts) By construction, 5-sect the given line segment.

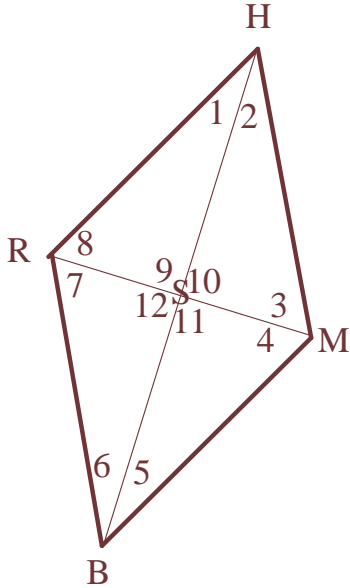


16. (4pts) Construct a *non-regular* convex quadrilateral. Then construct a midsegment of your polygon. Label the endpoints of your midsegment M and D.

17. (4pts) By construction, circumscribe the given triangle.



18. (11pts) Prove each diagonal of a rhombus bisects the opposite angles. (Use the figure below; do not rename any angles or segments or vertices. Where possible, use the provided numbers to name the angles.)



1. rhombus RHMB with diagonals \overline{RM} and \overline{HB}

1. given

2.

2.

3. $\overline{RM} \cong \overline{RM}$, $\overline{HB} \cong \overline{HB}$

3.

4. $\triangle HMB \cong$

4.

$\triangle RHM \cong$

5. $\angle 1 \cong$

5.

$\angle 5 \cong$

$\angle 3 \cong$

$\angle 7 \cong$

6.

6.

qed

19. (10pts) Prove: If the hypotenuse and an acute angle of one right triangle are congruent to those of another right triangle, respectively, the two triangles are congruent. This is also known as the **HA Theorem**.