Test 3 MAT 104 Winter 2008 Name_____

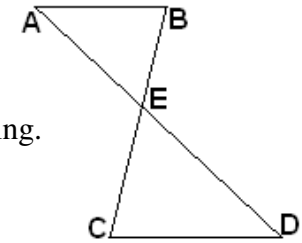
Simplify all answers and show your work!

1) The Hypotenuse-Leg Theorem can only be used with __right__ triangles.

2) In similar triangles, corresponding angles are __congruent__.

3) The symbol ≅ means __congruent to__.

4) If ΔABE ~ ΔDCE where AB = 7 , AE = 7.2, BE = 5.9, and DC = 8.5, find the following.



a) CE = __7.16__ b) ED = __8.74__

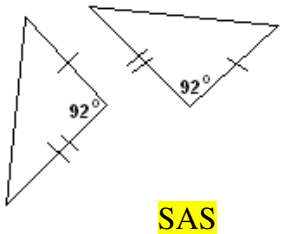
c) ∠BAE ≅ __∠CDE__ d) ∠AEB ≅ __∠DEC__ e) ∠ABE ≅ __∠DCE__

5) A tree casts a shadow of 50 feet at the same time that a person who is 5.5 feet tall casts a shadow of 6 feet. How tall is the tree?

45.8 feet

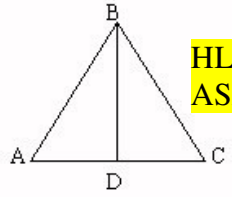
6) For each pair of triangles, determine which theorem – if any – proves congruence: SSS, SAS, ASA, AAS, HL, or none.

a)



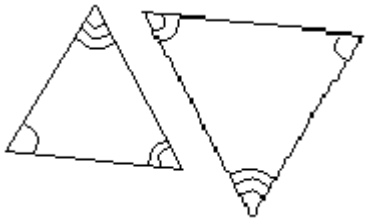
SAS

b) ΔABC is equilateral and ∠BDA = 90°



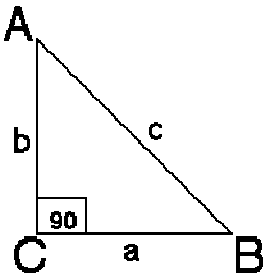
HL, SSS, SAS, ASA, or AAS

c)



None

Use the right triangle below to answer questions 7 – 12.



7) If a = 5 and b = 7, find tan A.

$\frac{5}{7}$

8) If b = 12 and c = 15, find a.

a = 9

9) If a = 3 and c = 8, find sin B.

0.9270

10) If m∠A = 35° and b = 14, find a.

9.8

11) If m∠B = 63° and c = 7.2, find b.

6.4

12) If a = 2.3 and b = 4.1,

a) find m∠A. 29.3°

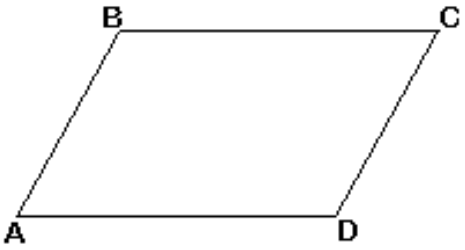
b) find m∠B. 60.7°

Find the values of the following.

13) $\cos 13.9^\circ$ 14) $\tan 79.23^\circ$ 15) $\sin 80^\circ$ 16) $\cot 24.97^\circ$ 17) $\sec 44^\circ$

0.9707 5.2571 0.9848 2.1474 1.3902

Given the parallelogram to the right, answer the following questions.



18) If AB = 14.1 and BC = 18.7, find the following.

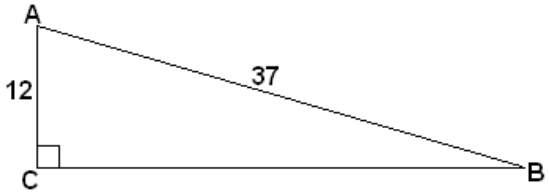
a) CD = 14.1 b) AD = 18.7

c) The perimeter of the parallelogram = 65.6

19) Given $m\angle A = 62^\circ$, find the following.

a) $m\angle C$ = 62° b) $m\angle B$ = 118° c) $m\angle D$ = 118°

20) Given the triangle to the right, find the following.



a) CB = 35 b) sin A c) cos A d) tan A

$\frac{35}{37}$ $\frac{12}{37}$ $\frac{35}{12}$

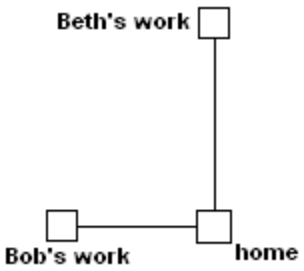
e) cot A f) csc A g) sec A h) $m\angle A$ i) $m\angle B$

$\frac{12}{35}$ $\frac{37}{35}$ $\frac{37}{12}$ 71.1° 18.9°

21) A 30-foot ladder is leaning against a building. If the base of the ladder is 10 feet away from the base of a building, how far up the building does the ladder reach?

28.28 feet

22) Beth drives to work, which is 30 miles due north from home. Her husband, Bob, drives to work 20 miles due west from home. How far apart are their workplaces? (See figure below.)



36.1 miles

23) A scale model of an airplane uses a scale of 1 inch on the model to 40 inches on the actual airplane. If the model has a wingspan of 8.3 inches, what is the wingspan on the actual airplane?

332 inches or $27\frac{2}{3}$ feet