Math 206 - Test 3

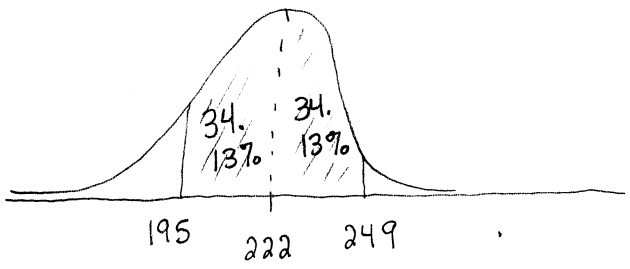
April 24, 2012

Name key

Score _____

Show all work to receive full credit. Supply explanations where necessary.

1. (5 points) A stay in a U.S. emergency room has an average length of 222 minutes with a standard deviation of 27 minutes. Assuming stay lengths are normally distributed, about how many patients in a group of 700 will have stays that last between 195 minutes and 249 minutes?



$z_{249} = \frac{249-222}{27} = 1$

$z_{195} = \frac{195-222}{27} = -1$

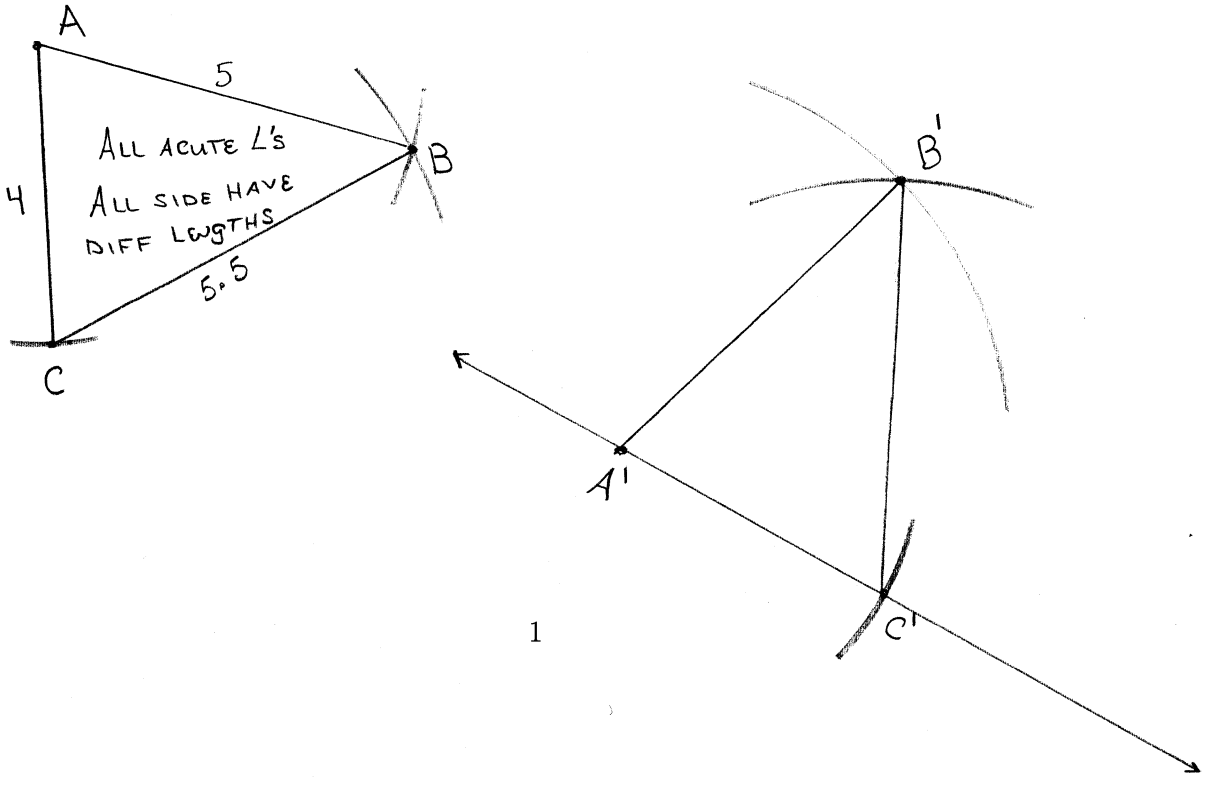
Look up $z = 1$ To get 34.13%

34.13% on each side

$\Rightarrow$ 68.26%

68.26% of 700 $\approx$ 478

2. (5 points) Use a straightedge to sketch a random acute, scalene triangle. Then use the SSS property to construct (with compass and straightedge only) a congruent triangle.



3. (5 points) An angle measures $53°40'25''$. Find the measure of its complement. Write your answer in degrees in decimal form, rounding to the nearest thousandth.

$90° = 89° 59' 60''$

$$\begin{array}{r} 89°\,59'\,60'' \\ -\ 53°\,40'\,25'' \\ \hline 36°\,19'\,35'' \end{array}$$

$36°$

$\frac{19'}{1} \cdot \frac{1°}{60'} = 0.31\overline{6}$

$\frac{35''}{1} \cdot \frac{1°}{3600''} = 0.00972$

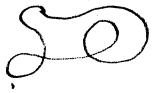
$36.32638°$

$\approx$

$36.326°$

4. (5 points) Roughly sketch each of the following or state that it is not possible.

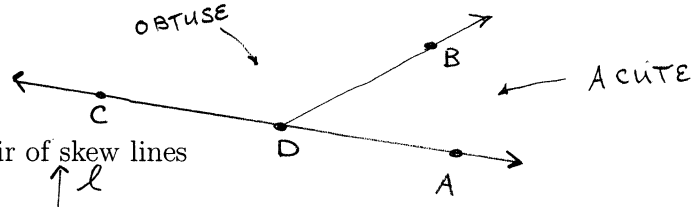
(a) A closed curve that is not simple



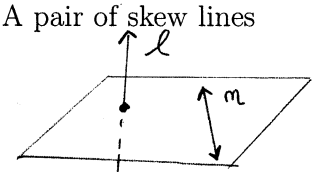
(b) Three non-coplanar points

NOT POSSIBLE

(c) Two adajcent angles where one is acute and one is obtuse

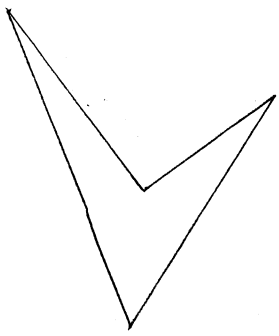


(d) A pair of skew lines



ℓ AND m ARE SKEW BECAUSE THEY DO NOT SHARE A PLANE

(e) A concave quadrilateral



5. (5 points) Finish each statement below by using **every** appropriate word (or abbreviation) from this list:

RT—right triangle	AT—acute triangle	OT—obtuse triangle	ST—scalene triangle
IT—isosceles triangle	ET—equilateral triangle	T—trapezoid	K—kite
P—parallelogram	R—rectangle	Rh—rhombus	S—square

(a) An example of a quadrilateral that is not necessarily a parallelogram is a

T, K

(b) A square is also a

T, K, P, R, Rh

(c) An example of a parallelogram with a right angle is

R, S

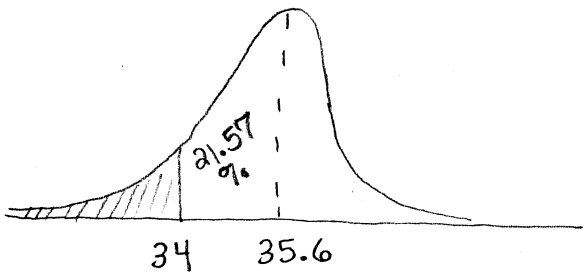
(d) A three-sided polygon with angles that measure 45°, 90°, and 45° is a

RT, IT

(e) An example of a kite that is also a parallelogram is

Rh, S

6. (5 points) Adult male wombats in Narawntapu National Park have a mean weight 35.6 kg with a standard deviation of 2.8 kg. If these weights are normally distributed, about what percent of the park's adult male wombats weigh less than 34 kg?



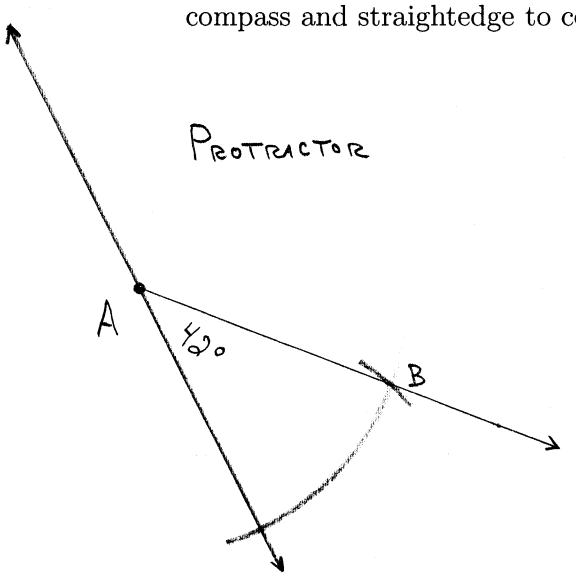
$$z_{34} = \frac{34 - 35.6}{2.8} \approx -0.57$$

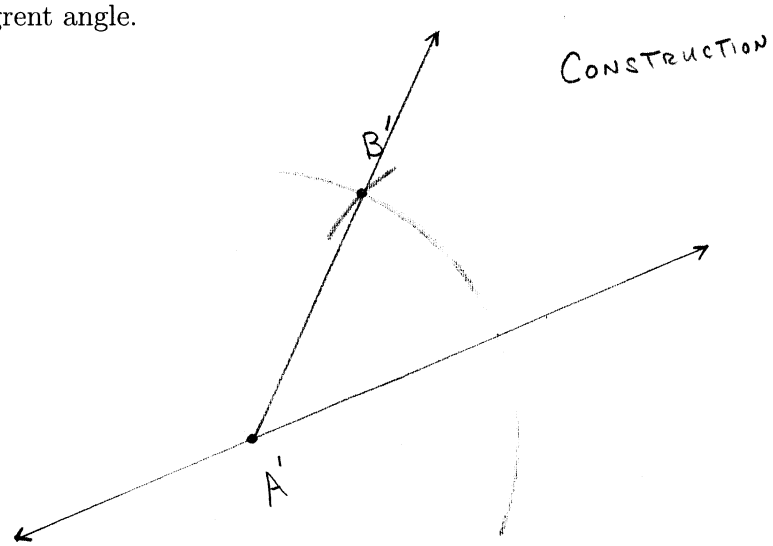
Look up 0.57 to get 0.2157

50% - 21.57%

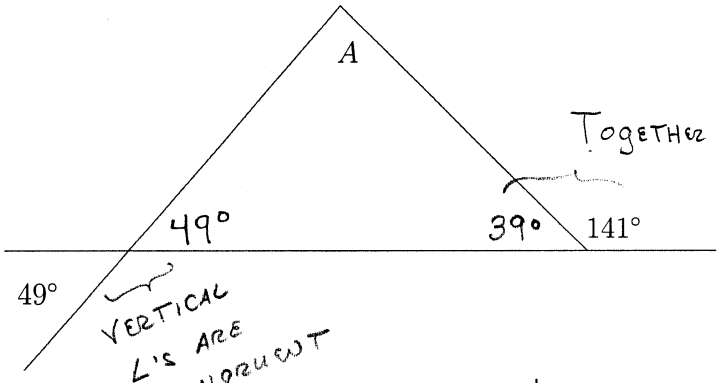
= 28.43%

7. (5 points) Use your protractor to sketch an angle that measures 42°. Then use your compass and straightedge to construct a congrent angle.





8. (3 points) Find the measure of the angle at A. Carefully explain your reasoning.



INTERIOR ∠'S OF △ ADD UP TO 180° ⇒

$m(\angle A) = 180° - 49° - 39°$

$= \boxed{92°}$

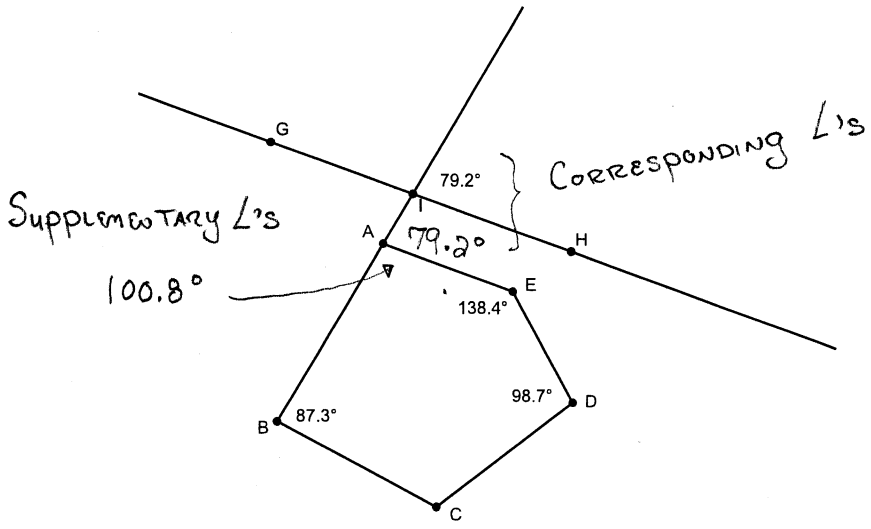
9. (2 points) What is the measure of each interior angle of a regular nonagon?

SUM OF ANGLE MEASURES $= (9-2)\,180° = 1260°$

EACH ∠ MEASURES

$\frac{1260°}{9} = \boxed{140°}$

10. (5 points) In the following figure, $\overline{AE} \parallel \overline{GH}$. Find the measure of $\angle BCD$.



INTERIOR ∠'S OF A CONVEX PENTAGON ADD UP TO 540°

$m(\angle BCD) = 540° - 87.3° - 100.8° - 138.4° - 98.7°$

$= \boxed{114.8°}$

11. (5 points) Fill in a word that correctly completes each sentence.

(a) A simple, closed, polygonal curve is called a POLYGON.

(b) When two lines intersect, pairs of congruent angles, called VERTICAL angles, are formed.

(c) Two angles that share a common side and have non-overlapping interiors are called ADJACENT angles.

(d) A POLYHEDRON is a simple, closed surface made up entirely of polygonal regions called faces.

(e) Two angles are supplementary if together they make a STRAIGHT angle.