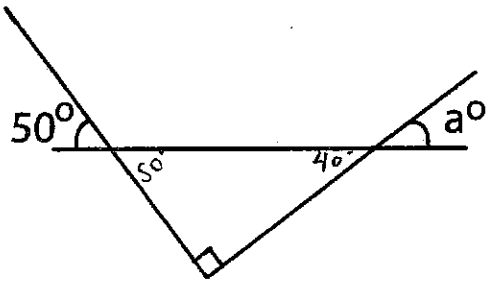
/ [redacted] S09310elB

Name: [redacted]

Math 310 Spring 2009, Exam 1, Version B

1) (3 pts each) In each of the following, find the value of a.

a.

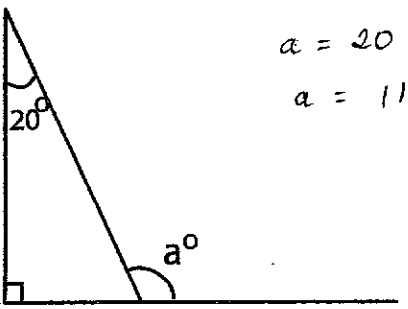


$180 - (90+50)$ vert. $\angle$s

$180 - 140 = a$

$a = 40°$ vert. $\angle$s

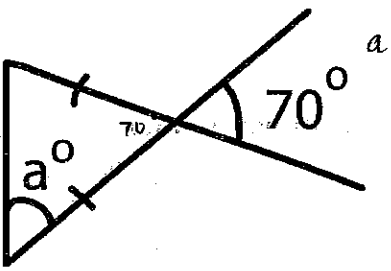
b.



$a = 20 + 90$ exterior $\angle$

$a = 110°$

c.

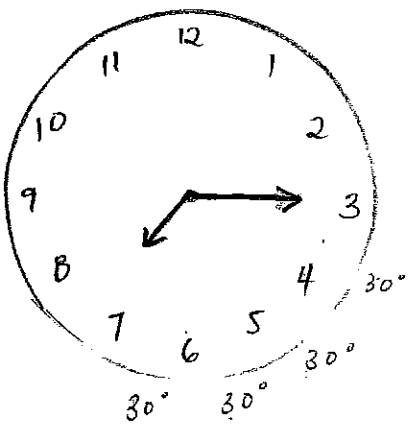


$a = \frac{180-70}{2}$ base $\angle$s of an isos. $\triangle$

$a = \frac{110}{2}$

$a = 55°$

2) (6 pts) Sketch a clock face showing 7:15 and calculate the *smaller* angle formed by the clock hands.



$\frac{30}{4} = 7.5$

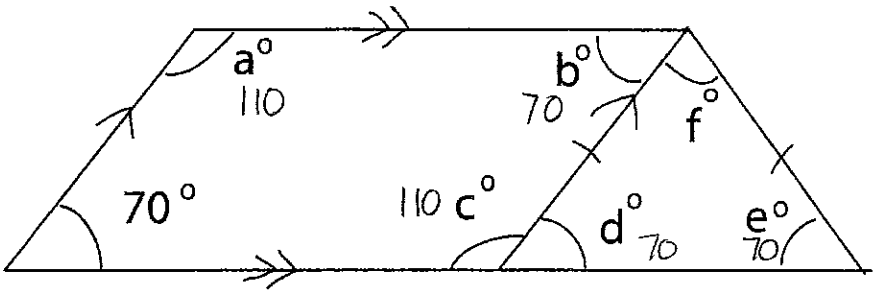
$= 127.5°$

$(30 \times 4) + 7.5$

$120 + 7.5 =$

15

3) (8 pts) Give a Teacher's solution to find the missing angles in the figure below.



a + 70° = 180 — int ∠'s of parallelogram
a = 110

110 + b = 180 — int ∠'s of parallelogram
b = 70

70 + c = 180 — int ∠'s of parallelogram
c = 110

110 + d = 180 — ∠'s on a line
d = 70

d = e — base ∠'s of isoc △
d = 70
e = 70

70 + 70 + f = 180 — ∠ sum of △
140 + f = 180
f = 40

4) a. (2 pts) Use your ruler to draw a line segment that is 5 centimeters long.

b. (3 pts) Measure the line segment you drew in part (a) in inches. It is roughly 2 inches long. Therefore, 1 inch is approximately 2.5 centimeters long.

c. (8 pts) Arrange the following lengths in order, beginning with the shortest.

1 yd, 80 cm, 2 ft, 35 in

1 yd = 3 ft = 36 in

$36\text{ in} \times \frac{2.5\text{ cm}}{1\text{ in}} = 90\text{ cm}$

1 yd = 90 cm

$2\text{ ft} \times \frac{12\text{ in}}{1\text{ ft}} = 24\text{ in}$

$24\text{ in} \times \frac{2.5\text{ cm}}{1\text{ in}} = 60\text{ cm}$

$35\text{ in} \times \frac{2.5\text{ cm}}{1\text{ in}} = 87.5\text{ cm}$

90 cm, 80 cm, 60 cm, 87.5 cm

60 cm, 80 cm, 87.5 cm, 90 cm → 2 ft, 80 cm, 35 in, and 1 yd

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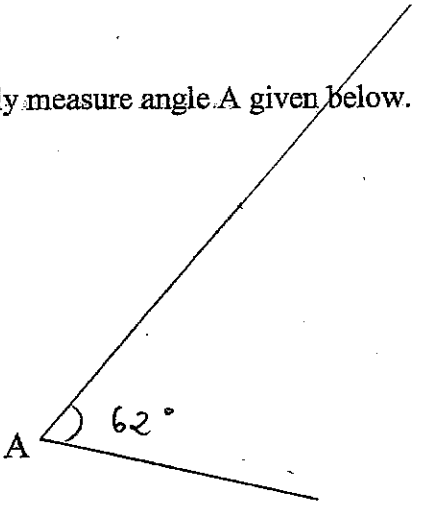
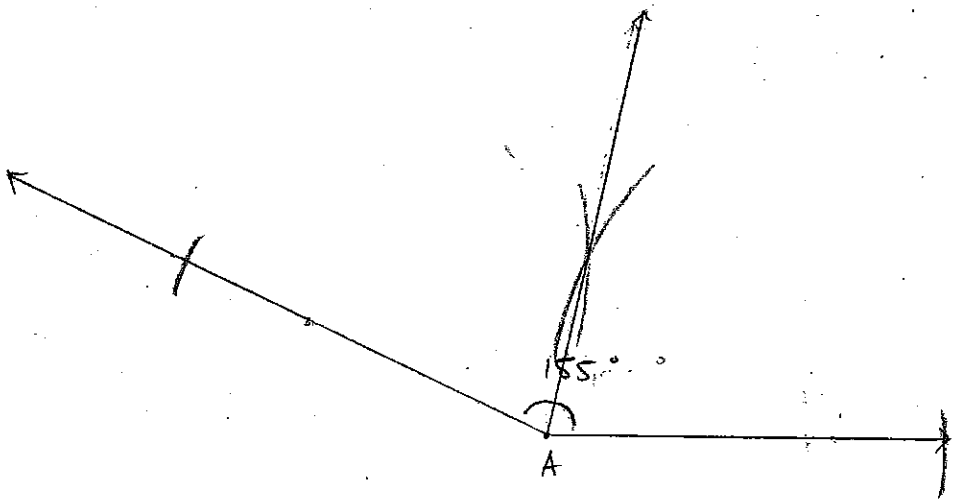
5) a. (3 pts) Use your protractor to precisely measure angle A given below.



$\angle A = 62°$

b. (4 pts) Use a straightedge and *protractor* to carefully draw a 155 degree angle.



$\angle A = 155°$

77
2 | 155
14
15

c. (5 pts) Use a straightedge and compass ONLY (no protractor!) to carefully bisect the 155 degree angle you drew in part (b). Show your work above and show ALL construction marks.

12

6) (3 pts each) Which of the following could be lengths of the sides of a triangle? In each case, explain your answer.

a. 5 cm, 4 cm, 1 cm No.
the sum of the shorter sides must be greater than the longest to form a triangle.
They could not lay next to each other perfectly.

b. 6 cm, 8 cm, 4 cm
yes.
4 + 6 cm = 10
10 cm > 8 cm.

7) (2 pts each) Fill in the blanks.

a. Two angles are supplementary if the sum of their measures is 180 degrees.

b. Two angles are complementary if the sum of their measures is 90 degrees.

8) (3 pts each) Complete the following definitions:

a. A scalene triangle is a triangle in which
none of the sides are congruent.

b. A trapezoid is a quadrilateral in which
exactly one pair of sides is parallel.

c. A rhombus is a
parallelogram with 4 equal sides.

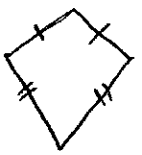
□ w/ right ∠s

9) (4 pts) Is every square a rectangle? If so, explain why. If not, draw a counterexample (i.e. a square that is NOT a rectangle).

Yes. □ has 2 pairs of ∥ sides & 4 right ∠s.

10) (4 pts) Is every kite a parallelogram? If so, explain why. If not, draw a counterexample (i.e. draw a kite that is NOT a parallelogram).

No



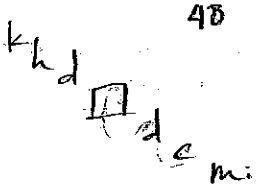
No. 2 pairs of ∥ sides, as a parallelogram requires.

11) (2 pts each) Complete the following.

a. 288 in = 24 ft = 8 yd

$12\overline{)288}$ → 24 → 48

b. 150.3 m = 15030 cm



c. 2213 mm = 2.213 m

d. 8723.1 L = 8723100 mL

12) (5 pts) Give a Teacher's Solution to the following.

2 L 500 mL + 750 mL = 3.25 L

1 L = 1000 ML

2 L 500 ML
+ 750 ML
2L 1250 ML ⇒ 3L 250 ML
= 3.25 L

(1000 ML = 1 L
So take 1000 from here & add it to the 2L on the other side)

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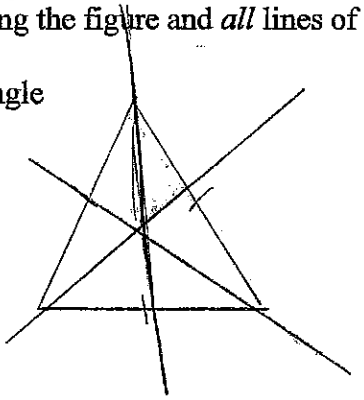
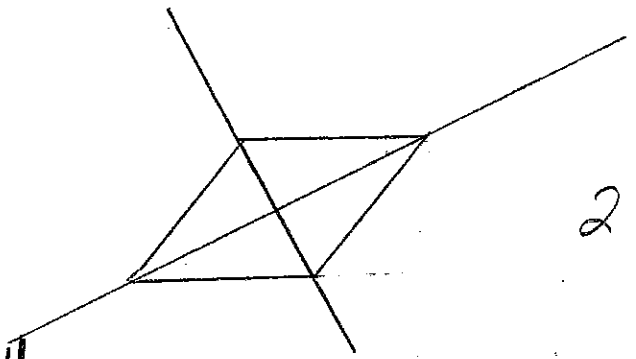
13) (3 pts each) In general, how many lines of symmetry does each of the following figures have? Draw sketches showing the figure and *all* lines of symmetry.

a. equilateral triangle



3 lines

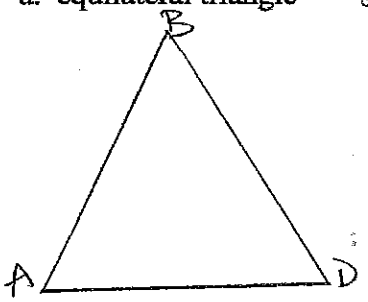
b. rhombus



2 lines

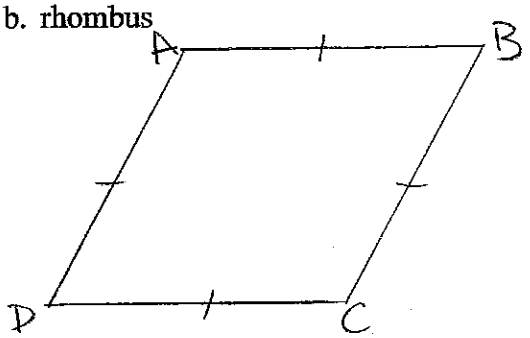
14) (3 pts each) Determine whether each of the following figures has rotational symmetry. In each case, determine the smallest angle for which the figure has rotational symmetry and the *order* of the rotational symmetry. If the figure does not have rotational symmetry, write "none."

a. equilateral triangle $3\overline{)360}^{120}$



120° & order 3

b. rhombus



180° & order 2

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