Final Exam – Part II: 150 points   **Name**_____
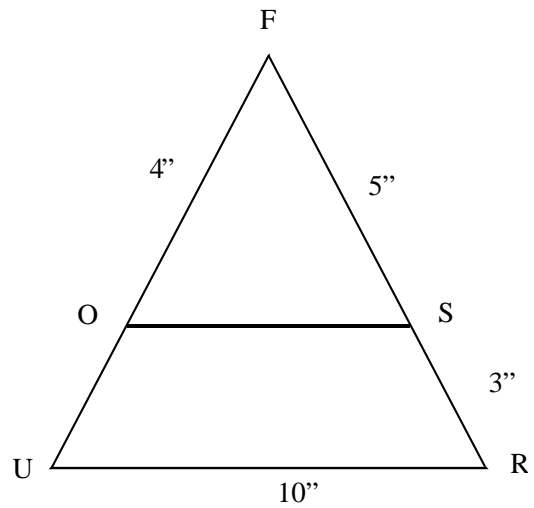
1. (16 pts) Given the figure shown below with $OS \parallel UR$, find the following:

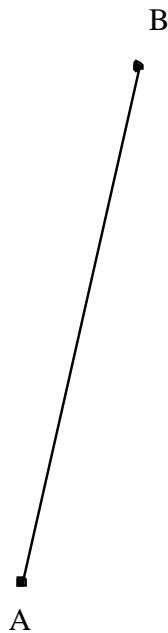   **A.** OS

   B. OU

   C. $\dfrac{\rho_{\triangle UFR}}{\rho_{\triangle OFS}}$

   D. $\dfrac{\alpha_{\triangle UFR}}{\alpha_{\triangle OFS}}$

Figure: Triangle UFR with apex F at top, base UR at bottom. Segment OS is drawn parallel to UR. Labels: $FO = 4"$ on the left side, $FS = 5"$ on the right side, $SR = 3"$, $UR = 10"$.

1. (5 pts) Bisect the following line segment. Label the midpoint C.

Figure: Line segment from point A (bottom) to point B (top).

2. (14 points total) Use $\triangle ABC$ to answer the following to the nearest degree. Given $m\angle B = 43°$. **<u>SKIP</u>**
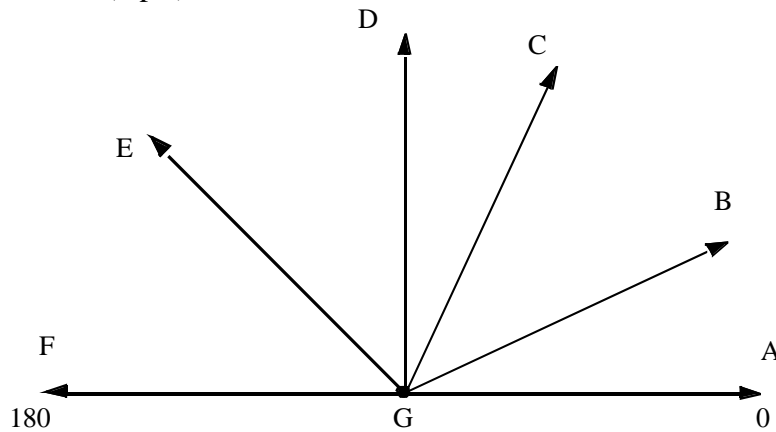
    A. What is the length of $\overline{AC}$?
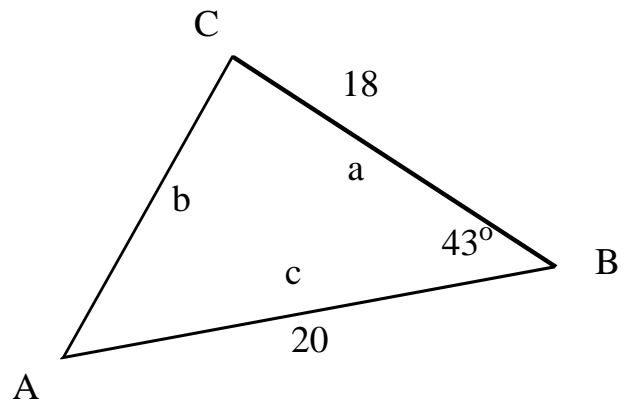
    B. What is the measure of $\angle A$?

    C. What is the measure of $\angle C$?

3. (6 pts) What is the measure of $\angle BGE$ if $\angle AGB = 40°$ and $\angle AGE = 135°$?

4. (12 pts) Given the figure shown below. Determine the measures of ∠1 through ∠12 .

$m\angle 1 = $ _____ $m\angle 7 = $ _____

$m\angle 2 = $ _____ $m\angle 8 = $ _____

$m\angle 3 = $ _____ $m\angle 9 = $ _____

$m\angle 4 = $ _____ $m\angle 10 = $ _____

$m\angle 5 = $ _____ $m\angle 11 = $ _____

$m\angle 6 = $ _____ $m\angle 12 = $ _____
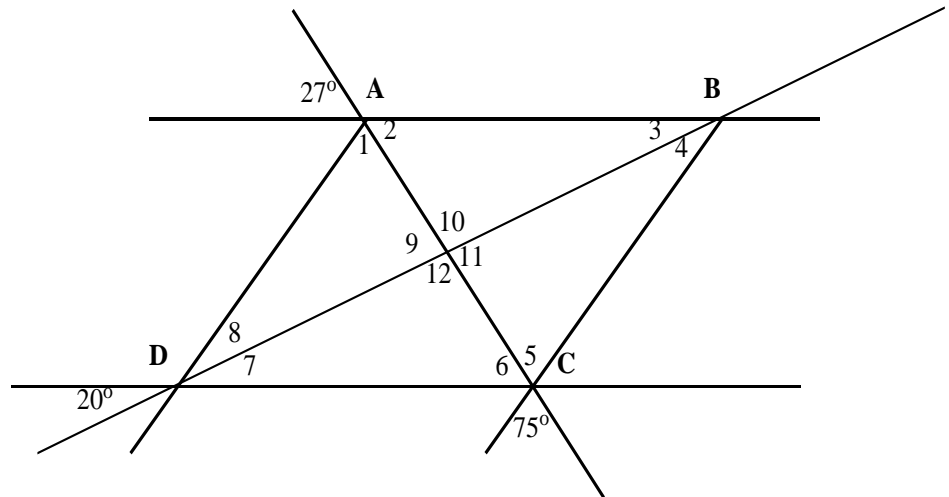
5. (12 pts) A rectangular garden is surrounded on all sides by a path that is 3 feet wide. The dimensions of the courtyard, including path and garden, are 18 feet by 24 feet. How much fencing material is needed to enclose only the garden?
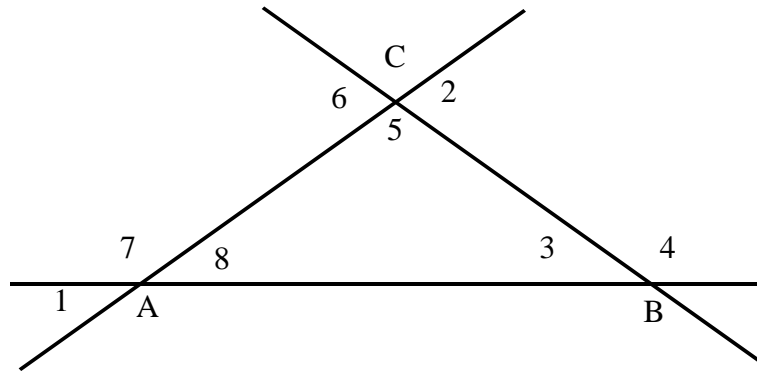
Path

Garden

18 feet

24 feet
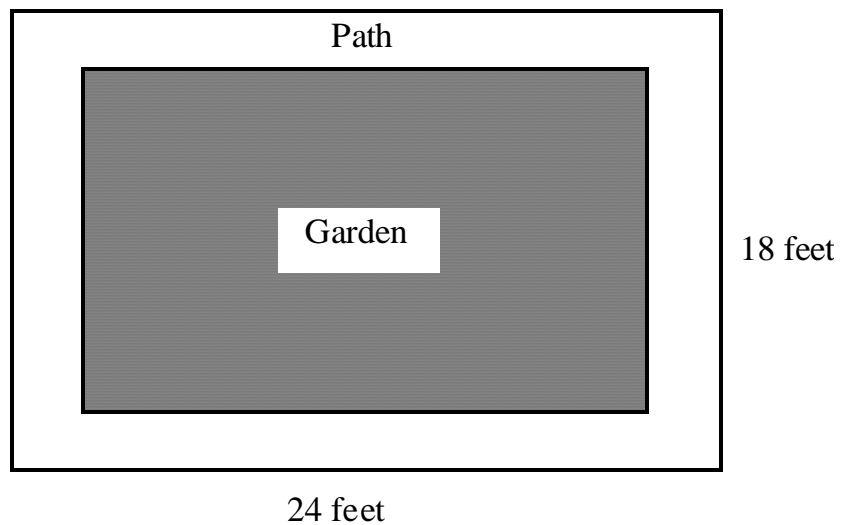
6. (6 pts) Bisect the following angle. Label the bisector $\overrightarrow{OD}$.

O
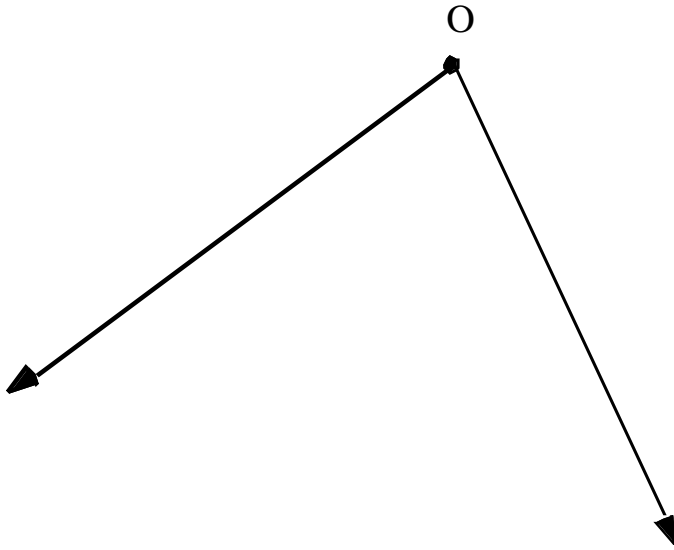
**7.** (8 pts) Draw a line parallel to $\overline{BC}$ passing through Point A.

B

A

C
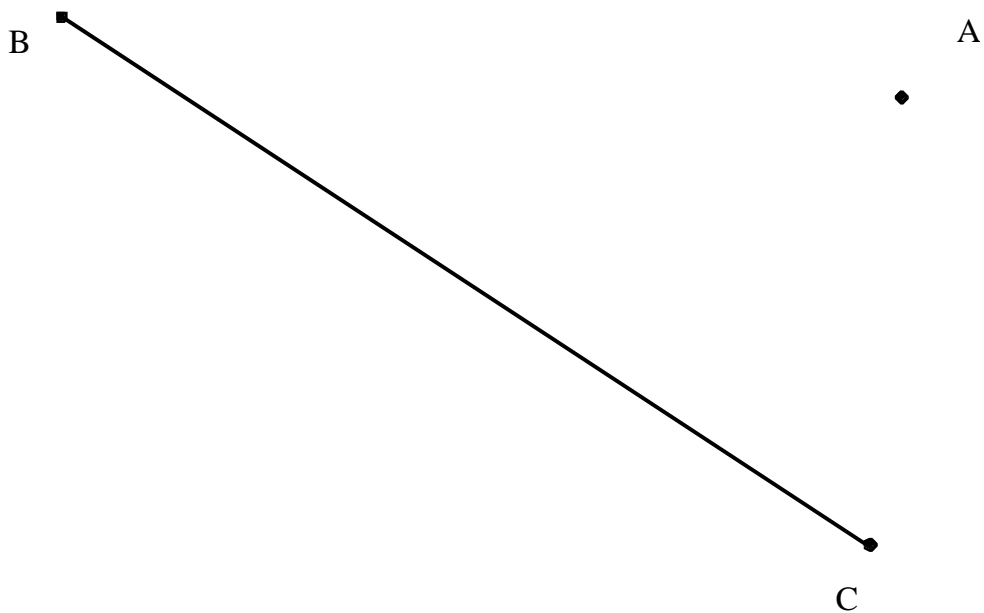
8. (12 pts) Fill in the blanks using information from the following figure.

    A. $AB + BC >$ _____   (SKIP)

    B. $\angle 4 + \angle 3 =$ _____ degrees.

    C. $\angle 4 = \angle$ ___ $+ \angle$ ___ .

    D. $\angle 7 > \angle$ ___ and $\angle 7 > \angle$ ___ .   (SKIP)

9. (3 pts each) Do the following lengths of sides form a triangle? If not, state the reason why.   (SKIP)

    A. 6, 8, 10

    B. 9, 6, 17

    C. x, $2x$, $3x$

10. (12 pts) Complete the following proof, stating the appropriate reasons justifying each statement. (NOTE: Fill in all the blanks in the *Statements* and *Reasons*. Not all the lines need to be used.)

Given: $\angle A = \angle 1$ and $\angle 2 = \angle C$

Prove: $AB = CD$
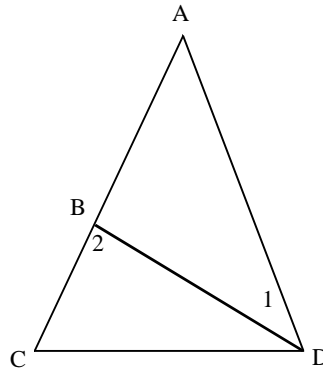
Statements   *Reasons*

1. $\angle A = \angle 1$ and $\angle 2 = \angle C$
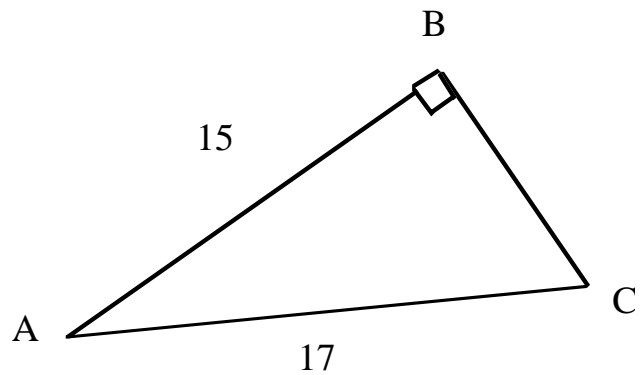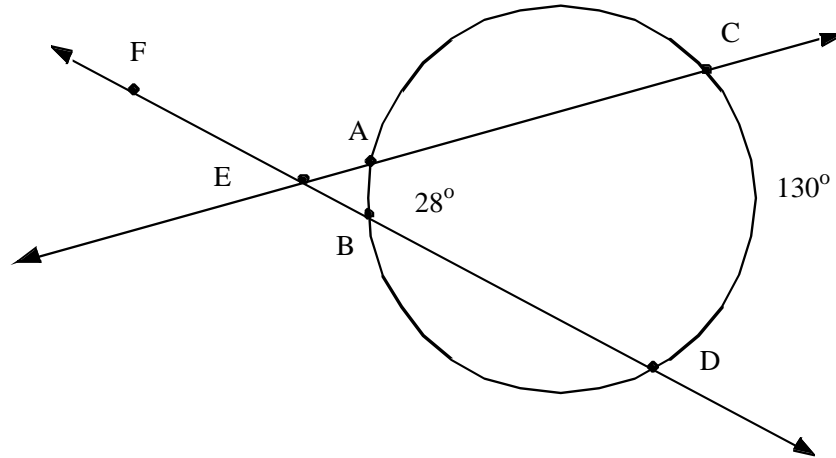
2.

3.

4.

5.

11. (8 pts) Given $\triangle ABC$.

A. Find the area of the triangle.
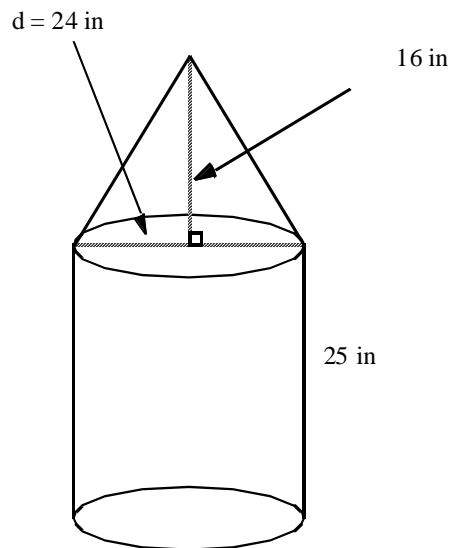

B. If the sides of the triangle are doubled, what happens to its area?.

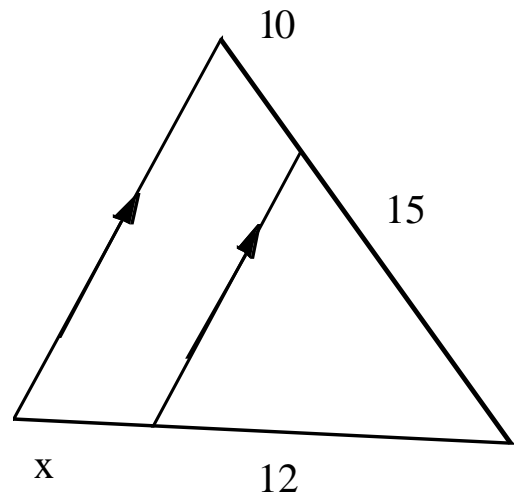**12.** (10 points) Use the circle and secants to answer the following.

What is the measure of $\angle FEC$?

13. (12 pts) Find the total volume of the figure shown below. Use $\pi = 3.14$ when necessary. Round to the nearest hundredth.

14. (8 pts) Find the length marked x in the following figure:

BONUS *(total of **20** extra points)*
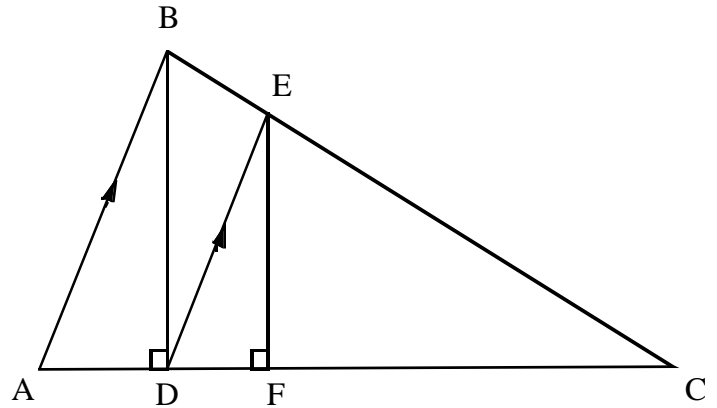
1. (8 pts) In $\triangle ABC$, $BD \perp AC$, $EF \perp AC$, and $AB \parallel DE$. $BD = 36$, $AD = 16$, and $EF = 24$.

Find the following:

DF

CF

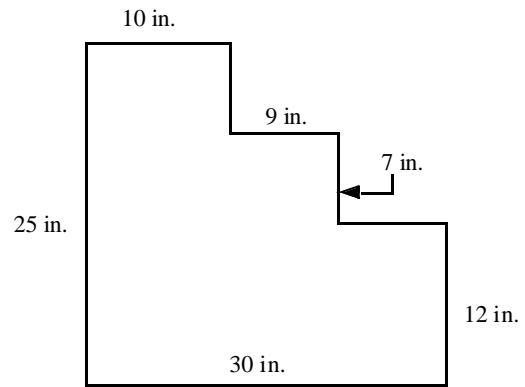$\alpha_{\triangle}ABC$

$\dfrac{\alpha_{\triangle}ABD}{\alpha_{\triangle}DEF}$

MORE ON BACK

2. (8 pts) Find the area. Assume that all sides meet at right angles.

10 in.

9 in.

7 in.

25 in.

12 in.

30 in.

3. (4 pts) What did you learn this semester?