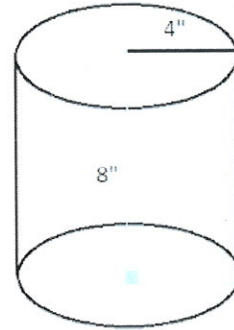


Instructions: This portion of the exam is "take-home". You may use your notes and textbook to complete the problems. Show all work. Use exact answers unless specifically asked to round. Be sure to complete all parts of each problem. Identify any formulas or conversions used.

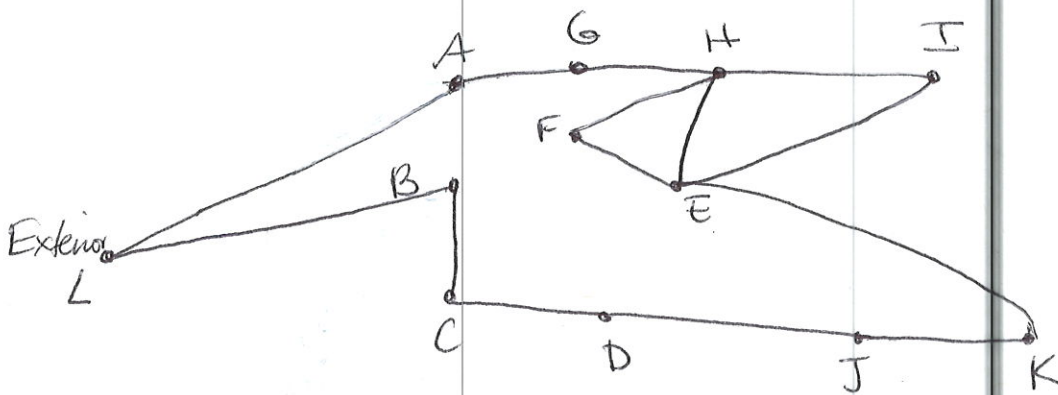
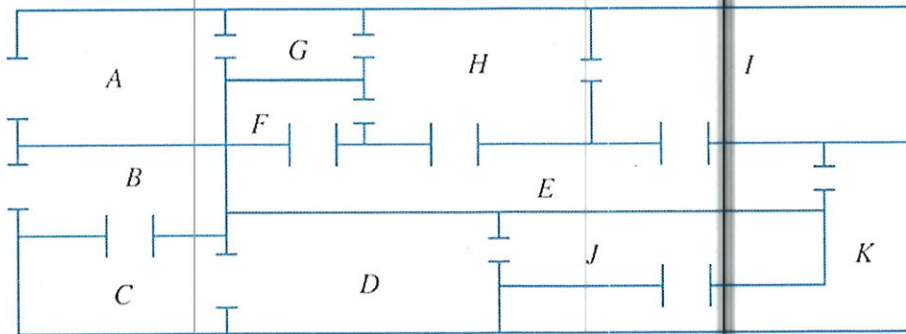
1. Find the volume and surface area of the shape below. (8 points)

$$V = \pi r^2 h = \pi (4)^2 8 = \boxed{128\pi}$$

$$SA = 2\pi r h + 2\pi r^2 = 2\pi (4)(8) + 2\pi (4)^2 = 64\pi + 32\pi = \boxed{96\pi}$$

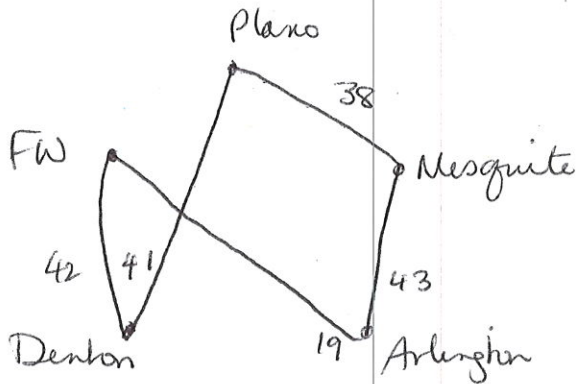


2. Find a graph to represent the floor plan below. (6 points)



3. Use the mileage table shown below and the Cheapest Link/Sorted Edges algorithm starting from Plano to find the minimal cost Hamilton circuit for traveling between the cities in the table. Be sure to clearly state the final cost of the circuit. (8 points)

	Plano	Mesquite	Arlington	Denton
Fort Worth	54	52	19	42
Plano		38	53	41
Mesquite			43	56
Arlington				50



$$38 + 43 + 19 + 41 + 42 = 183$$

4. Convert the following measurement to the indicated units. State clearly any conversion factors used. Do not just give the answer. Show work or you will receive no credit. (5 points each)

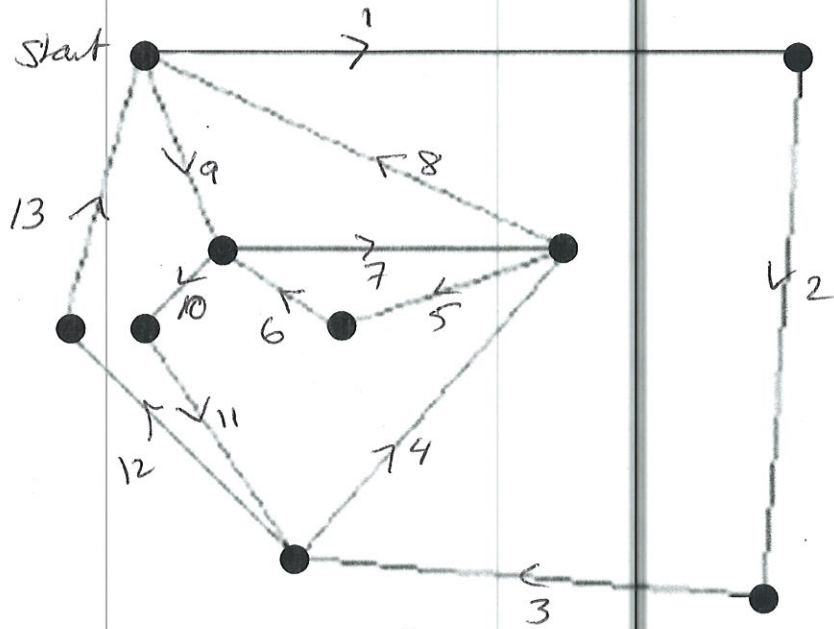
- a. $15^{\circ}F$ to degrees Centigrade (Celsius)

$$\frac{5(15-32)}{9} = -9.4^{\circ}C$$

- b. 15 inches to centimeters

$$15 \times 2.54 = 38.1 \text{ cm}$$

5. The graph below contains an Euler circuit. Find the circuit using Fleury's Algorithm or another method. Number the edges consecutively as you use them. (8 points)

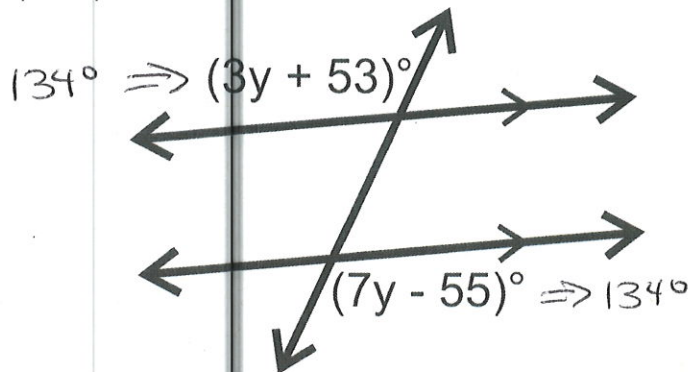


Answers will vary

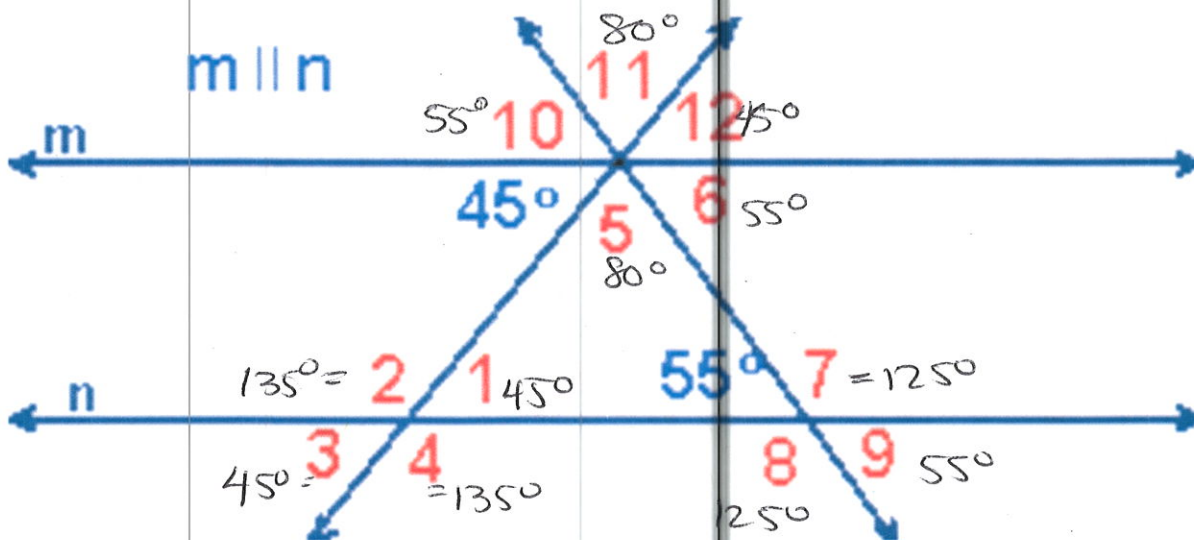
Instructions: Show all work. Use exact answers unless specifically asked to round. Be sure to complete all parts of each problem.

1. Find the measure of the marked angles. (7 points)

$$\begin{array}{r} 3y + 53 = 7y - 55 \\ -7y - 53 \quad -7y - 53 \\ \hline -4y = -108 \\ y = 27 \end{array}$$



2. Find the measure of each angle. (10 points)



3. Find the value of x . (6 points)

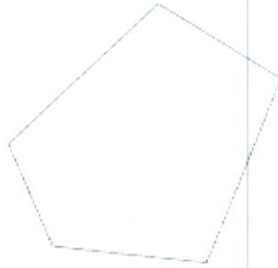


$$\begin{array}{l} 132 = 93 + 9x + 3 \\ 36 = 9x \\ x = 4 \end{array}$$

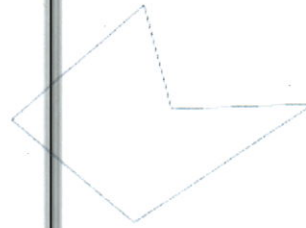
4. Identify each polygon by name and label it as concave or convex. (6 points)



triangle
convex



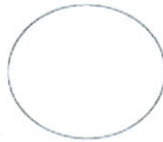
pentagon
convex



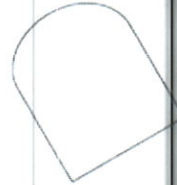
pentagon
concave

5. None of the following shapes/curves are polygons. Identify which curves are closed or not closed, and which curves are simple, or not simple. (8 points)

closed
simple



closed
simple



not closed
simple



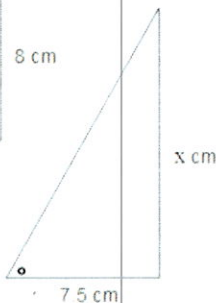
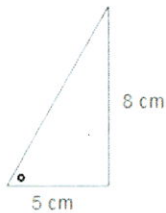
not closed
simple



6. The sum of the measure of the interior angles of a polygon is given by the formula $180^\circ(n - 2)$. Find the sum of the interior angles for a heptagon. (5 points)

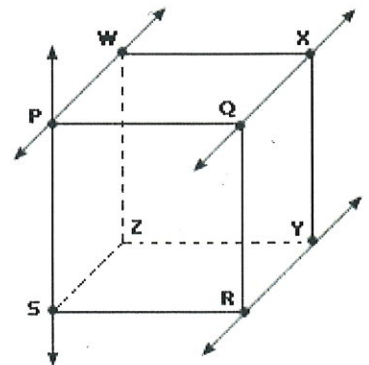
$$180(7-2) = 180(5) = 900^\circ$$

7. Use the diagram to the right to identify a pair of skew lines. (3 points)



PW & XY

answers will vary



8. Find the value of x in the diagram to the left. (6 points)

$$\frac{5}{7.5} = \frac{8}{x} \Rightarrow 5x = 60$$

$$\boxed{x = 12}$$