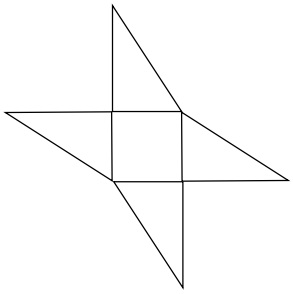
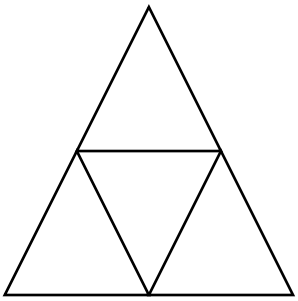
37. Which of the following nets:
a) are nets for regular pyramids?
b) are nets for regular polyhedra?
c) are **not** nets for any polyhedra?
Justify your answers.

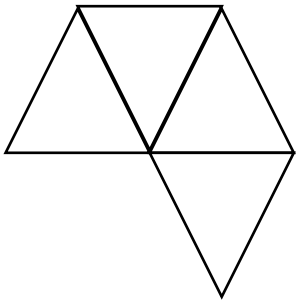
Net 1:



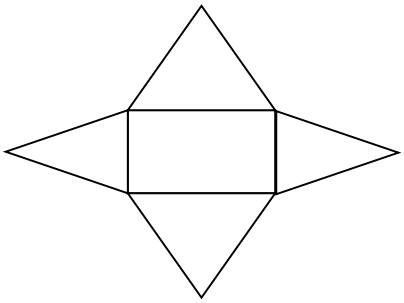
Net 2:



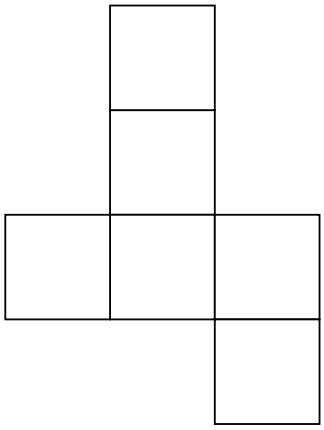
Net 3:



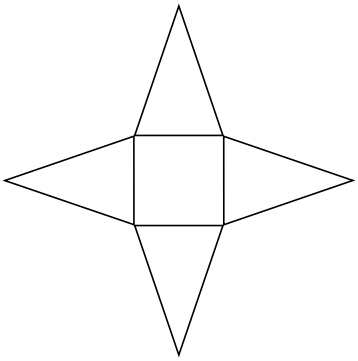
Net 4:



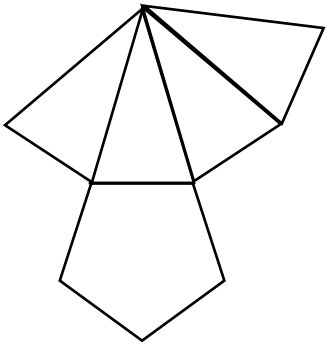
Net 5:



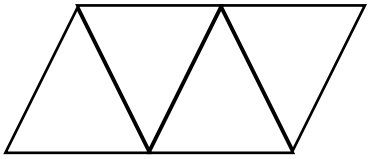
Net 6:



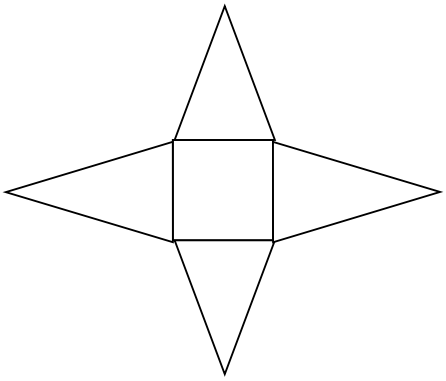
Net 7:



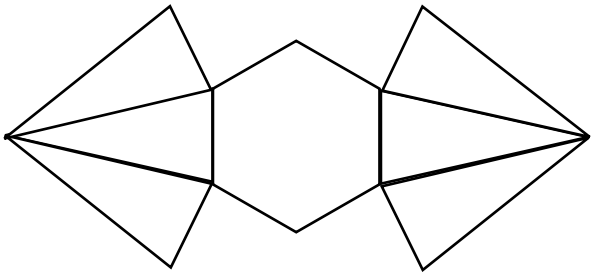
Net 8:



Net 9:



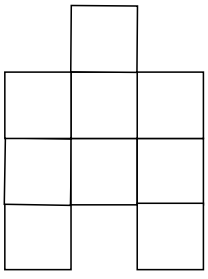
Net 10:



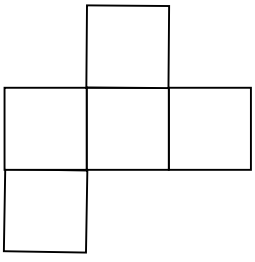
38. a) Draw a regular hexagon. Does this shape tessellate the plane?
b) Manipulate your shape so that you obtain a **concave** hexagon that tessellates the plane.

39. Which of the following shapes tessellate the plane? If the shape tessellates, show a tessellation. If not explain why it does not tessellate the plane.

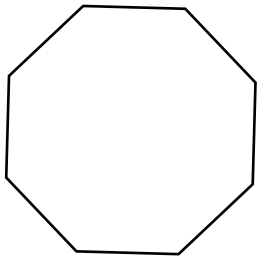
a)



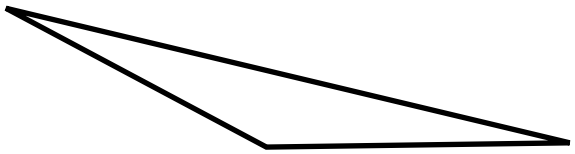
b)



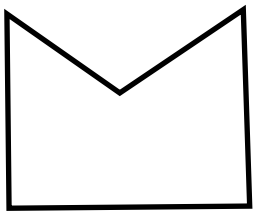
c)



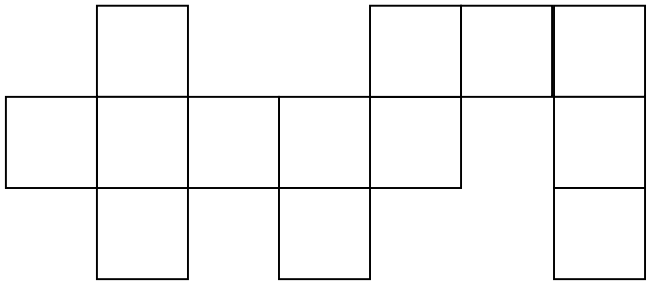
d)



e)



f)

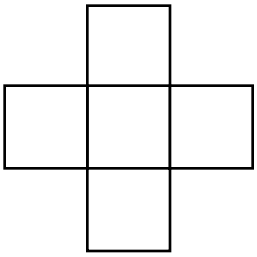


40. If possible draw an example fitting the given description. If not possible explain why.
a) An obtuse isosceles triangle.
b) A regular octagon that is not equiangular.
c) An isosceles trapezoid that is not a rectangle.
d) A kite that is also a parallelogram.
e) A regular decagon that is concave.
f) A rhombus with at least one right angle. (What is the name of this shape?)
g) An equiangular quadrilateral that is not regular. (What is the name of this shape?)
h) A cube that is not a right rectangular prism.
i) An equilateral hexagon that is concave.
j) A regular tetrahedron that is not a triangular pyramid.
k) An oblique circular cone.
l) An oblique triangular prism that does not tessellate the space.

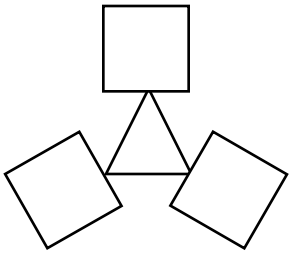
41. a) How many lines of symmetry does a regular heptagon have?
b) How many rotational symmetries does a regular heptagon have?
[Try to answer this question without drawing a regular heptagon, use only the concept of regular]

42. How many lines of symmetry does each of the following figures have? How many rotational symmetries does each figure have? Give the angles of rotation.

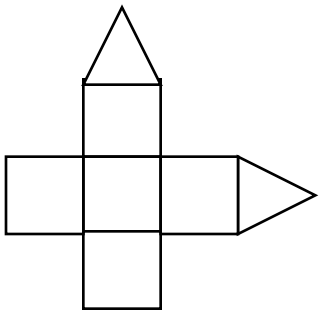
I.



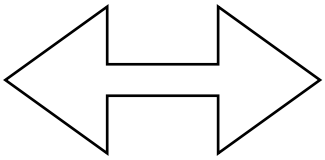
II.



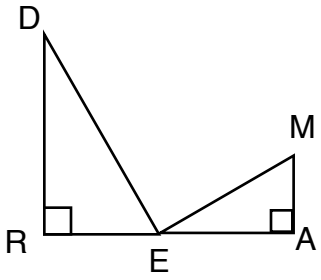
III.



IV.

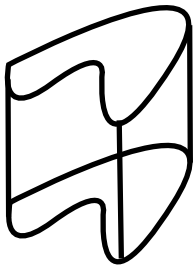


43.
Angle DEM is right.
DE = 6 in
RE = 3in
MA = 2 in



a) Name a pair of similar triangles.
b) Explain why they are similar.
c) Find EM.

44. Figure I and Figure II are similar. The volume of Figure I is 125 cm^3, the volume of Figure II is 8 cm^3. If the surface area of Figure I is 100 cm^2, what is the surface area of Figure II?



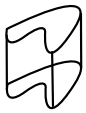
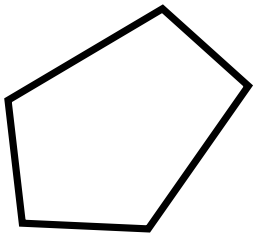
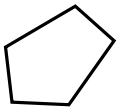


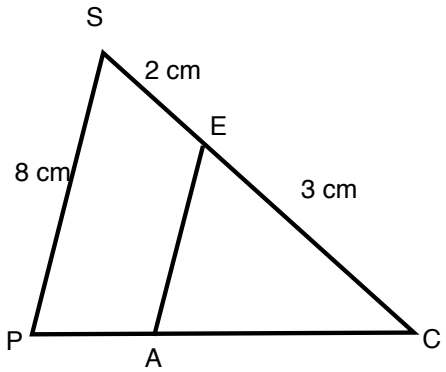
Figure I Figure II

45. The pentagons below are similar, (with a scale factor of 6).
a) The area of the bigger one is 144 m^2, what i s the area of the smaller one?
b) The perimeter of the smaller one is 5 m, what is the perimeter of the bigger one?



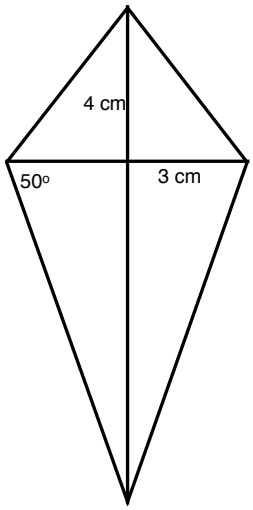


46. a) If triangles PCS and ACE are similar, what can be said about lines SP and EA?
b) How long is AE?

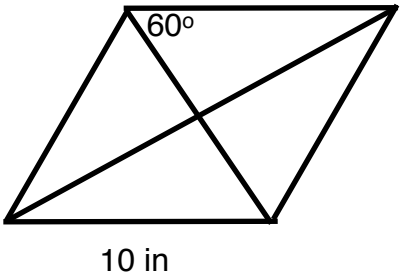


47. Fill in as many measurements as possible in the following figures. (Use the Pythagorean theorem when necessary)

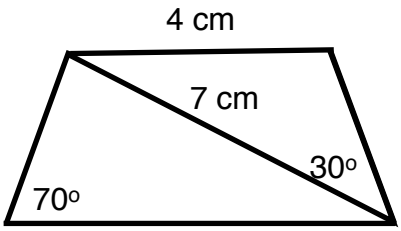
a) KITE



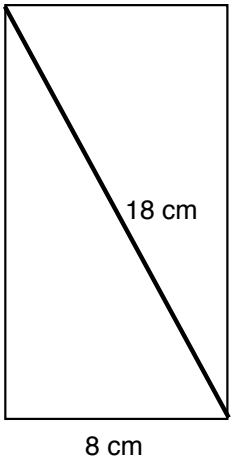
b) RHOMBUS



c) ISOSCELES TRAPEZOID

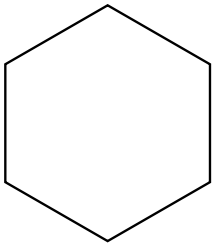


d) RECTANGLE

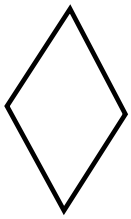


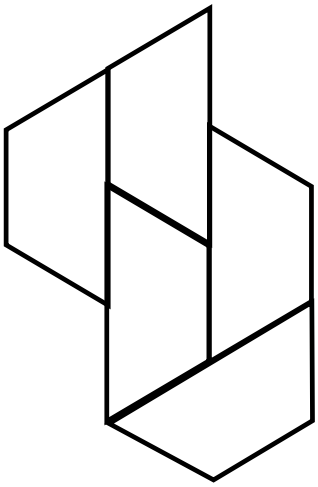
48. Find the area of the figure to the right in terms of the units below:

UNIT I: _____

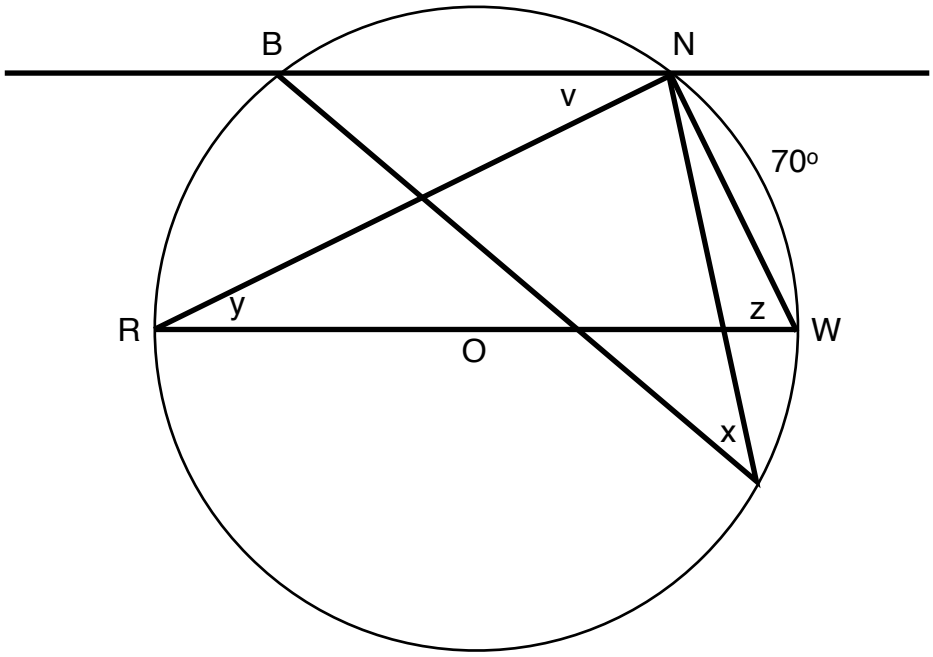


UNIT II: _____

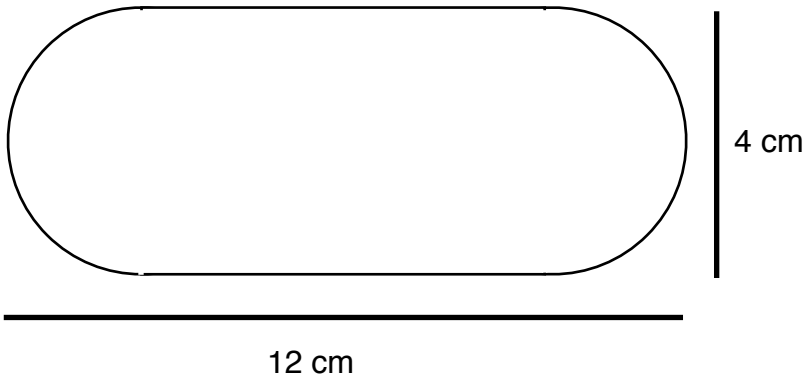




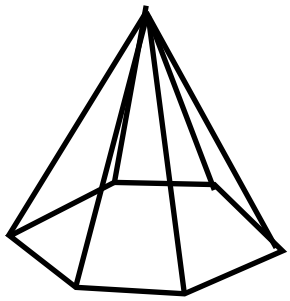
49. Determine the measurement of angles x, y, z and v in the following figure, knowing that segments BN and RW are parallel, and that O is the center of the circle.



50. Below we show a cross section of a pill.
a) Determine the volume inside the pill.
b) Determine the surface area of the pill.



51. The height of the regular hexagonal pyramid below is 8 cm, and the length of one of the sides is 6 cm.
a) Let O be the center of the base, what is the the distance from the center of the base to one of the vertices on the base?
b) Using the Pythagorean Theorem, and your answer to part a) determine the length of a lateral edge of the pyramid.
c) Using the Pythagorean Theorem, your answer to part b) and the fact that the lateral faces of a regular pyramid are isosceles triangles, determine the altitude of a lateral face.
d) Determine the area of the base of this pyramid.
e) Using your answers to part d) and part c) determine the surface area of the pyramid.
f) Using your answer to part d) determine the volume of the pyramid.



[THIS PROBLEM IS VERY HARD, BUT IF YOU ARE ABLE TO SOLVE IT, YOU UNDERSTAND HOW TO USE THE PYTHAGOREAN THEOREM AND UNDERSTAND REGULAR PYRAMIDS]