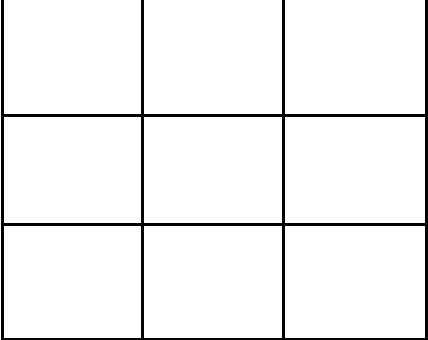
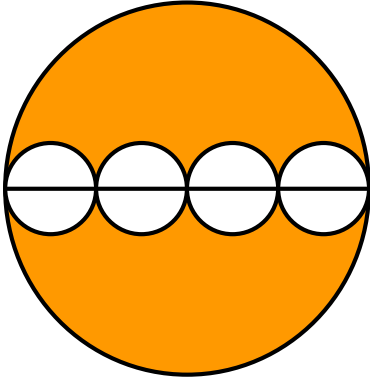




Knights of Pi Math Tournament – Dec. 12, 2015  
Geometry 5th/6th

1	What is the sum of the interior angles of a hexagon?
2	I have a triangle ABC, angle A is $2X$ degrees, angle B is $3X$ degrees, and angle C is $4X$ degrees. What is the sum of the angles B and C in degrees?
3	How many rectangles are in this 3 by 3 square? (Figure not drawn to scale) 
4	A square ABCD has side length of 12, and a quadrilateral is formed with the midpoints of the sides as vertices. What is the largest side length of this new quadrilateral?
5	It is 12:00 now, the minute hand and hour hand meets. The minute hand is 10 cm long, and the hour hand is 5 cm long. How much area, in $\text{cm}^2$ , will the minute hand pass over between now and 12:50?
6	Let AB be the diameter of a circle of radius 5, and C be another point on or within the circle. What is the maximum possible area of triangle ABC?
7	Let ABC be an equilateral triangle of side length 8, and let D be the midpoint of AB, E the midpoint of BC, and F the midpoint of AC. Then, let G be the midpoint of DE, H the midpoint of EF, and I the midpoint of DF. What is the ratio of the area of triangle GHI to the area of triangle ABC?

8	<p>I have 4 congruent tangent small circles inside a large circle, as shown below. If the radius of the larger circle is 20, what is the area of the shaded region?</p> 
9	<p>Segment <math>\underline{AB}</math> and <math>\underline{CD}</math> are of equal length and they perpendicularly bisect each other at point E. The midpoints of <math>\underline{AC}</math> and <math>\underline{BC}</math> are F and G, respectively. If <math>\underline{EF}</math> is 5, what is the area of quadrilateral <math>AFGD</math>?</p>
10	<p>Let ABC be a triangle. Let D be the midpoint of side BC and let E be the perpendicular from B. If angle CAD equals angle CBE = 20, what is the measure of angle BAC?</p>