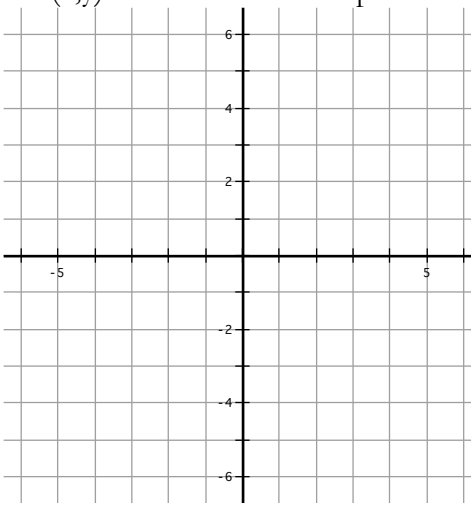
# Whatcom County Math Championship – 2013
# Geometry – 4th Grade

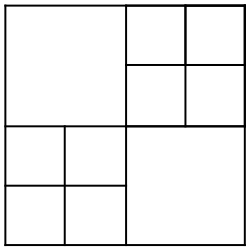
1. If one side of a regular octagon is 3 inches, what is the perimeter (in inches) of the octagon?

2. Vi Heart has a crazy snail that starts at (0, 0), travels 1 square up, turns 90° clockwise and travels 2 squares, turns 90° and travels 3 squares, and so on. After the snail has made her 10 square move, what are the (x,y) coordinates for the point is she on?

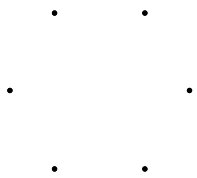



3. What is the angle of between the minute hand and the hour hand on an analog clock when it is 4:00?

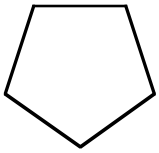
4. How many squares of all sizes are there in this picture?

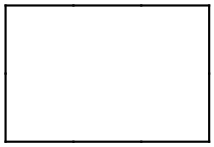


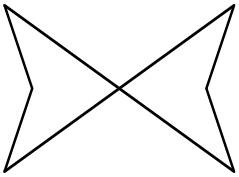
5. What is the biggest number of distinct equilateral triangles that you can draw connecting the points below, with the points as vertices?



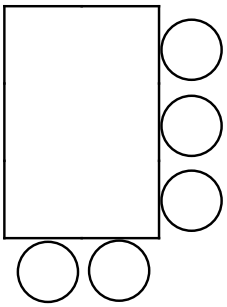
6. How many total lines of symmetry are there in all of the figures below?





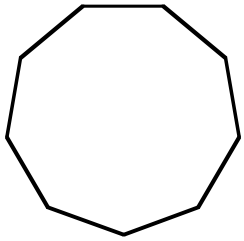


7. Evan has 10 tables like the one below, that fit 2 chairs along one side and 3 chairs along the other. If the tables are placed side by side, the sides that touch cannot have any chairs. Evan wants to place the tables so that they make a rectangle and each table touches another. What is the largest number of chairs Evan can have around his tables?

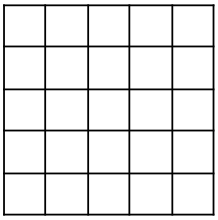


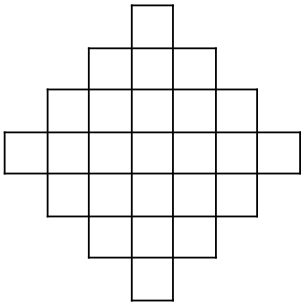
8. What is the surface area of a rectangular prism that has sides of 2 inches, 3 inches and 5 inches?

9. How many diagonals can be drawn on a regular nonagon?



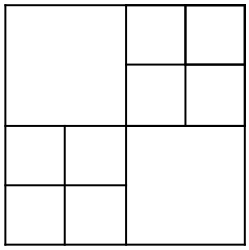
10. Both figures below have the same number of squares. What is the difference in the perimeters?



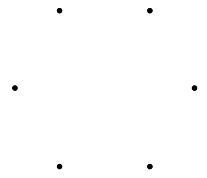


# Whatcom County Math Championship – 2013
# Geometry – 5th Grade

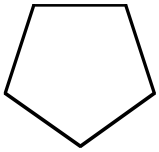
1. How many squares of all sizes are there in this picture?

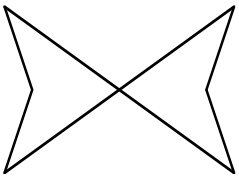


2. What is the biggest number of distinct equilateral triangles that you can draw connecting the points below, with the points as vertices?

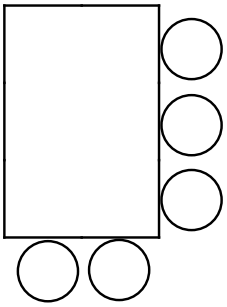


3. How many total lines of symmetry are there in all of the figures below?



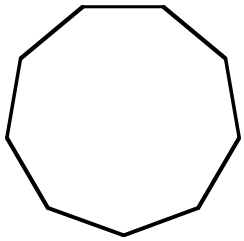


4. Evan has 10 tables like the one below, that fit 2 chairs along one side and 3 chairs along the other. If the tables are placed side by side, the sides that touch cannot have any chairs. Evan wants to place the tables so that they make a rectangle and each table touches another. What is the largest number of chairs Evan can have around his tables?

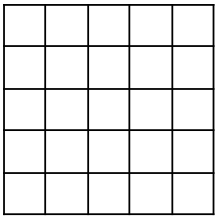


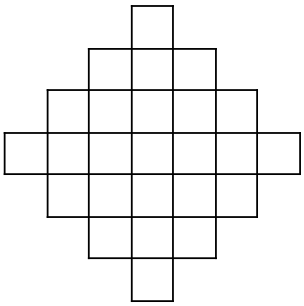
5. What is the surface area of a rectangular prism that has sides of 2 inches, 3 inches and 5 inches?

6. How many diagonals can be drawn on a regular nonagon?



7. Both figures below have the same number of squares. What is the difference in the perimeters?





8. On the coordinate plane, what is the distance between the points (–2, 5) and (6, –1)?

9. Of all the rectangles with whole number side lengths and an area of 144 square inches, what is the sum of the largest and smallest perimeters?

10. If this pattern continues, how many squares of all sizes will there be in figure 4?

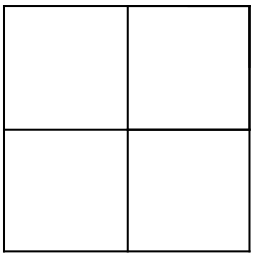


**figure 1**

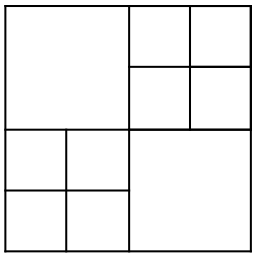


**figure 2**

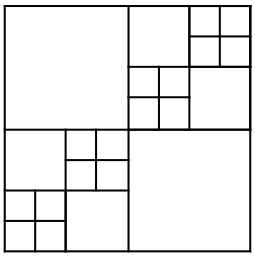
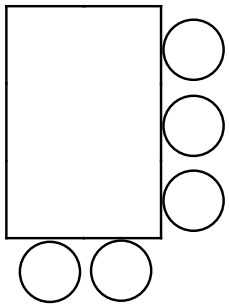


**figure 3**

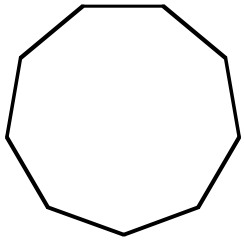
# Whatcom County Math Championship – 2013
# Geometry – 6th Grade

1. Evan has 10 tables like the one below, that fit 2 chairs along one side and 3 chairs along the other. If the tables are placed side by side, the sides that touch cannot have any chairs. Evan wants to place the tables so that they make a rectangle and each table touches another. What is the largest number of chairs Evan can have around his tables?

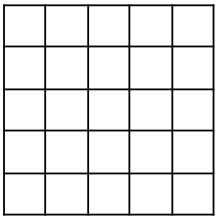


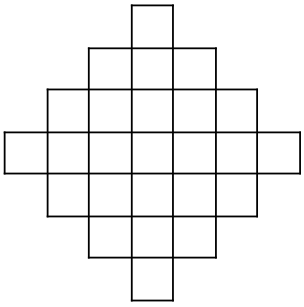
2. What is the surface area of a rectangular prism that has sides of 2 inches, 3 inches and 5 inches?

3. How many diagonals can be drawn on a regular nonagon?



4. Both figures below have the same number of squares. What is the difference in the perimeters?





5. On the coordinate plane, what is the distance between the points (–2, 5) and (6, –1)?

6. Of all the rectangles with whole number side lengths and an area of 144 square inches, what is the sum of the largest and smallest perimeters?

7. If this pattern continues, how many squares of all sizes will there be in figure 4?

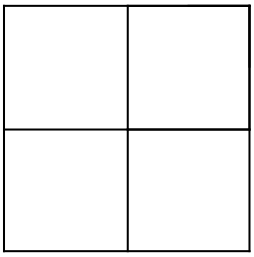


**figure 1**

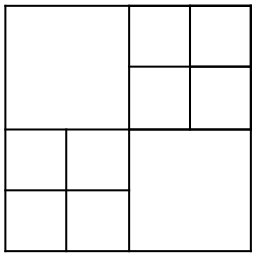


**figure 2**

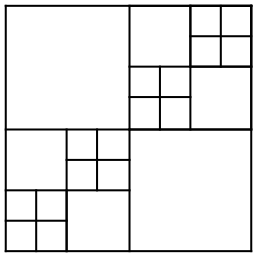
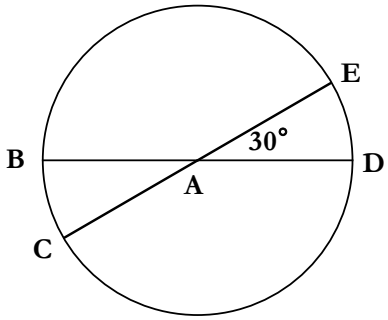


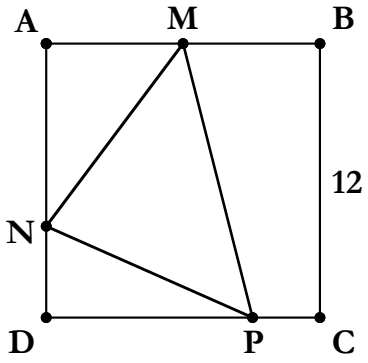
**figure 3**

8. In the circle below, BD and CE are diameters, and the measure of ∠EAD is 30°. If the radius of the circle is 6, what is the length of the arc through the points C, E and D. **Leave your answer in terms of π.**



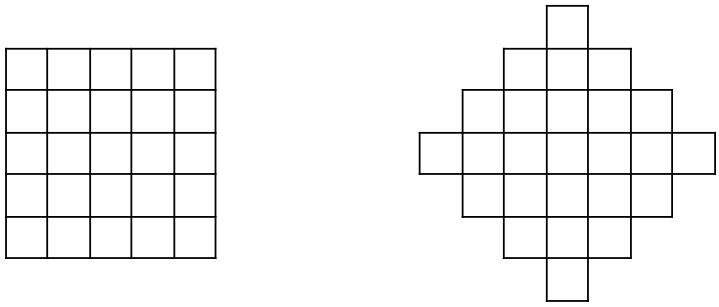

9. A right triangle has a hypotenuse that is cut into a 3:1 ratio by the altitude from the hypotenuse. If the hypotenuse is length 12, how long is the shortest leg of the right triangle?

10. In the figure below, ABCD is a square with side length 12. M is halfway between A and B, N is two-thirds of the way between A and D, and P is three-fourths of the way between D and C. What is the area of triangle MNP?



# Whatcom County Math Championship – 2013
# Geometry – 7th and 8th Grade

1. Both figures below have the same number of squares. What is the difference in the perimeters?



2. On the coordinate plane, what is the distance between the points (–2, 5) and (6, –1)?

3. Of all the rectangles with whole number side lengths and an area of 144 square inches, what is the sum of the largest and smallest perimeters?

4. If this pattern continues, how many squares of all sizes will there be in figure 4?

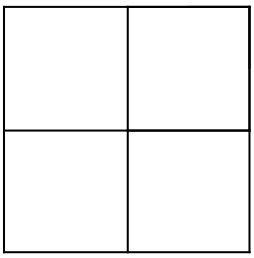


**figure 1**

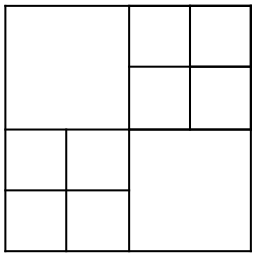


**figure 2**

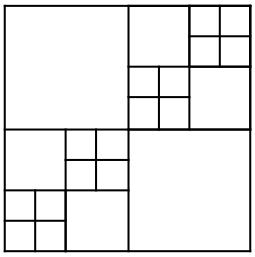
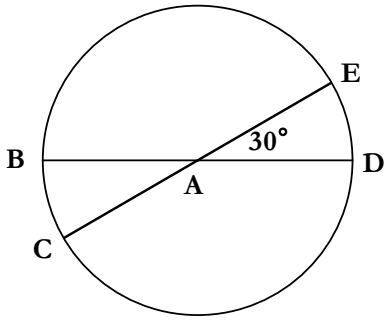


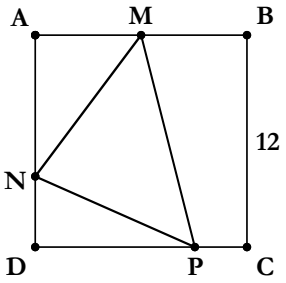
**figure 3**

5. In the circle below, BD and CE are diameters, and the measure of ∠EAD is 30°. If the radius of the circle is 6, what is the length of the arc through the points C, E and D. **Leave your answer in terms of π.**

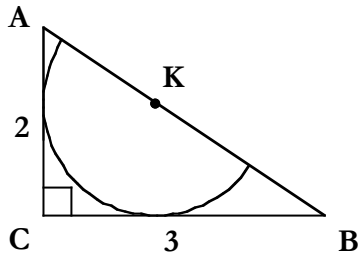



6. A right triangle has a hypotenuse that is cut into a 3:1 ratio by the altitude from the hypotenuse. If the hypotenuse is length 12, how long is the shortest leg of the right triangle?

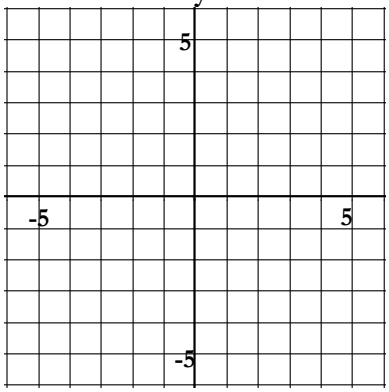
7. In the figure below, ABCD is a square with side length 12. M is halfway between A and B, N is two-thirds of the way between A and D, and P is three-fourths of the way between D and C. What is the area of triangle MNP?




8. In the figure below, right triangle ABC has legs of length 2 and 3, and the semi-circle with center K is tangent to both legs. What is the radius of the semi-circle? **Write your answer as a reduced fraction.**




9. A square has two vertices at A (0, 0) and Z (4, 2). There are three positions for the other two vertices of the square. If you find the centers of each square, what the equation of the line that goes through all three centers? **Write your answer in slope-intercept form.**




10. In the figure below, INDO is a square, and W is the center of the two semi-circles. The smaller semi-circle has a radius of half the larger semi-circle. The points on the semi-circles are evenly spaced. Find the area marked by the *. **Leave your answer in terms of π**.