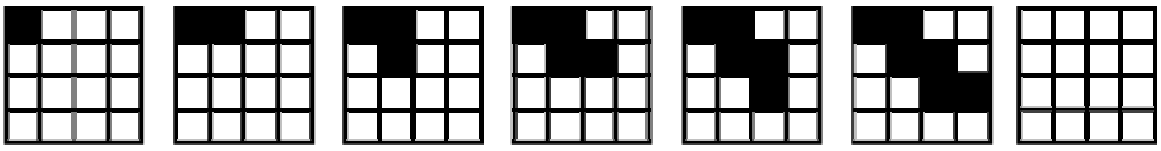
Concepts of Mathematics NAME:
Introduction Worksheet

Work with your neighbors on this worksheet. Stop and compare answers often. Help each other through the problems. We will come together and discuss some items as a whole class.

1. Find a pattern in the following six figures (going left to right). Shade in the seventh figure using the pattern that you determine.

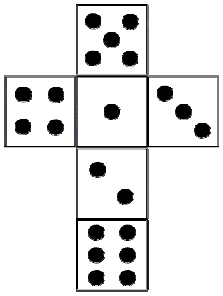


2. There are four finalists in a contest. Their names are Amy, Bob, Cathy, and Doug. Prizes will be awarded for first and second places. Use the spaces below to write out the twelve possibilities for giving out the awards. To get you started, one possibility is given.

Amy	Bob		
first	second	first	second
first	second	first	second
first	second	first	second
first	second	first	second
first	second	first	second
first	second	first	second

3. Fold up and tape your cube net to form a die. Roll your die ten times and record the number of times you roll an even number. If you were to roll your die one hundred times, how many times would you expect to get an even number? Why?

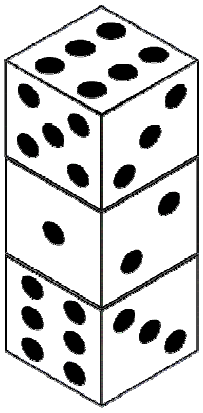
4. You were given a net for a cube to make the die for the previous question. It is copied below. However, this is not the only way we could have drawn the net. Draw another possible net for a cube. It should have six connected faces and it should be possible to cut along the outer edges and fold along the inner edges to make it into a cube.



5. Notice the pattern in the equations below. Write the next equation in the pattern. Check it by evaluating each side.

$$1 = 1^2$$
$$1 + 3 = 2^2$$
$$1 + 3 + 5 = 3^2$$
$$1 + 3 + 5 + 7 = 4^2$$
$$1 + 3 + 5 + 7 + 9 = 5^2$$

6. Consider the stack of dice to the right.
What is the sum of the sides that are not shown?



7. Draw as few birds as you can to draw a diagram of the following phrase.

"Two birds above a bird, two birds below a bird, and a bird between two birds."

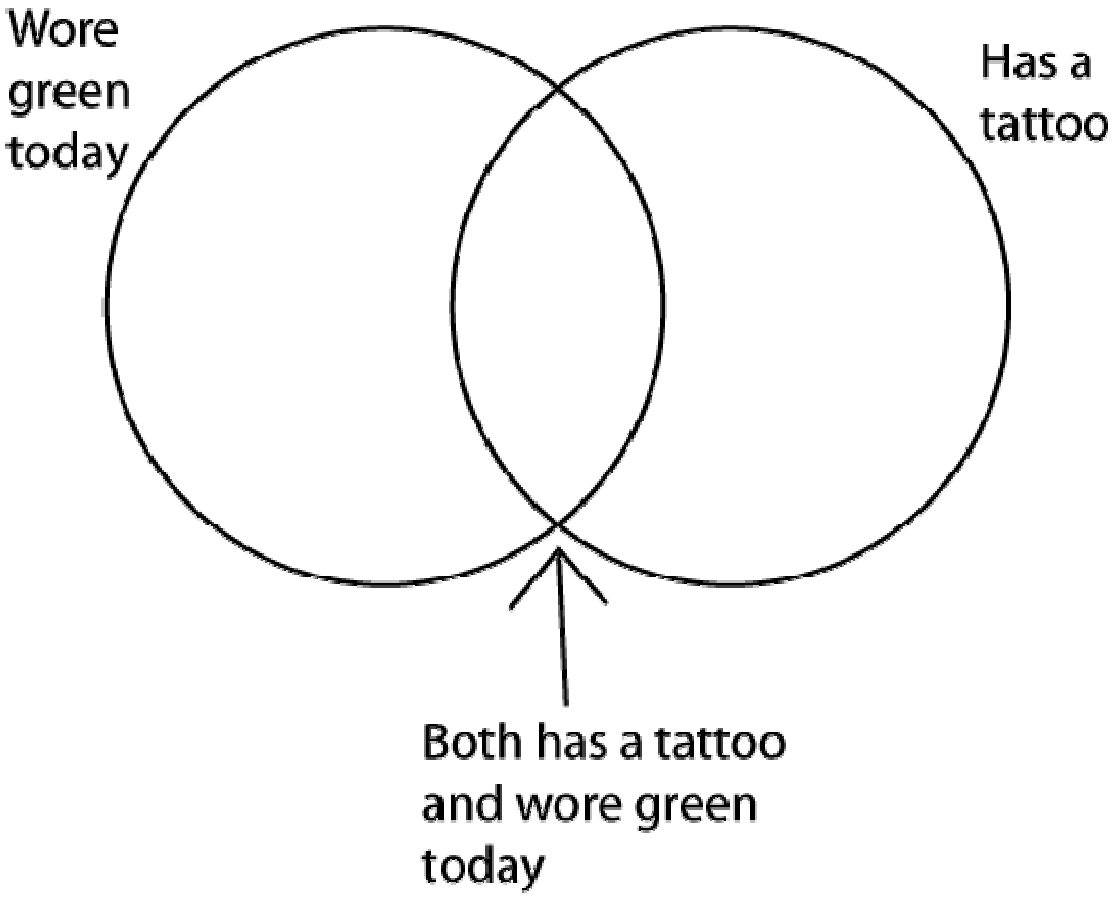
8. How many total people are in today's class? _____

How many wore green today? _____

How many have a tattoo? _____

How many both have a tattoo and wore green today? Figure this by using the information above.

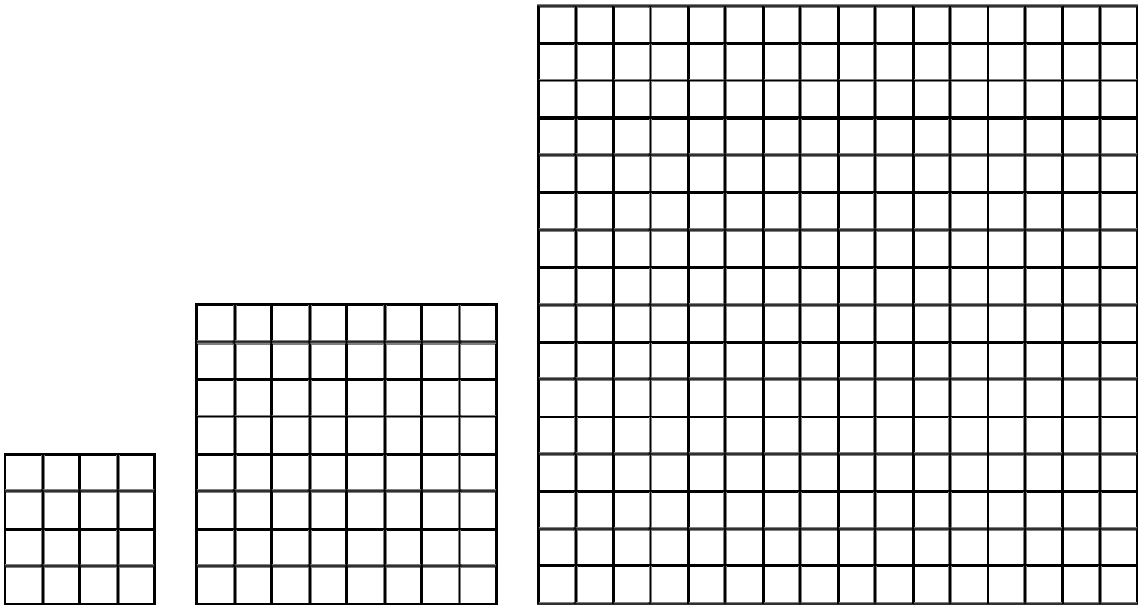
9. Diagram the various people in our class using this Venn diagram. Write each person's name in the appropriate circle. Notice the section in the middle where the two circles intersect represent the people who are in both groups.



10. The area of a square is found by multiplying the side length.

The area of the "2 by 2" square to the right is four square units. Find the areas of the following squares and then answer the question, "As side length doubles, what happens to the area of the square?"

$2 \times 2 = 4$



$4 \times 4 =$ ___ $8 \times 8 =$ ___ $16 \times 16 =$ ___

As the side length doubles, what happens to the area of the square? Explain this using the pictures above.