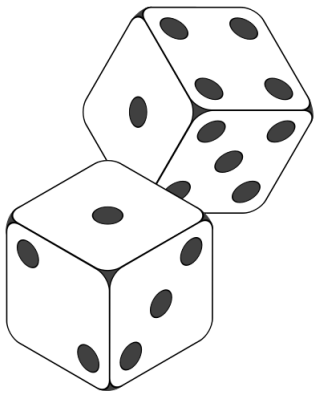
Model 1 The Die Class

The following class represents an individual "die" in a game of dice. The diagram on the right is a graphical summary of the ***attributes*** (variables) and ***methods*** of the class.

```
/**
 * Simulates a die object.
 */
public class Die {

    private int face;

    /**
     * Constructs a die with face value 1.
     */
    public Die() {
        this.face = 1;
    }

    /**
     * @return current face value of the die
     */
    public int getFace() {
        return this.face;
    }

    /**
     * Simulates rolling the die.
     *
     * @return new face value of the die
     */
    public int roll() {
        this.face = (int) (Math.random() * 6) + 1;
        return this.face;
    }

}
```

Die
-face: int
+Die() +getFace(): int +roll(): int



Questions (10 min) Start time:

1. Consider the `Die` class:

a) What are the attributes?

b) What are the methods?

2. In the class diagram (on the upper right):

a) What do the `+` and `-` symbols represent?

b) What does the `:` represent?

3. Open the provided *Die.java* and run the program several times. Then answer the following questions about the `main` method:

a) What is the data type of `d1` and `d2`?

b) What are the initial values of the dice?

c) What method changed the dice values?

4. Write a statement that declares and initializes a `Die` variable named `lucky`.

5. When you create an object, Java invokes a ***constructor***. This method has no return type and has the same name as the class itself. What does the `Die()` constructor do?

6. Notice how the `roll` method refers to `this.face`, yet that variable is not declared in the method. What does the `roll` method change, in terms of the `Die` object?