Method Parameters
Logical/Boolean expressions;
Cumulative Loops

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A "Parameter Mystery" problem

```java
public class ParameterMystery {
    public static void main(String[] args) {
        int x = 9;
        int y = 2;
        int z = 5;

        mystery(z, y, x);

        mystery(y, x, z+y);
    }

    public static void mystery(int x, int z, int y) {
        System.out.println(z + " and " + (y - x));
    }
}
```

What is the output?
Practice: Scanner Fun

- Please try out ScannerFun.java
Exercise: Basic Boolean Expressions

- Gentle || active
  All
- !active && healthy
  Cuddles
- !(clean && healthy)
  Vamp, Yoda
- !clean || !healthy
  Vamp, Yoda
- !(clean || gentle)
  Vamp
- !clean && !gentle
  Vamp
Exercise: “Marriage Penalty” in 2014

- See Tax2014.java

Example: BMI

- See BMI.java
Cumulative Scanning

A common type of loop is cumulative. E.g., counting those satisfy a condition, summing up numbers.

- Initialize state variable
- Loop over each element e
  - if (element satisfies condition)
    - update state variable

```java
int sum = 0;
for (int y = 2000; y <= 2100; y++) {
  if (isLeapYear(y)) {
    sum ++;
  }
} // end of for
```
**Exercise: Design a data analyzer**

*first asks user for a number N, and then reads in a sequence of N grades and compute min, max, and average.*
Cumulative Max

Loop over each number n
if (n > currentMax) // check condition
    currentMax = n; // update state

- **Issue:** what is the initial value of `currentMax`
  - **Approach one:**
    - `currentMax = first number;`
  - **Approach two:**
    - `currentMax = minimum of range; (e.g., Integer.MIN_VALUE)`
Regex: Regular Expressions

- Matching Patterns and Strings within another String.

```java
// returns true if the string is exactly "true"
public boolean isTrue(String s)
{
    return s.matches("true");
}

// returns true if the string matches exactly:
// "true" or "True"
public boolean isTrueIgnoreCase(String s)
{
    return s.matches("[tT]rue");
}

// returns true if the string matches exactly:
// "true" or "True" or "yes" or "Yes"
public boolean isTrueOrYes(String s)
{
    return s.matches("[tT]rue|[yY]es");
}

// returns true if the string contains "CPSC112"
public boolean containsCPSC112(String s)
{
    return s.matches(".*CPSC112.*");
}

// returns true if the string contains 3 numbers
public boolean isThreeNumbers(String s)
{
    return s.matches("[0-9]{3}");
}
```