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1. Log in
2. Working in Unit 2
 - Scanner Input & Decimal Formatting
 - If Statements & Relational Operators
 - For and While Loops
 - Recursion

Oct 16-12:21 PM

Structure of a for loop ...

```
for( counterStartValue ; conditionNeeded ; counterAdjustment)
{
    ...do this stuff over and over
}
```

The loop will continue until either "break;" is found
 or until the condition needed is no longer true.

Basic Example ...

```
for( int i=0 ; i<5 ; i++)
{
    System.out.println(i);
}
```

Oct 16-9:28 AM

Some other basic examples ...

```
for(int g=5 ; g<20 ; g+=3)
    System.out.println(g);
```

```
for(int i=3 ; i<=10 ; i++)
    System.out.print(i);
```

```
for( int t=15 ; t<=30; t+=6)
{
    System.out.print(t);
}
```

Oct 20-12:48 PM

```
for( int t=24 ; t>1; t++)
{
    t=t/2;
    System.out.println(t);
}
```

DANGER!!!
 This is an infinite loop!!!

Oct 21-10:04 AM

This is REALLY what I wanted to do ...

```
for( int t=24 ; t>1; t++)
{
    t=t/2;
    System.out.println(t);
    t=1;
}
```

This corrects the infinite problem!

Oct 20-12:52 PM

Review - How many times do these iterate?

```
for(int i=1 ; i<=19 ; i++)
```

```
for(int j=1 ; j<15 ; j++)
```

```
for(int k=3 ; k<7 ; k++)
```

```
for(int m=7 ; m<=99 ; m++)
```

```
for(int p=11 ; p<88 ; p++)
```

```
for(int w=1 ; w<=17 ; w+=3)
```

Oct 20-12:54 PM

Be aware of break statements ... stop the loop!

```
for(int i=1 ; i<=7 ; i++) {
    if(i==4)
        break;
    else
        System.out.print(i);
}

for(int p=4 ; p<15 ; p+=3) {
    if(p>10)
        break;
    System.out.print(p++ + " ");
}
```

Oct 20-12:54 PM

The story of Carl Friedrich Gauss ...

1. Your "typical teacher"
2. Your "not-so-typical student"
3. Carl's mathemagic!
4. Application to the for-loop:
Start at 1 and add 100 numbers.

Oct 16-12:34 PM

Carl's JAVA solution (he had no computer) ...

```
int sum = 0;
for(int i=1 ; i<=100 ; i++)
{
    sum=sum+i;
}

System.out.println("Sum of the 1st 100 numbers is: "+sum);
```

**** Note:** If sum is declared outside of the loop, it is a ******
"global" variable and can be used anywhere in the class.

Oct 20-12:46 PM

Same Carl Program, different outcome ...

```
for(int i=1 ; i<=100 ; i++)
{
    int sum = 0;
    sum=sum+i;
}

System.out.println("Sum of the 1st 100 numbers is: "+sum);
```

**** Note:** If sum is declared inside of the loop, it is a ******
"local" variable and can only be used inside the loop.
THIS CLASS WILL YELL ERROR CODES AT YOU!!!

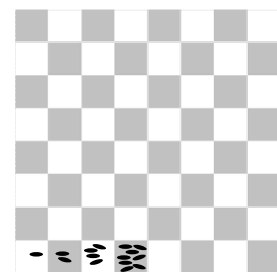
Oct 20-12:46 PM

Improve on Carl's Problem:
Ask the user the start/end numbers ...

```
import java.util.*;
...
int firstNumber, lastNumber, sum=0;
Scanner getNumber = new Scanner(System.in);
System.out.println("I will add consecutive integers for you!");
System.out.println("Enter the starting integer: ");
firstNumber = getNumber.nextInt();
System.out.println("Enter the ending integer: ");
lastNumber = getNumber.nextInt();
for(int i=firstNumber ; i<=lastNumber ; i++)
{
    sum=sum+i;
}
System.out.print("Sum of numbers from "+firstNumber+" to ");
System.out.print(lastNumber+" is " + sum);
```

Oct 20-12:47 PM

The classic "grains on a chessboard" problem ...



Lawn mowing
anyone???

Oct 20-12:47 PM

The classic "grains on a chessboard" problem ...

```
int numberOnSquare=1, sum=0;
for(int squareNumber=1 ; squareNumber<=64 ; squareNumber++)
{
    sum += numberOnSquare;
    System.out.print("Grains on "+squareNumber+" is "+numberOnSquare);
    System.out.println(" and the total on the board is "+sum);
    numberOnSquare*=2;
}
```

**** Try running this one in netbeans ****
Notice the issue???

Oct 20-12:56 PM

Things to do ...

1. Decimal Format WS should be done
2. Scanner Input WS should be done
3. How's the Worksheet 3 going?
4. Today: Worksheet 4 - For Loops

Oct 16-9:12 AM