

**Worksheet: Iteration Practice (while and for)**

1. Write a for loop that prints all the numbers from 1 to 10, inclusive.

```
1 for(int i=1; i<=10; i++) {
2     System.out.print( i + " ");
3 }
```

2. Write a while loop that prints all the numbers from 10 down to 1, inclusive.

```
1 int i = 10;
2 while(i >= 1) {
3     System.out.print( i + " ");
4     i--;
5 }
```

3. Write a loop that prints all the even numbers from 20 down to 2, inclusive.

<pre>1 for(int i=20; i&gt;=2; i-=2) { 2     System.out.print( i + " "); 3 }</pre>	<pre>1 int i = 20; 2 while(i &gt;= 2) { 3     System.out.print( i + " "); 4     i-=2; 5 }</pre>
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4. Write a loop that prints the sum of odd numbers from 1 to 50, inclusive.

<pre>1 int sum = 0; 2 for(int i=1; i&lt;=50; i+=2) { 3     sum += i; 4 } 5 System.out.print(sum);</pre>	<pre>1 int sum = 0; 2 int i = 1; 3 while(i &lt;= 50) { 4     sum += i; 5     i+=2; 6 } 7 System.out.print(sum);</pre>
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5. Write a loop that calculates and prints the value of 10! (recall  $5! = 1 \times 2 \times 3 \times 4 \times 5$ ).

<pre>1 int factorial = 2; 2 for(int i=3; i&lt;=10; i++) { 3     factorial *= i; 4 } 5 System.out.print(factorial);</pre>	<pre>1 int factorial = 2; 2 int i = 3; 3 while(i &lt;= 10) { 4     factorial *= i; 5     i++; 6 } 7 System.out.print(factorial);</pre>
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## Worksheet: Iteration Practice (while and for)

6. Rewrite the code from the first box into the second box, using correct spacing and indentation.

```
public static void printCharGrid(char c,int x,int y){while(y>0){int
z=x;while(z>0){System.out.print(c);z--;if(z==0)System.out.println();}
y--;}}
```

```
1 public static void printCharGrid(char c, int x, int y) {
2     while(y > 0) {
3         int z = x;
4         while(z > 0) {
5             System.out.print(c);
6             z--;
7             if(z == 0)
8                 System.out.println();
9         }
10        y--;
11    }
12 }
```

- +1 proper indentation of method, including opening and closing curly braces
- +1 proper indentation of first while block, including opening and closing curly braces
- +1 proper indentation of second while block, including opening and closing curly braces
- +1 proper indentation of if statement; curly braces may be added
- +1 no added syntax errors

Complete the trace table by writing the values of the variables after each execution of line 3, 6, or 10.

after line #	char c	int x	int y	int z	output
3	A	3	2	3	
6	A	3	2	2	A
6	A	3	2	1	AA
6	A	3	2	0	AAA
10	A	3	1	0	AAA↵
3	A	3	1	3	AAA↵
6	A	3	1	2	AAA↵ A
6	A	3	1	1	AAA↵ AA
6	A	3	1	0	AAA↵ AAA
10	A	3	0	0	AAA↵ AAA↵