



Loops - Page 1

Name _____

Date _____

Write the sequence of values generated by the following For Dtatements.

for (int i = 1; i <= 8; i++) _____, _____, _____, _____, _____, _____, _____, _____

for (int i = 60; i >= 55; i= i-1) _____, _____, _____, _____, _____, _____, _____, _____

for (int i = 2; i <= 10; i= i+2) _____, _____, _____, _____, _____, _____, _____, _____

for (int i = 0; i <= 255; i= i+64) _____, _____, _____, _____, _____, _____, _____, _____

for (int i = 255; i >= 0; i= i-50) _____, _____, _____, _____, _____, _____, _____, _____

for (int i = 1; i <= 10; i=i-1) _____, _____, _____, _____, _____, _____, _____, _____

Write a For-Next statement to generate each sequence of values.

1 to 50 for (int i = _____ ; _____ ; _____)

0 to 50 by 2s for (int i = _____ ; _____ ; _____)

0, 3, 6, 9 for (int i = _____ ; _____ ; _____)

10, 8, 6, 4, 2, 0 for (int i = _____ ; _____ ; _____)

1000, 2000, 3000 for (int i = _____ ; _____ ; _____)

1, 2, 3, 4 ... 365 for (int i = _____ ; _____ ; _____)

365, 364, 363, 362 ... 1 for (int i = _____ ; _____ ; _____)

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Write For Statements to do the following. Use the integer variable "tot" in addition to the loop index "i".

example. Add up the integers from 1 to 100 inclusive.

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

a. Add up the integers from 3 to 17 inclusive.

b. Add up the EVEN integers from 4 to 16 inclusive.

c. Calculate 16! (! means factorial and evaluates to $16 \times 15 \times 14 \times 13 \times \dots \times 3 \times 2 \times 1$).
What happens if you try to calculate 17!

Write the code that will display the numbers 1 to 25 along with the square of each number.

example.

1	1
2	4
3	9
4	16
...	...
25	625

Repeat the above for numbers that are powers of 2, starting with 1 and ending with 2048.

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Note: Use the C++ program to assist you with the following tasks.

Write the code to generate the numbers from 1 to 50 ...

i. Using a **While** Loop

ii. Using a **Do...While** Loop

Write the code to generate the numbers from 0 to 100 by 4s ...

i. Using a **While** Loop

ii. Using a **Do...While** Loop

Loops - Page 4

Name _____

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Write a C++ program that uses nested for loops to print the following patterns, one below the other.

This should be accomplished using only `cout << "*" ;` and `cout << "\n" ;`

(ie. you cannot use `cout << "*****" ;`)

For c. and d. you can also use `cout << " " ;`

a.

```
X
XX
XXX
XXXX
XXXXX
XXXXXX
XXXXXXX
XXXXXXXX
XXXXXXXXX
XXXXXXXXXX
XXXXXXXXXXX
```

b.

```
XXXXXXXXXX
XXXXXXXXXX
XXXXXXXXXX
XXXXXXXXXX
XXXXXXXXX
XXXXXXX
XXXXXX
XXXXX
XXXX
XXXX
XXX
XX
X
```

c.

```
XXXXXXXXXX
XXXXXXXXXX
XXXXXXXXXX
XXXXXXXXX
XXXXXXX
XXXXXX
XXXXX
XXXX
XXX
XX
X
```

d.

```

X
XX
XXX
XXXX
XXXXX
XXXXXX
XXXXXXX
XXXXXXXX
XXXXXXXXX
XXXXXXXXXX
XXXXXXXXXXX
```

The following table may be helpful for visualizing c. and d.

	1	2	3	4	5	6	7	8	9	10
1										X
2									X	X
3								X	X	X
4							X	X	X	X
5						X	X	X	X	X
6					X	X	X	X	X	X
7				X	X	X	X	X	X	X
8			X	X	X	X	X	X	X	X
9		X	X	X	X	X	X	X	X	X
10	X	X	X	X	X	X	X	X	X	X