Lab Goal : This lab was designed to teach you more about base conversion.

Lab Description : Read in a number and a base and a new base. You are then to output the original number and original base and the new number in the new base.

Files Needed ::

BaseConversion.java
BaseRunner.java

Sample Data :

```
10 10 2
AB 16 10
345 6 4
25 10 2
127 10 16
1024 7 16
97342 10 16
1010010010001001 2 16
```

Sample Output :

```
10-10 == 1010-2

AB-16 == 171-10

345-6 == 2021-4

25-10 == 11001-2

127-10 == 7F-16

1024-7 == 169-16

97342-10 == 17C3E-16

1010010010001001-2 == A489-16
```

algorithm help

ANY BASE to BASE TEN

Given 32 in base 4, you could convert it to base 10 using the following formula ::

```
4^3  4^2  4^1  4^0
 *    *    *    *
 0 +  0 +  3  + 2

 0 * 64 +  0 * 16 +  3 * 4  + 2 * 1  =  14
```

BASE TEN to ANY BASE

loop as long as num is greater than 0

```
while ( num > 0 )
{
   get remainder  -  % new base
   reduce num  -  / new base
}
```

if new base is 2 and num is 65

new base	num /	remainder %
2	|65	1
2	|32	0
2	|16	0
2	|8	0
2	|4	0
2	|2	0
2	|1	1

65 base 10 = 100 0001 base 2
% and div are your friends.