Exercise 1 - Approximation!

Write a program to approximate the formula: $\frac{1}{1-x}$

You can use the summation: $\frac{1}{1-x} = \sum_{n=0}^{\infty} x^n \qquad |x| < 1$

Ask the user for the value for x and the maximum value for n (we can't sum to infinity!)

Compare your approximation to the calculation of $\frac{1}{1-x}$. Display the difference.

How large does the max value of n need to be for your approximation and calculation to agree to 10 decimal places? 15 decimal places?

Be sure to try several different values for x!

Exercise 2 - Lines!

Draw some lines with * on the screen! Ask the user for an integer and draw four lines. **Use only one loop per line!**

```
How long shall the line be? 5

Horizontal:
*****

Vertical:
*
*
*
*
*

Diagonal:
*
 *
  *
   *
    *

Diagonal again!
    *
   *
  *
 *
*
```

Exercise 3 - Vee!

Draw some Vs with * on the screen! Ask the user for an integer and draw four Vs. **Use only one loop per V!**

```
How long shall the lines be? 4

V1:
*      *
 *    *
  * *
   *
V2:
    *
  * *
 *    *
*      *
V3:
    *
   *
  *
 *
  *
   *
    *
V4:
*
 *
  *
   *
  *
 *
*
```

Challenge -- Squares!

Have the user input an integer and draw a box of that size on the screen using * characters. Hint: You may need more than one loop!

Example:

```
What is the length of the side of the square? 4
****
****
****
****
```

Super Challenge: Draw a hollow square

```
****
*  *
*  *
****
```