

## Exercise 1

Write a program that prints out a left oriented triangle of x's with a height of 5. Your final result should look like this.

```
x
xx
xxx
xxxx
xxxxx
```

## Exercise 2

Write a program that prints out a centred triangle of x's with a height of 5. Your final result should look like this.

```
  x
 xxx
xxxxx
xxxxxxx
xxxxxxxxx
```

## Exercise 3

Write a program that prints out a diamond of x's with a height of 9. Your final result should look like this.

```
  x
 xxx
xxxxx
xxxxxxx
xxxxxxxxx
xxxxxxx
xxxxx
 xxx
  x
```

## Solution 1

```
def print_left_oriented_triangle(height, symbol):  
    for i in range(1, height + 1):  
        print(symbol * i)
```

## Solution 2

```
def print_centre_oriented_triangle(height, symbol):  
    for i in range(height):  
        num_spaces = height - i - 1  
        num_symbols = 2 * i + 1  
        print(f"{' ' * num_spaces}{symbol * num_symbols}{' ' * num_spaces}")
```

## Solution 3

```
def print_centre_oriented_triangle_mod(lower, upper, symbol, space_modifier):  
    for i in range(lower, upper):  
        num_spaces = upper - i + space_modifier  
        num_symbols = 2 * i + 1  
        print(f"{' ' * num_spaces}{symbol * num_symbols}{' ' * num_spaces}")
```

```
def print_upside_down_triangle(lower, upper, symbol):  
    for i in range(lower, upper):  
        num_spaces = i - lower  
        num_symbols = 2 * (upper - i - 1) + 1  
        print(f"{' ' * num_spaces}{symbol * num_symbols}{' ' * num_spaces}")
```

```
def print_diamond(height, symbol):  
    halfway_point = int(height / 2)  
  
    space_modifier = -1  
    if halfway_point != height / 2:  
        space_modifier = 0  
  
    print_centre_oriented_triangle_mod(0, halfway_point, symbol, space_modifier)  
    print_upside_down_triangle(halfway_point, height, symbol)
```