

# Project 2 - Random numbers

**Decomposition** breaks a program down into a number of sub-programs (called subroutines).

In Python these are called **functions**.

This has a number of advantages:

- subroutines can be tested thoroughly so less errors in code
- breaks a complex problem up into manageable parts
- different programmers can be responsible for each subroutine, breaking up work
- subroutines can be reused in other programs, saving work

# Project 2 - Random numbers

Here's how to create a function:

## Python:

```
def throwDice(numDice, sides):  
    total = 0  
    for i in range(0, numDice - 1):  
        total = total + random.randint(1, sides)  
    return total #returns value to main program
```

Then call the function in the program with:

```
number = throwDice(3, 6)
```

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Here's how to create a function:

## Pseudo code:

```
SUBROUTINE (numbDice, sides)
  total <- 0
  FOR i <- 1 TO numbDice
    total <- total + RANDOM_INT(1 , sides)
  RETURN total #returns value to main program
```

Then call the function in the program with:

```
number <- throwDice(3, 6)
```

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Use decomposition to break your program down into functions