

# Functions

- Used to break a problem  
in to small bite sized pieces
- functions have an optional return type  
and 0 or more arguments
- functions return (at most) 1 value
- good programming requires all functions  
to be "prototyped"

return type  
double  
name  
abs  
parameter  
(double a)  
no ; in  
function  
definition

```
if (a < 0)
    return -a;
else
    return a;
```

```
}
```

x = abs(y)

```
double abs(double a);
void main()
{
```

```
    double w = -5, x = 3, y, z;
```

```
    y = abs(w);
```

```
    z = abs(x);
```

```
    printf("%f", y);
```

```
    printf("%f", abs(-3.14));
```

```
}
```

---

5.000000 3.140000

// don't put `_CRT_SECURE_NO_...`

```
#include <stdio.h>
```

```
#include <math.h>
```

```
// proto type for hyp()
```

```
double hyp(double a, double b);
```

```
void main()
```

```
{  
  int double x, y, h;
```

```
  printf("Enter sides: ");
```

```
  scanf_s("%lf %lf", &x, &y);
```

```
  h = hyp(x, y);
```

```
  printf("hypotenues is %lf\n", h);
```

```
}
```

Scope main() | Scope hyp()

x [ 3.0 ] | a [ 3.0 ]

y [ 4.0 ] | b [ 4.0 ]

h [ 5.0 ] | sum [ 25.0 ]

result [ 5.0 ]

```
double hyp(double a, double b)
```

```
{  
  double sum, result;
```

```
  sum = a*a + b*b;
```

```
  result = sqrt(sum);
```

```
  return result;  
}
```

**NOTE** - a, b NOT copied back to x, y

---

Enter sides: 3.0 4.0 ←

hypotenues is 5.000000

