

C Basics Worksheet

1. Which variable names below are legal?

x	a21	3zoom	R.6
Hello_bozo	void	too-much	arf\$

2. Turn the following formulas into C code:

x=y times the quantity of a minus b

x=the square of y, plus the square of b

x=the square root of the quantity of a divided by c

x=the arctangent of y

x= 1 divided by the quantity of 2 times pi times f

3. Explain the difference between integer and floating point division.

4. Explain the following: Header files, #include statements, function prototypes.

5. Create a loop that starts at 10, increasing by 5 until it hits 100 (inclusive).

6. Run a loop so long as x is non-zero and y is 1.

7. Declare two floating point variables named f1 and f2, an integer variable named x that ranges from 1 through 100, and another integer named y that could be as high as 100,000 and as low as -50,000. Use the minimum space required for each object.

8. Prompt the user for a value (floating point) and assign it the variable R.

9. Correct the syntax errors below:

```
some_func( float z )
{
    float A;E;F;
    int B;

    print("give me your interbank number:\n")
    scanf("%d",B)

    if( B=61 )
        print("Ha! You're my brother!\n")

    if( B=117 )
        print("Ho! You're my sister!\n")

    if( B=0 )
        print("Hee! You're a fool!\n")
        A=1.0
        E=27.6
    else
        A=2.0
        E=30.1

    F=A*E*Z
    print("Your IQ is %d\n",F)
}
```

C Basics Worksheet Answers

1. Which variable names below are legal?

x	a21	3zoom	R.6
Hello_bozo	void	too-much	arf\$

2. Turn the following formulas into C code:

x=y times the quantity of a minus b `x=y*(a-b);`

x=the square of y, plus the square of b `x=y*y+b*b;` or
`x=pow(y,2.0)+pow(b,2.0);`

x=the square root of the quantity of a divided by c
`x=pow(a/c, 0.5);` or `x=sqrt(a/c);`

x=the arctangent of y `x=atan(y);`

x= 1 divided by the quantity of 2 times pi times f
`x=1/(2.0*PI*f);` PI may be defined as `M_PI`, or not at all, in which case create your own define for it.

3. Explain the difference between integer and floating point division.

Unlike floating point division, integer division has no remainder or fractional part. Thus 10/4 is 2.

4. Explain the following: Header files, #include statements, function prototypes.

#include statements are used to reference other C code, most notably header files. Header files normally contain defines and function prototypes. Function prototypes describe the types of arguments a function takes as well as its return type (if any). These are essential for type checking.

5. Create a loop that starts at 10, increasing by 5 until it hits 100 (inclusive).

```
int i;

for(i=10;i<=100;i+=5)
{
    ... whatever...
}
```

6. Run a loop so long as x is non-zero and y is 1.

```
while( x && y == 1 )
{
    ...whatever...
}
```

7. Declare two floating point variables named f1 and f2, an integer variable named x that ranges from 1 through 100, and another integer named y that could be as high as 100,000 and as low as -50,000. Use the minimum space required for each object.

```
float f1, f2;
char x;          /* unsigned char x; is also OK */
long int y;
```

8. Prompt the user for a value (floating point) and assign it the variable R.

```
printf("Please enter a value:");
scanf("%f", &R);          /* assumes R has been declared elsewhere */
```

9. Correct the syntax errors below:

```
void some_func( float Z )
{
    float A,E,F;
    int B;

    printf("give me your interbank number:\n");
    scanf("%d", &B);

    if( B==61 )
        printf("Ha! You're my brother!\n");

    if( B==117 )
        printf("Ho! You're my sister!\n");

    if( B==0 )
    {
        printf("Hee! You're a fool!\n");
        A=1.0;
        E=27.6;
    }
    else
    {
        A=2.0;
        E=30.1;
    }

    F=A*E*Z;
    printf("Your IQ is %d\n",F);
}
```