

9/24/18

EXAM #1 WED 10/3

```
int a;  
float b, c;
```

```
a = 7;  
b = 3.14159,  
c = 34.7;
```

```
int p = 15, q = 17;
```

```
float pi = 3.14159, twopi = pi * 2.0;
```

```
float x, y, z;
```

```
x = y = z = 15.2; // sets x, y, z to 15.2
```

operators (arithmetic)

+ , - , * , / , %

← mod or remainder

expression	result
10 % 3	1
92 % 5	2
106 % 2	0
8 % 9	8

% ONLY works
with integers

Integer mode for + - * /

expression	result
$6 + 2$	8
$20 * 30$	600
$6 + 2 + 20 * 30$	608
$9 / 10$	0 (fractional part discarded)
$9 \% 10$	9 truncated

int * int : result int
↙ any operation

float mode for +, -, *, /

expression	result
$6.0f * 2.0f$	$12.0f$
$6.0f * 1.5f$	$9.0f$
$9.f / 10.f$	$0.9f$

float * float : result: float
↑
any op (+, -, *, /)

double mode for +, -, *, /

Expression	result
$7.2 * 2.0$	14.4
$9.99 / 100.0$	0.0999
double * double	double.

Mixed Mode

(i = int, f = float, d = double)

$$i * i \Rightarrow i$$

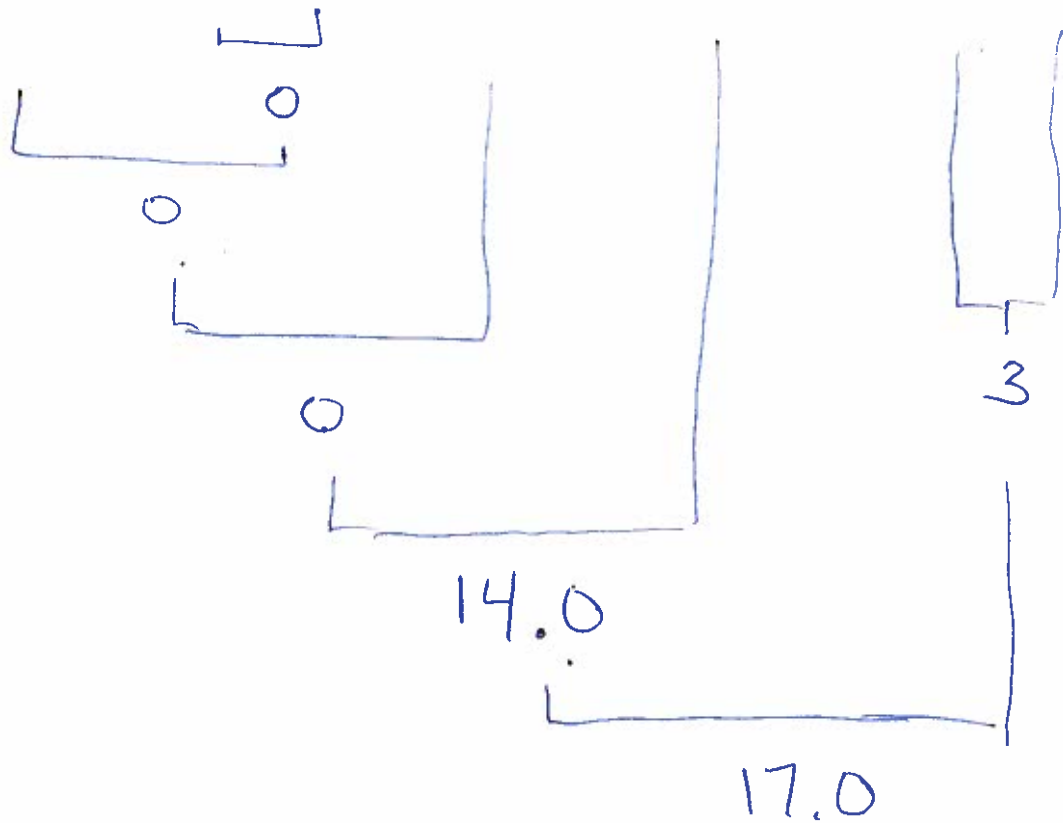
$$\left. \begin{array}{l} i * f \\ f * i \end{array} \right\} \Rightarrow f$$

$$\left. \begin{array}{l} i * d \\ d * i \end{array} \right\} \Rightarrow d$$

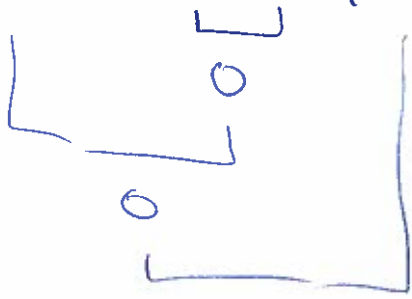
$$f * f \Rightarrow f$$

$$\left. \begin{array}{l} d * f \\ f * d \\ d * d \end{array} \right\} \Rightarrow d$$

$$5 * (37.3) / 6 + 14.0 + 10/3$$



$$5 * (39.3) / 6 + (0.0 + 10) / 3 + 14.0$$



$$10.0$$

0

$$3.33\dots 3$$

16

$$3.33\dots 3$$

$$17.3333333\dots 3$$

More on if

logical operators

==

!=

>=

>

<

<=

WRONG WAY

x = 3

if (x = 4)

printf("Hi");

else

printf("Bye");

as is: prints:
Hi

with x == 4
prints
Bye

False represented by 0 value

True " by non-zero

more on if

```
if (condition)
{
    statements if True (non-zero)
}
else
{
    statements if false (zero)
}
```

Alternative form

```
if (condition)
{
    statements if true (non-zero)
}
// no else part
```

// prompt & get grade - print A, B, C, D, F

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

```
scanf("%d", &g);
```

// is g $90 \leq g \leq 100$ ← logical and

```
if ((90 <= g) && (g <= 100))  
    printf("A");
```

```
if ((80 <= g) && (g <= 89))  
    printf("B");
```

⋮

```
if (g < 60)  
    printf("F");
```