

CMPS 150 – Sections 3 & 4 – 11:00 am
Fall 2002 – Test #1

Name: _____ Date: _____ Section: _____

1. On planet Ucs there are only 4 months. The month names and the number of days in each are:

Janfebarch 31
Apmajune 30
Julausept 30
Octnodec 31

Write a program fragment that will ask the user for the day of the year, and respond with the correct month and day. For example, one run of the program could be:

```
Enter day of the year: 64
Day number 64 is Julausept 3.
```

2. A company needs a program to compute payroll data for its sales people. A person's monthly pay is determined by adding a percentage of their sales + a sales bonus (also based on their sales). Here are the categories on which monthly pay is based:

<u>category</u>	<u>sales</u>	<u>rate</u>
1	\$50,000 or more	\$500 + 16% of sales
2	< \$50,000 but at least \$30,000	\$400 + 12% of sales
3	< \$30,000 but at least \$10,000	\$300 + 9% of sales
4	< \$10,000	\$200 + 5% of sales

Write a program fragment that will:

- declare all variables needed for the following 3 steps
- ask the user for the total sales for the month and get the user's input from the keyboard
- calculate their monthly pay based on sales entered by user
- use only one cout statement at the very end of the program fragment – i.e., no cout allowed in an if/else stmt.

You may assume the following constants have been declared:

```
const int    SALES1 = 50000, SALES2 = 30000, SALES3 = 10000;  
const int    BONUS1 = 500,   BONUS2 = 400,   BONUS3 = 300,   BONUS4 = 200;  
const double PCT1 = 0.16,    PCT2 = 0.12,    PCT3 = 0.09,    PCT4 = 0.05;
```

3. Given the following declarations and assignment statements, what is the result of each boolean expression?
NOTE: Your answer must be the entire word True or False.

```
int    a = 5, b = 8, c = 14;  
float  x = 12.0, y = 30.5, z = 1.6;
```

`x + y / 5 < b + a` _____

`b / a == z` _____

`! (y + c != c + a * y)` _____

`a > b && c > b || x < y || z < a && b == 8` _____

4. Given the following declarations, input statements and user entry, what is stored in the input variables?

declarations

```
int    int1;  
double dble1;  
char   ch1, ch2;  
string str1;
```

prompt and input statement

```
cout << "Enter data: ";  
cin >> ch1 >> str1 >> dble1 >> int1 >> ch2;
```

user entry

James24 86 54.9 K

variable values

ch1 _____

ch2 _____

dble1 _____

int1 _____

str1 _____

5. Indicate which data type is best to represent the following items:

- _____ zip code
- _____ a letter grade on an exam
- _____ age
- _____ the average (numeric) test score for an exam

6. What is the output TO THE SCREEN by the following C++ program fragment?

```
angle = 25;
side1 = 45;

if (angle = 45)
    side2 = 45;
else
    side2 = 15;

cout<< "angle " << angle << " side 1 " << side1 << " side 2 " << side2 << endl;
```

7. Indicate the UNIX command to do the following:

- _____ list files in the current directory
- _____ change the current directory to your class directory (folder)
- _____ change a file's name from PA2.CC to pa2.cc
- _____ compile a program named pa4.cc (executable name is your choice)

8. Write a valid C++ assignment statement to express the following math formulas.

a. slope = $\frac{x_2 - x_1}{y_2 - y_1}$ _____

b. perimeter = $2L + 2W$ _____