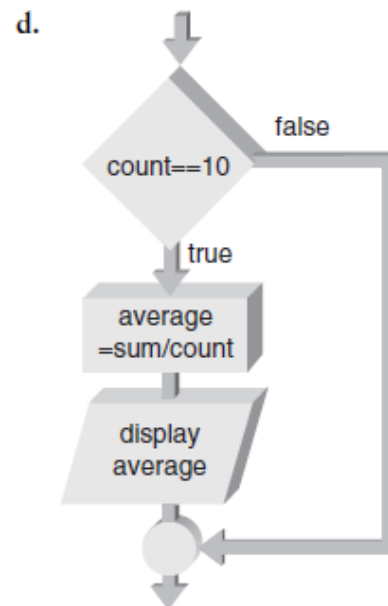
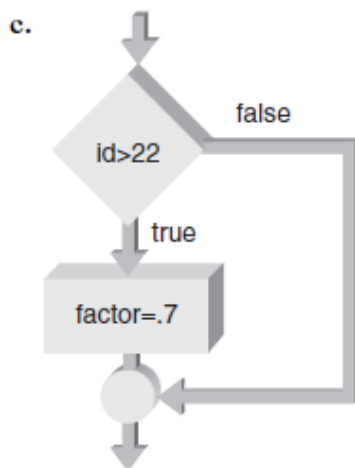
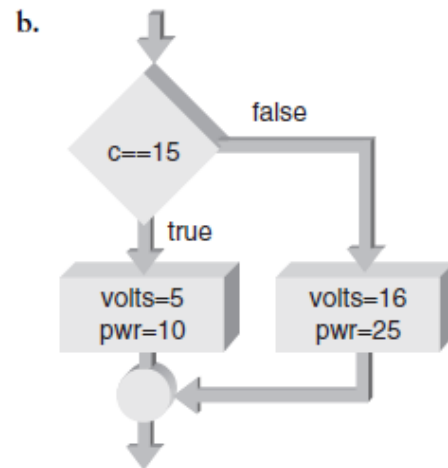
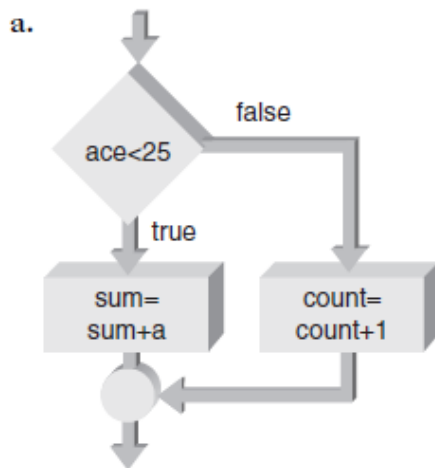


## SHEET 3

- (Practice) Determine the value of the following expressions, assuming  $a = 5$ ,  $b = 2$ ,  $c = 4$ , and  $d = 5$ :
  1.  $a == 5$
  2.  $b * d == c * c$
  3.  $d \% b * c > 5 \parallel c \% b * d < 7$
- (Practice) Write appropriate if statements for the following conditions:
  1. If an angle is equal to 90 degrees, print the message “The angle is a right angle”; else, print the message “The angle is not a right angle.”
  2. If the temperature is above 100 degrees, display the message “above the boiling point of water”; else, display the message “below the boiling point of water.”
  3. If the number is positive, add the number to the variable positivesum; else, add the number to the variable negativesum.
  4. If the slope is less than 0.5, set the variable flag to 0; else, set flag to 1.
  5. If the difference between volts1 and volts2 is less than 0.001, set the variable approx. to 0; else, calculate approx. as the quantity  $(\text{volts1} - \text{volts2}) / 2.0$ .
  6. If the frequency is above 60, display the message “The frequency is too high.”
  7. If the difference between temp1 and temp2 exceeds 2.3, calculate the variable error as  $(\text{temp1} - \text{temp2}) * \text{factor}$ .
  8. If x is greater than y and z is less than 20, request that the user input a value for the variable p.
  9. If distance is greater than 20 and less than 35, request that the user input a value for the variable time.
- (Practice) A certain waveform is 0 volts for time less than 2 seconds and 3 volts for time equal to or greater than 2 seconds. (These waveforms are referred to as step functions.) Write a C++ program that accepts time in the variable named time and displays the appropriate voltage, depending on the input value.

SHEET 3

- (Practice) Write if statements corresponding to the conditions illustrated in the following flowcharts:



- (Practice) An insulation test for a wire requires that the insulation withstand at least 600 volts. Write a C++ program that accepts a test voltage and displays the message “PASSED VOLTAGE TEST” or the message “FAILED VOLTAGE TEST,” as appropriate.

## SHEET 3

- (Practice) a. Write a C++ program to display the message “PROCEED WITH TAKEOFF” or “ABORT TAKEOFF,” depending on the input. If the character g is entered in the variable code, the first message should be displayed; otherwise, the second message should be displayed.
- (Electrical eng.) A small factory generates its own power with a 20-kilowatt generator and a 50-kilowatt generator. The plant manager indicates which generator is required by typing a character code. Write a C++ program that accepts this code as input. If code s is typed, a message directing the plant foreman to use the smaller generator should be displayed; otherwise, a message directing use of the larger generator should be displayed.
- What will the following program segment display?

```
int funny = 7, serious = 15;  
funny = serious % 2;  
if (funny != 1)  
{  
    funny = 0;  
    serious = 0;  
}  
else if (funny == 2)  
{  
    funny = 10;  
    serious = 10;  
}  
else  
{  
    funny = 1;  
    serious = 1;  
}  
cout << funny << serious << endl;
```