1. You are writing a program that will keep track of the number of apples in a bucket, the total cost of the apples, and the tax on the apples. What type of variables would make the most sense to use (respective order!)

    A. integer, integer, integer
    B. integer, double, integer
    C. double, double, double
    D. integer, double, double
    E. double, double, integer

2. Consider the student code that prints out the state of water. Which is true?

```
int temp = //user input
if (temp<0)
  SOP("ice");
else if (temp< -50)
  SOP("cold ice");
else if (temp<100)
  SOP("water");
else
  SOP("steam");
```

    A. "ice" will never print out
    B. "coldice" will never print out
    C. "water" will never print out
    D. "steam" will never print out
    E. when "cold ice" prints outs, "ice" must also print out

3. Consider the following student code to find the SUM of user entered numbers. Which would best be placed in line 1 and line 2 ?

```
int x;
int sum=0;
int count;
for (count=0;  count<10; count=count+1){
  //line 1
  //line 2
}
System.out.println(sum);
```

    A. sum = //user input
       x = x + sum
    B. sum = sum + x
       x = //user input
    C. x = //user input
       sum+x
    D. x = //user input
       sum = sum + x
    E. x = //user input
       sum + x = sum

4. What will be the output of the following code segment?

```
int x = 5;
do{
  print(x);
  x=x-1;
}while(x>3);
```

A. 5,4,3
B. 5,4,3,2
C. 5,4
D. 4,3
E. 4,3,2

5. Which best describes the affect the segment of code has on the variable num ?

```
int num = //userinput
int count = 1;
do{
    count = count +1;
    num = num + 1;
}while(count<=5);
```

A. does not change the value of num
B. increases the value of num by 1
C. increases the value of num by 4
D. increases the value of num by 5
E. increases the value of num by 6

6. What will be the output of the following code segment when the user enters 1?

```
x = //userinput

while(x<20){
  x = x * 2;
  print(x);
}
```

A. 1, 2, 4, 8, 16, 32
B. 1, 2, 4, 8, 16
C. 2, 4, 8, 16
D. 2, 4, 8, 16, 32
E. 2, 4, 8

7. Which produce the same output?

    I. for (int i=5; i<8; i++){SOP("HI")}

    II. for (int i=5; i>=2; i--){SOP("HI")}

    III. int c = 0;
```
    while(c<4){
        SOP("HI");
        c++;
    }
```

    A. I and III
    B. I and II
    C. I and II and III
    D. II and III
    E. each produces a unique output

8. A student wrote this segment of code. Which is true?

```
String pw = "empty";
while(pw.equals("magic") == true){
   pw = //user input
}
SOP("PASS");
```

    A. the user must enter 'magic' in order to PASS
    B. there are many different passwords that will PASS
    C. any password entered will PASS
    D. the user will never get to enter a password
    E. the user will enter passwords forever

9. Which best describes the following code segment that a student wrote?

```
int num=0;
do{
   num = //user enters number
   if(num!=7){
      System.out.println("Not the correct code number");
   }
}while(num!=7);
```

    A. The user will keep entering numbers forever
    B. The user will never get to enter a number
    C. The user will exit the loop if they enter 7
    D. If the user enters 7, they will have to enter another number
    E. If the user enters 7, they will never exit the loop

10. A user must enter a number in the range 1-100. If they don't, they are asked again.
    Which would be best complete the code?

```
int x;
do{
   x = //user input
}while( ??? );
```

   A. (x<1) && (x>100)
   B. (1>x) || (x<100)
   C. (x>1) || (x<100)
   D. (x<1) || (x>100)
   E. (x>=1) && (x<=100)

11. Which describes the following code segment?

```
int num = //get positive number larger than 1
int count = 1;
int track = 1;
do{
  if (num%count==0){
    track = count;
  }
  count++;
}while( count<num );
```

   A. count will never equal num
   B. track can sometimes equal num
   C. track will always be equal to 1
   D. track will always equal count
   E. track is a factor of num

12. Look at the following code segments. Which code segments will *NOT* work as intended due to careless errors - inspect carefully!

```
I.  String pw = //user input ;
    if (pw == "easytest") {
        SOP("You may pass")
    }
```

```
II. int guess=13;
    if (guess = 13) {
        SOP("Your guess number is unlucky 13");
    }
```

```
III.  int score = //user enters integer
      int maxscore = 100;
      double percent;
      percent = (score/maxscore)*100;
      SOP("Your percentage on the test was " + percent);
```

   A. I doesn't work
   B. II doesn't work
   C. I and II don't work
   D. I and III don't work
   E. I, II, and III don't work

13. A student wrote the following two code segments. Which is true?

    I. if (16 > age > 0)
          System.out.println("You are too young to drive");
    II. if (password = "computer")
           System.out.println("Computer is the correct password!");

    A. only I will work as intended
    B. only II will work as intended
    C. I and II will work as intended
    D. neither I nor II will work as intended

14. What is the output of the following code segment?

```
int sum = 0;
int d = 1;
for (int count = 2; count>0; count--){
   sum = sum + d;
   if (d > 0)
     d++;
   else
     d--;
   d = -d;
}

SOP(sum);
```

    A. -2
    B. -1
    C. 0
    D. +1
    E. +2

15. What is the value of num   after the code segment is executed?

```
int counter;
int num = 0;
for(counter=2; counter<=5; counter=counter+1){
   num = num + counter;
}
```

    A. 2
    B. 5
    C. 14
    D. 24
    E. 25

16. Which would properly execute a loop 5 times?

    I. for(k= 0; k<4; k=k+1)
    II. for(k = 0; k<=4; k=k+1)
    III. for(k = 1; k<10; k=k+2)

    A. I only
    B. II only
    C. I and III
    D. II and III
    E. III only

17. The following for loop would produce approximately how many lines of output?
    ```
    for (int d=0; d<=1000; d++){
      if (d%20 == 0){
        System.out.println(d);
      }
    }
    ```

    A. 0
    B. 20
    C. 50
    D. 950
    E. 1000

18. Which best describes the following code segment?
    ```
    int a = //get positive number
    int b = //get positive number
    int c = 1;
    for (int count=1;  count<=a; count++){
      c = c * b;
    }
    System.out.println(c);
    ```

    A. prints out a to the power of b
    B. prints out the product of a and b
    C. prints out the sum of all the numbers between a and b
    D. prints out b to the power of a
    E. prints out the product of c and b

19. What is the output of the following code segment when the user enters 15 ?

```
x = //userinput
if ( (x>10) && (x<15) ) {
   print("Hi");
}
else if (x<20){
   print("Bye")
}
else{
   print("Cry");
}
```

   A. Hi
   B. Bye
   C. Cry
   D. Bye then Cry
   E. no output

20. What is the output of the following code if the grade entered is 74 ?

```
grade = //userinput
if (grade<50){
   SOP("F");
}
else if (grade>50){
   SOP("C");
}
else if (grade>73){
   SOP("B");
}
else if (grade>86){
   SOP("A");
}
```

   A. A
   B. B
   C. C
   D. F
   E. no output