1. (4 points) "Computing is information processing"; how is most processing accomplished in Java?
   By sending messages (to objects).

2. (4 points) Why are accessors called accessors?
   They access variables inside objects.

3. (4 points) What does “pixel” stand for? What does it mean?
   Picture element - the smallest writeable unit on the screen.

4. (4 points) Write Java code to declare an variable of type Bar named ram.
   ```java
   Bar ram;
   ```

5. (4 points) Create an object of type Bar and store it in ram (see previous question).
   ```java
   ram = new Bar();
   ```

6. (5 points) Send the ram object the beer() message with the parameter 5.
   ```java
   ram.beer(5);
   ```

7. (4 points) Where is information stored in a Java program?
   In variables.

8. (4 points) Java is a typed language, so all information in a Java program has a type. Name two types you have used in your programs.
   i) int  ii) String

9. (5 points) Write a line of Java code to convert a String, s, to an int, anInt.
   ```java
   int anInt = Integer.parseInt(s);
   ```

10. (4 points) Write a line of Java code to convert an int, anInt to a String, s.
    ```java
    String s = "" + anInt;
    ```

11. (5 points) Write a line of Java code to convert an Object, anObject, to a String, and send the result as a parameter to System.out along with the println() message.
    ```java
    System.out.println(anObject.toString());
    ```
12. (3 points) What must every identifier in Java start with?
A letter.

13. (3 points) What characters are allowed in Java identifiers?
Letters, digits, and underscores.

14. (3 points) Which, by convention, begin with small letters, object or class names?
Object

15. (6 points) What are three Java statements we have covered so far?
   i) return   ii) message  iii) assignment

16. (5 points) Assume you have an Account class, with an int variable, balance (as in lab 3). Write a method, withdraw(int) which will reduce the balance by the parameter.

   ```java
   void withdraw(int howMuch) {
       balance = balance - howMuch;
   }
   ```

17. (5 points) Write a SavingsAccount class, which acts in all respects like the Account class except that it costs one dollar to make a withdrawal. You may only write one method.

   ```java
   class SavingsAccount extends Account {
       void withdraw(int howMuch) {
           balance = balance - howMuch - 1;
       }
   }
   ```
18. (3 points) Write a `LyingAccount` class which, when sent `getBalance()`, returns twice its balance; again, you are only allowed to write one method.

```java
class LyingAccount extends Account {
    int getBalance() {
        return super.getBalance() * 2;
    }
}
```

19. (5 points) Write a method, named `multiply`, which returns the product of its two `int` parameters.

```java
int multiply(int x, int y) {
    return x * y;
}
```

20. (10 points) Write a complete class named `Circle`. Your class should have three variables, `x`, `y`, and `radius`, and accessors for the `radius` variable. It should have just two methods, `getRadius()` and `setRadius()`.

```java
class Circle {
    int x, y, radius;

    int getRadius() {
        return radius;
    }

    void setRadius(int nuR) {
        radius = nuR;
    }
}
```
21. 10 points) Write a complete class named Test, with only a `public static void main(String [] args)` method, which creates two Circles, sets their radii to 100 and 333, respectively, and then prints the radius of each.

```java
class Test {
    public static void main(String [] args) {
        Circle aCircle = new Circle();
        Circle bCircle = new Circle();
        aCircle.setRadius(100);
        bCircle.setRadius(333);
        System.out.println("a radius=" + aCircle.getRadius());
        System.out.println("b radius=" + bCircle.getRadius());
    }
}
```

22. (Extra credit 10 points) Write an initializing constructor for the Circle class (above) which has three parameters and initializes the three variables to them.

```java
Circle (int x, int y, int r) {
    this.x = x;
    this.y = y;
    this.radius = r;
}
```