Name:                                                                          ID:

1) What would be the output of the program below?                              [12]

```java
public class Test {
        public static void main(String[] args) {
                A a = new A();
                A b = new B();
                A c = new C();
                a.display();
                b.display();
                c.display();
                a = c;
                a.display();
                b.display();
                c.display();
        }
}

public class A{
        public void display()     {
                System.out.println("I am from A");
        }
}

public class B extends A{
        public void display()     {
                System.out.println("I am from B");
        }
}


public class C extends A{
        public void display()     {
                System.out.println("I am from C");
        }
}
```

2) What is wrong with the code below? Circle wrong code & write correct code next to it.    [8]

```java
public class Parent{
        int num;

        public Parent(int z)        {
                num = z;
        }

        public void show()  {
                System.out.println("num: " + num);
        }
}

public class Child extends Parent{
        public int childNum;

        public Child()       {
                super();
                childNum = 15;
        }

        public Child(int a, int b){
                super(a);
                childNum = b;
        }

        protected void show() {
                System.out.println("num: " + num);
        }
}
```

| Name: | ID: |
|---|---|

1) What properties have been exercised / shown in the codes below? Write your answer in right column. [8]

| | |
|---|---|
| ```public class Car extends Vehicle``` | |
| ```A a = new A();```<br>```a.show();```<br>```a.show("Hi There!");``` | |
| A is the parent class of B then,<br>```A a = new B();``` | |
| A is the parent class of B and the 2 display() call of following code is giving 2 different outputs [output1 and output2 are different] at 2 different line(line#3 and line#4). What could be the reason behind 2 different outputs?<br><br>```A a = new A();```<br>```A b = new B();```<br>```a.display(); // output1```<br>```b.display(); // output2``` | |

2) What would be the output of the program below?                                    [12]

```java
public class Test {
        public static void main(String[] args) {
                A a = new A();
                B b = new B();
                C c = new C();
                a.display();
                b.display();
                c.display();
                b = c;
                a = b;
                a.display();
                b.display();
                c.display();

        }
}

public class A{
        public void display()      {
                System.out.println("display of A");
        }
}

public class B extends A{
        public void display()      {
                System.out.println("display of B");
        }
}


public class C extends B{
        public void display()      {
                System.out.println("display of C");
        }
}
```