## Polymorphism Worksheet - Inheritance +Compiling

```
public class Animal {
   public Animal() {
      System.out.println("Animal");
   }
}
public class Mammal extends Animal {
   public Mammal() {
      System.out.println("Mammal");
   }
}
public class Cat extends Mammal {
   public Cat() {
      System.out.println("Cat");
   }
}
```

1. What is the parent class of *Animal*?

2. Is *Cat* a subclass of *Animal*?

3. What will be displayed when a new instance of *Cat* is created?

4. Is the definition

```
Animal rex = new Cat();
```

legal?

5. Given the above definition of `rex`, and the definitions

```
Animal lizzy = new Animal();
Cat tigger = new Cat();
```

Which of the following assignments are legal (will compile)?

a) `lizzy = tigger;`
b) `tigger = rex;`
c) `tigger = (Cat)rex;`
d)
```
if (rex instanceof Cat)
    tigger = rex;
```

6. Given all the above definitions of *Animal*, *Mammal*, *Cat*, `rex`, `lizzy`, and `tigger`, the method `hasFur` is specified as

```
public boolean hasFur (Mammal m);
```

Which of the following are legal (will compile)?

a) `hasFur(lizzy);`
b) `hasFur(rex);`
c) `hasFur(tigger);`
d) `hasFur((Mammal)lizzy);`
e) `hasFur((Mammal)rex);`