

1. **At the right**, create an object map for the code below. There are no spaces in any of the Strings.

```
String cat = new String ("cat");  
String dog;  
String frog = "meow";  
dog = frog;  
String horse = new String (dog);  
String mouse = "meow";  
frog = cat;
```

2. Use your map to answer the following questions about object reference.

- a) How many objects were created? \_\_\_\_\_
- b) Is there garbage? Write yes or no. If yes, also indicate what is garbage. \_\_\_\_\_
- c) Are there aliases? Write yes or no. If yes, list them all. \_\_\_\_\_
- d) When the following were declared, what value did each refer to?  
cat: \_\_\_\_\_ dog: \_\_\_\_\_ frog: \_\_\_\_\_
- e) At the end of the code, what did each of the following refer to?  
horse: \_\_\_\_\_ dog: \_\_\_\_\_ frog: \_\_\_\_\_

3. Use your map and the code below to answer the following questions about String methods. Assume that all of the code above has run. If there is an error that would crash the program, explain why. Be careful!

```
String x = horse.concat(mouse);
```

- a) x.length() returns \_\_\_\_\_
- b) x.indexOf('e', 1) returns \_\_\_\_\_
- c) x.lastIndexOf('o', 5) returns \_\_\_\_\_
- d) x.substring(2, 6) returns \_\_\_\_\_
- e) frog.endsWith("ow") returns \_\_\_\_\_
- f) cat.compareTo(dog) returns \_\_\_\_\_ number