

```

1. public interface Measurable {
2.     double getMeasure();
3. }
   //////////////////////////////////////////////////
3. abstract class SHAPE {
4.     public SHAPE(int w,int h) {
5.         this.boxWidth=w;
6.         this.boxHeight=h;
7.     }
8. public abstract double area();
9. private int boxWidth;
10. private int boxHeight;
11. }
   //////////////////////////////////////////////////
12. class LINE extends SHAPE implements Measurable {
13.     public LINE (int x0,int y0,int x1,int y1)
14.     {
15.         super(Math.Abs(x1-x0), Math.Abs(y1-y0));
16.         this.x0=x0; this.y0=y0;
17.         this.x1=x1; this.y1=y1;
18.     }
19.     public double getMeasure () {
20.         this.Length=
21.         Math.Sqrt(Math.Sqr(x1-x0)+Math.Sqr(y1-y0));
22.         return this.Length;
23.     }
24.     public double area(){ return 0.0; }
25.     protected double Length;
26.     private int x0, y0, x1, y1;
27. }
   //////////////////////////////////////////////////
28. final class VERTICAL extends LINE {
29.     static Main(string [] args)
30.     {
31.         Obect o=new LINE(2,3,5,7);
32.         Measureble m = new LINE(2,3,7,15);
33.         SHAPE s = new LINE();
34.         LINE l = new LINE(5,10,5,100);
35.         Edge.getMeasure();
36.     }
37.     final string label="LEFT";
38. }

```

Name _____

Answer the following questions in plain English sentences.

1. Write out a toString function for LINE.

2. Write out a compareTo function for LINE.

3. Explain the problems with the above code (why would it not compile):

Name _____

Answer the following questions in plain English sentences.

1. Explain what the code in Line 1 above indicates:

2. Explain what the code in Line 2 above indicates:

3. Explain what the code in Line 3 above indicates:

4. Explain what the code in Line 4 above indicates:

5. Explain what the code in Line 5 above indicates:

6. Explain what the code in Line 6 above indicates:

7. Explain what the code in Line 7 above indicates:

8. Explain what the code in Line 8 above indicates:

9. Explain what the code in Line 9 above indicates:

10. Explain what the code in Line 10 above indicates:

11. Explain what the code in Line 11 above indicates:

12. Explain what the code in Line 12 above indicates:

13. Explain what the code in Line 13 above indicates:

14. Explain what the code in Line 14 above indicates:

15. Explain what the code in Line 15 above indicates:

16. Explain what the code in Line 16 above indicates:

17. Explain what the code in Line 16 above indicates:

18. Explain what the code in Line 17 above indicates:

19. Explain what the code in Line 18 above indicates:

20. Explain what the code in Line 19 above indicates:

21. What is the purpose of an `interface`?

22. Why do we typically override the `toString()` function?

23. What is `object`?

24. What is inheritance?

25. What is polymorphism?

26. What is data protection?

27. What is late binding?

28. What is encapsulation?
