```
public class GeometryAreaCont {
    public String shape { get; set; }
    public Decimal length { get; set; }
    public Decimal width { get; set; }
    public Decimal radius { get; set; }
    public Decimal baseVal { get; set; }
    public Decimal height { get; set; }
    public Decimal area { get; set; }

    public List<SelectOption> getShapeOptions() {
        return new List<SelectOption>{
            new SelectOption('Square', 'Square'),
            new SelectOption('Rectangle', 'Rectangle'),
            new SelectOption('Circle', 'Circle'),
            new SelectOption('Triangle', 'Triangle')
        };
    }

    public void calculate() {
        if(shape == 'Square' && length != null) {
            area = length * length;
        } else if(shape == 'Rectangle' && length != null && width != null) {
            area = length * width;
        } else if(shape == 'Circle' && radius != null) {
            area = Math.PI * Math.pow((Double)radius, 2);
        } else if(shape == 'Triangle' && baseVal != null && height != null) {
            area = 0.5 * baseVal * height;
        } else {
            area = null;
        }
    }
}
```

```
<apex:page controller="GeometryAreaCont">
  <h2>Geometry Area Calculator</h2>
  <apex:form>
    <apex:pageBlock title="Select Shape and Enter Dimensions">
      <apex:pageBlockSection columns="1">
        <apex:selectList value="{!shape}" size="1" label="Select Shape">
          <apex:selectOptions value="{!shapeOptions}"/>
        </apex:selectList>

        <!-- Input fields rendered conditionally -->
        <apex:inputText value="{!length}" label="Length" rendered="{!shape='Square' ||
shape='Rectangle'}"/>
        <apex:inputText value="{!width}" label="Width"
rendered="{!shape='Rectangle'}"/>
        <apex:inputText value="{!radius}" label="Radius" rendered="{!shape='Circle'}"/>
        <apex:inputText value="{!baseVal}" label="Base"
rendered="{!shape='Triangle'}"/>
        <apex:inputText value="{!height}" label="Height"
rendered="{!shape='Triangle'}"/>
      </apex:pageBlockSection>

      <apex:pageBlockSection>
        <apex:commandButton value="Calculate Area" action="{!calculate}"/>
      </apex:pageBlockSection>

      <apex:pageBlockSection rendered="{!NOT(ISNULL(area))}">
        <apex:outputText value="Area = {!area} square units"/>
      </apex:pageBlockSection>
    </apex:pageBlock>
  </apex:form>
</apex:page>
```

Great — since you want to run and test your **GeometryAreaCont Apex class without using the Visualforce Page**, here's how you can do that **entirely from the Developer Console's Execute Anonymous Window**.

✅ **Test GeometryAreaCont in Execute Anonymous Window**

You can simulate a user interaction by setting the values of the fields directly and calling the calculate() method.

✅ **Test Case 1: Square (Length = 5)**

```
GeometryAreaCont g = new GeometryAreaCont();
g.shape = 'Square';
g.length = 5;
g.calculate();

System.debug('Area of Square: ' + g.area);  // Should be 25
```

✅ **Test Case 2: Rectangle (Length = 4, Width = 3)**

```
GeometryAreaCont g = new GeometryAreaCont();
g.shape = 'Rectangle';
g.length = 4;
g.width = 3;
g.calculate();

System.debug('Area of Rectangle: ' + g.area);  // Should be 12
```

✅ **Test Case 3: Circle (Radius = 2)**

```
GeometryAreaCont g = new GeometryAreaCont();
g.shape = 'Circle';
g.radius = 2;
g.calculate();

System.debug('Area of Circle: ' + g.area);  // Should be approx 12.5664
```

✅ **Test Case 4: Triangle (Base = 5, Height = 4)**

```
GeometryAreaCont g = new GeometryAreaCont();
g.shape = 'Triangle';
g.baseVal = 5;
g.height = 4;
g.calculate();
```

```
System.debug('Area of Triangle: ' + g.area);  // Should be 10
```

✅ **Test Case 5: Missing Inputs (Error Handling)**

```
GeometryAreaCont g = new GeometryAreaCont();
g.shape = 'Rectangle'; // But don't provide width
g.length = 5;
g.calculate();

System.debug('Area with Missing Width: ' + g.area);  // Should be null
```

This lets you fully test your logic without any Visualforce UI. Would you like to add input validation or error messages for missing/invalid values?