



**PECANWOOD
COLLEGE**

Prepared for Life

**INFORMATION TECHNOLOGY CYCLE TEST
JAVA OOP - GRADE 10**

NAME: Memo.

GRADE: _____

DATE: 18 SEPTEMBER 2019

MODERATOR: MR N NAINAR

EXAMINER: MR SC EILERTSEN

MARKS: 35

TIME: 1 HOUR

INSTRUCTIONS:

1. This test is made up of two pages. Please ensure that your paper is complete.
 2. You may use a non-programmable calculator where relevant.
 3. Login immediately and load the IDE you intend to use.
 4. Print your Java code and hand it in with this question paper. You are responsible to ensure that your work is labelled correctly and handed in.
-

Section One

Java Coding - OOP

1.1) Write a two class program that calculates area of a triangle using the formula below.

Half the base times by the perpendicular height.

Example: Base = 6.5. Height = 3.2.
 $(6.5 / 2) * 3.2 = 10.4$

Package: septcycletest

Class: TriangleUI The class with the main method.
Creates the new object from the Triangle class (see below).
Uses JOptionPane to accept user input.
Accepts only lengths bigger than zero from the keyboard.
Rejects invalid input and forces the user to input again.
Calls the processing method to calculate the area.
Prints the final output to screen using JOptionPane.

Class: Triangle The class that does the processing using a single processing method.
Returns the final area value to the UI class for printing to the screen

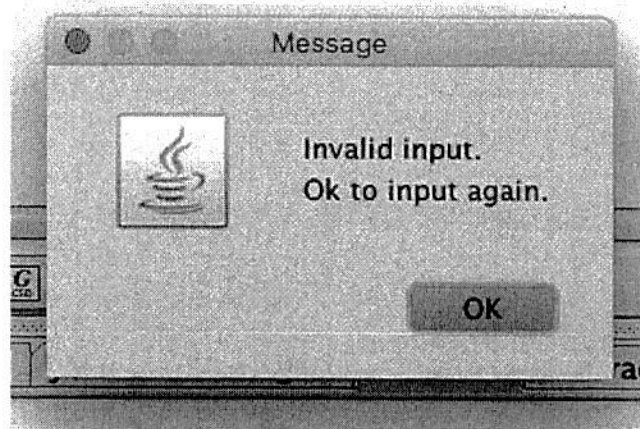
Input: Via the TriangleUI class

The input needed from the user is as follows . . .

- The length of the base of the triangle
- The perpendicular height of the triangle

(21)

This class uses a while loop to reject any value that is zero or smaller - your error message box must look like the example below.



Processing: Via the object created from the Triangle class.

Method calcTriangle.

This method accepts the triangle lengths from the main method.

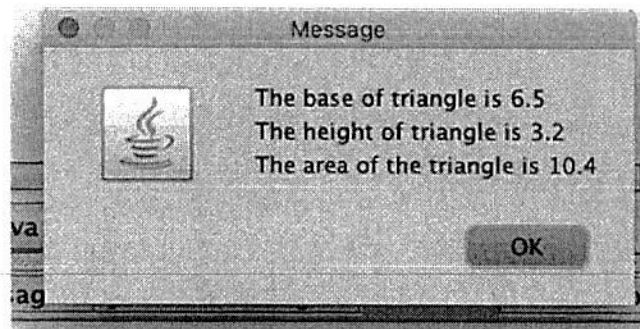
Calculates the area of the triangle – see page one for an example with more detail.

Returns the area value to the main method for output.

(9)

Output: Via the TriangleUI class

Displays the area of the triangle with suitable, useful messages – your message box must look like the example below.



Print your two classes to the network printer with your name, class and terminal number.

NOTE: Credit is given for good programming practice i.e.

1. Well-chosen variable names.
2. Correctly created package and class names.
3. Useful prompts telling the user what to do.
4. Indentation.
5. Comments.
6. Good use of whitespace to group code into useful sections.
7. A useful message that explains the output to the user.

(5)

TOTAL: 35


```

1 /* This two class program calculates the area of a triangle.
2 * The class TriangleUI is used for input and output only.
3 * The Triangle class is used for processing only.
4 * The formula to calculate the area of a triangle is
5 * half the base multiplied by the perpendicular height
6 *
7 * Example: Base is 12.6, the height is 3.4 . . .
8 * (12.6 / 2) * 3.4 = 21.420
9 */
10
11 package septycletest; ✓
12
13 import javax.swing.JOptionPane; ✓
14
15 public class TriangleUI ✓
16 {
17     public static void main (String[] args) ✓
18     {
19         String baseSt, heightSt;
20         double base= 0.0, height = 0.0, area = 0.0; } ✓
21         Triangle myTriangleCalc = new Triangle(); ✓
22
23         // INPUT ✓
24         baseSt = JOptionPane.showInputDialog("Give the base of the triangle"); ✓
25         heightSt = JOptionPane.showInputDialog("Give the height of the triangle"); ✓
26
27         base = Double.parseDouble(baseSt); ✓
28         height = Double.parseDouble(heightSt); ✓
29
30         while ((base <= 0.0) || (height <= 0.0)) ✓
31         {
32             JOptionPane.showMessageDialog(null, "Invalid input." + "\n" ✓
33             + "Ok to input again."); ✓
34
35             baseSt = JOptionPane.showInputDialog("Give the base of the triangle"); ✓
36             heightSt = JOptionPane.showInputDialog("Give the height of the triangle"); ✓
37
38             base = Double.parseDouble(baseSt); ✓
39             height = Double.parseDouble(heightSt); ✓
40
41         } ✓
42
43         // PROCESSING ✓
44         area = myTriangleCalc.calcTriangle(base, height); ✓
45
46         // OUTPUT ✓
47         JOptionPane.showMessageDialog(null,
48         "The base of triangle is " + base + "\n" } ✓
49         + "The height of triangle is " + height + "\n" } ✓
50         + "The area of the triangle is " + area); ✓
51
52     }
53 }

```

Total $\frac{x}{35}$

$\frac{x}{26}$

Comments ✓

White space, indetation ✓

Variables ✓

package, class, method names ✓

user friendly messages ✓

```

1 /* This two class program calculates the area of a triangle.
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3 * The Triangle class is used for processing only.
4 * The formula to calculate the area of a triangle is
5 * half the base multiplied by the perpendicular height
6 *
7 * Example: Base is 12.6, the height is 3.4 . . .
8 * (12.6 / 2) * 3.4 = 21.420
9 */
10
11 package septcycletest;
12
13 public class Triangle ✓
14 {
15     private double base;
16     private double height;
17     private double totalArea = 0.0; } ✓
18
19     public double calcTriangle(double b, double h)
20     {
21         base = b; } ✓
22         height = h; } ✓
23         totalArea = (base / 2) * height; ✓
24
25         return totalArea; ✓
26     }
27 }

```

$$\frac{x}{9}$$