

## Heron

```
package u2_a3_ast2;
import java.util.Scanner;
import java.lang.Math;

/**
 *
 * @author Kunwar Nir
 * 24-07-2019
 * Title: Heron
 * Purpose: To calculate the area of a triangle given the three sides using
 * Herons formula, Area = (s(s-a) (s-b) (s-c))0.5
 */
public class Heron {

    public static void main(String[] args) {

        Scanner input = new Scanner(System.in);

        //Declaring variables for the sides of the triangle
        int intSide1, intSide2, intSide3;

        //Getting user input
        System.out.print("Enter the length of the first side: ");
        //Setting the value of the side to the input
        intSide1 = input.nextInt();

        //Getting user input
        System.out.print("Enter the length of the second side: ");
        //Setting the value of the side to the input
        intSide2 = input.nextInt();

        //Getting user input
        System.out.print("Enter the length of the third side: ");
        //Setting the value of the side to the input
        intSide3 = input.nextInt();

        //Declaring variable for half the perimeter
        double dblHalfPerimeter;

        //Assigning value for variable
        dblHalfPerimeter = ((intSide1 + intSide2 + intSide3)) / 2;

        //Declaring variable for area
        double dblArea;

        //Assigning value for area
```

```
dblArea = Math.pow((dblHalfPerimeter * (dblHalfPerimeter - intSide1) *  
    (dblHalfPerimeter - intSide2) * (dblHalfPerimeter - intSide3)), 0.5) ;
```

```
//Displaying the answer
```

```
System.out.println("\nCalculated using Herons formula, the area of a "  
    + "triangle with the sides " + intSide1 + ", " + intSide2 +  
    " and " + intSide3 + " is " + dblArea);
```

```
}
```

```
}
```

## Cosine Law

```
package u2_a3_ast2;
import java.util.Scanner;
import java.lang.Math;

/**
 *
 * @author Kunwar Nir
 * 24-07-2019
 * Title: Cosine Law
 * Purpose: To get the third side of a triangle using the cosine law given two sides of a
triangle and the contained angle
 */
public class CosineLaw {

    public static void main(String[] args){

        Scanner input = new Scanner(System.in);

        //Declaring variables for triangle
        int intSide1, intSide2, intAngle;

        //Getting user input
        System.out.print("Enter the length of the first side: ");
        //Setting the value of the side to the input
        intSide1 = input.nextInt();

        //Getting user input
        System.out.print("Enter the length of the second side: ");
        //Setting the value of the side to the input
        intSide2 = input.nextInt();

        //Getting user input
        System.out.print("Enter the measure of angle: ");
        //Setting the value of the side to the input
        intAngle = input.nextInt();

        //Declaring variable for the angle in radians and assigning it's value
        double dblAngleRadian = Math.toRadians(intAngle);

        //Declaring variable for third side and assigning value
        double dblSide3 = Math.pow(((Math.pow(intSide1, 2) + Math.pow(intSide2, 2)
            - 2 * intSide1 * intSide2 * Math.cos(dblAngleRadian))), 0.5);

        System.out.println("\nThe third side of this triangle is: " + dblSide3);
```

} }