

```
// Various examples of mathematical calculation
// (No user input, formatting, error checking, or other typical elements...)

public class DoMath
{
    public static void main(String [ ] args)
    {
        // ----- Miles per gallon -----
        double mpg, gallons, miles;
        gallons = 13.4; miles = 302.3;
        mpg = miles / gallons;
        System.out.println("Miles per gallon = " + mpg);

        // ----- Wall area, rectangular room, ignoring doors and windows -----
        double length, width, height, wallArea;
        length = 12.3; width = 9.8; height = 8.0;
        wallArea = 2 * width * height + 2 * length * height;
        System.out.println("Wall area is " + wallArea);

        // ----- Straight-line depreciation -----
        double cost, yearsOld, life, valueNow; // orig cost, age, expected life
        cost = 10300.0; yearsOld = 5.0; life = 10.0;
        valueNow = cost - yearsOld * cost / life;
        System.out.println("Value now = " + valueNow);

        // ----- Hypotenuse of right triangle -----
        double a, b, c;
        a = 3.0; b = 4.0;
        c = Math.sqrt(a*a + b*b); // or Math.sqrt(Math.pow(a,2) + Math.pow(b,2));
        System.out.println("hypotenuse = " + c);

        // ----- The constant pi -----
        System.out.println("The value of pi is about " + Math.PI);

        // ----- Diameter and area of circle -----
        double radius, circum, area;
        radius = 4.56;
        circum = 2 * radius * Math.PI;
        area = Math.PI * Math.pow(radius, 2); // or use radius * radius
        System.out.println("Circumference and area: " + circum + ", " + area);

        // ----- cosine of angle -----
        double angle, angleCos;
        angle = 0.0;
        angleCos = Math.cos(angle); // angle is in radians; also have sin, tan,...
        System.out.println("Cosine = " + angleCos);
    }
}
```

===== Sample Run =====

```
Miles per gallon = 22.559701492537314
Wall area is 353.6
Value now = 5150.0
hypotenuse = 5.0
The value of pi is about 3.141592653589793
Circumference and area: 28.65132500073891, 65.32502100168472
Cosine = 1.0
```