Math EQAO formulas

In the code below, the programmer
(1) got the input for the formula,
(2) did the calculation,
(3) and finally, they outputted their results.

First, they calculated the sphere area of the sphere, then, they calculated the area of a triangle, using Heron's formula.

The formula for the surface area of a sphere is:

$$SA = 4\pi r^2$$

Heron's formula states that the area of a triangle whose sides have lengths a, b, and c is

$$A = \sqrt{s(s-a)(s-b)(s-c)}$$

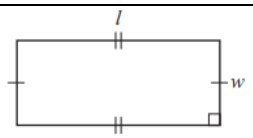
where s is the semi-perimeter of the triangle; that is,

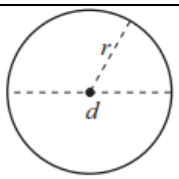
$$s = \frac{a+b+c}{2}$$

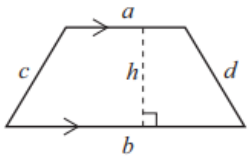
```
public class Grade9Math_Formulas
{
    public static void main (String args[])
    {
        new Grade9Math_Formulas ();
    }

    public Grade9Math_Formulas ()
    {
        System.out.println ("* * * * * * Sphere * * * * * * ");
        double radius = IO.inputDouble ("Enter the radius: ");
        double SA = 4 * Math.PI * radius * radius;
        System.out.println ("The surface area of the sphere is " + SA);
        System.out.println ("");

        System.out.println ("* * * * * * Triangle Area: Heron's Formula * * * * * * ");
        double sideA = IO.inputDouble ("Enter the first side length: ");
        double sideB = IO.inputDouble ("Enter the second side length: ");
        double sideC = IO.inputDouble ("Enter the third side length: ");
        double s = (sideA + sideB + sideC) / 2;
        double A = Math.sqrt (s * (s - sideA) * (s - sideB) * (s - sideC));
        System.out.println ("The area of the triangle is " + A);
        System.out.println ("");
    }
}
```

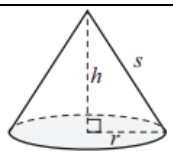
Your Task:

Code each of the following formulas. Check your answers to be sure they are right.

<table>
<tr>
<td> 
</td>
<td>Rectangle
$A = l \times w$
$P = 2(l + w)$

• If l=1, w=2, then A=2, P = 6
• If l=18, w=24, then A=432, P=84</td>
<td> 
</td>
<td>Circle
$A = \pi r^2$
$C = 2\pi r$

• If r = 1, then A = 3.14, C=6.28
• If r = 25, then A = 1963.5, C = 157.08</td>
</tr>
<tr>
<td> 
</td>
<td>Trapezoid
$A = \frac{(a+b)h}{2}$
$P = a + b + c + d$

• If a=1, b=2, c=1, d=2, then A = 1.5, P = 6
• If a=5, b=14, c=12, d = 13, then A= 114, P = 44</td>
<td> 
</td>
<td>Cone
$SA = \pi r(r + \sqrt{h^2 + r^2})$
$V = \pi r^2 \frac{h}{3}$

• If r = 1, h = 1, then SA = 7.58 and V = 1.047
• If r = 5, h = 12, then SA = 282.743 and V = 314.159</td>
</tr>
</table>