Answer on Question #63350, Physics / Other

Why can't you report an experimental value for pi to 10 digits?

Solution:

Since experimental methods for measuring PI are quite rude. They depend on the accuracy of the conducted measurements.
As an example one of the methods:
Measurement by weighing
On a piece of cardboard, draw the square. Inscribe him in a circle. Cut out a square. Determine the mass of the cardboard square with the help of school weights. Cut out a square from a circle. Weigh and him. Knowing the weight of square m_{sq} (= 10 g) and the inscribed circle m_{cir} (= 7.8 g) use the formulas

$$m = \rho V$$
$$V = Sh$$

where p and h are respectively the density and thickness of the cardboard, S - area of the figure.

Consider the equation:

$$m_{sq} = \rho Sh = \rho\, 4R^2h$$

$$m_{cir} = \rho\, R^2h$$

here

$$m_{cir} / m_{sq} = \rho\, R^2h / \rho\, 4R^2h = \pi/4$$

$$\pi = 4\, m_{cir} / m_{sq} = 4 * 7.8 / 10 = 3.12$$

Naturally, in this case, an approximate value depends on the accuracy of weighing sizes and shapes.