Task. Divide \$7200 into two parts such that the simple interest on one part at 6.5% per annum for 4.5 years would be equal to the simple interest on the other at 4.5% per annum for 5.5 years.

Solution. Let x and y be the two parts of \$7200, so

$$x + y = 7200.$$

The simple interest on x at 6.5% per annum for 4.5 years is equal to

$$x * 1.065^{4.5},$$

while the simple interest on y at 4.5% per annum for 5.5 years is

$$y * 1.045^{5.5},$$

and it is required that these expressions coincide, so

$$x * 1.065^{4.5} = y * 1.045^{5.5}.$$

Thus we get the following system of equations:

$$\begin{cases} x + y = 7200 \\ 1.065^{4.5}x = 1.045^{5.5}y \end{cases}$$

Notice that

$$1.065^{4.5} \approx 1.327618314, \qquad 1.045^{5.5} \approx 1.273912495,$$

whence

$$y = \frac{1.065^{4.5}}{1.045^{5.5}}\, x \approx \frac{1.327618314}{1.273912495}\, x \approx 1.04215817x.$$

Substituting y into the first equation $x + y = 7200$ we get

$$x + 1.04215817x = 7200,$$

$$2.04215817x = 7200,$$

$$x = \frac{7200}{2.04215817} \approx 3525.681852 \approx \$3525.68$$

Hence

$$y = 7200 - 3525.68 = \$3674.32$$

Answer. \$3525.68 and \$3674.32.