

2 bedrooms, \$160,000

Down payment, 10%

Calculate!

10% of \$160,000

↓
 $\frac{10}{100}$
↓

0.10

↓
means
multiply
↓

$$0.10 \cdot \$160,000 = \$16,000$$

Find
Principal!

$$\begin{array}{r} \$160,000 \\ - 16,000 \\ \hline \$144,000 \end{array}$$

I need a mortgage
for \$144,000

30 years fixed
at 4%!

principal = loan amount

Calculate monthly payment

$$M = P \cdot \frac{r(1+r)^n}{(1+r)^n - 1}$$

M = monthly payment

P = principal (\$144,000)

r = monthly interest rate = 4% → 0.04
 ($\frac{\text{annual interest}}{12 \text{ months}}$) $\frac{0.04}{12} = 0.00\bar{3}$

n = # of payments
 (number of months you are paying the loan)

30 years · 12 months = 360 months

$$M = 144,000 \cdot \frac{0.003(1+0.003)^{360}}{(1+0.003)^{360} - 1}$$

$$M = 144,000 \cdot \frac{0.003(1.003)^{360}}{(1.003)^{360} - 1}$$

$$M = 144,000 \cdot \frac{0.003(2.9399)}{2.9399 - 1}$$

$$M = 144,000 \cdot \frac{0.0088197}{1.9399}$$

$$M = 144,000 \cdot (0.0045)$$

$$M = \$654.69 / \text{month}$$

You will pay \$654.69 · 360 months: \$235,688 for the loan
 and interest to borrow \$144,000.

$$\begin{array}{r} 235,688 \\ - 144,000 \\ \hline \$91,688 \end{array} \leftarrow \text{This is } \underline{\text{interest!}}$$

Though I just showed you how to calculate a monthly payment, there is danger in rounding too soon (as every cent is compounded).

I used an online mortgage calculator to find the costs.

Monthly
 Payment
 \$687.00

\$247,492 total (principal + interest)

\$103,492 ← this is interest!