How long would it take to turn $500 into $1000 with simple interest investments?

Business Mathematics
Class notes
Finding Principal, Rate, and Time for Simple Interest Loans (section 9.2)

In the previous section, we were given the amount to be invested, the interest rate, and the time period of the loan and asked to find the interest earned. In this section, we will go the other way.

We start with our basic formula. The book does show these other versions and you can start there. However, you may find that memorizing all the incarnations of this one formula is *not* worth it. I remember the basic one and manipulate it when needed.

$I = P \times R \times T$

To find Principal: Divide both sides by $R \times T$ and get $P = \frac{I}{RT}$.

To find Rate: Divide both sides by $P \times T$ and get $R = \frac{I}{PT}$.

To find Time (years): Divide both sides by $P \times R$ and get $T = \frac{I}{PR}$.

Do *not* forget what those variables all mean!

I = **interest earned**
P = **principal** (initial deposit or investment, aka **Face Value**)
R = **annual interest rate** (decimal form)
T = **time** money is invested (years)

Recall that T (time) is in years. However, often loan periods will be given in months or days. So we have these additional formulas to convert years to months and days, whichever is required.

To find T (months): $T = \frac{I}{PR} \times 12$

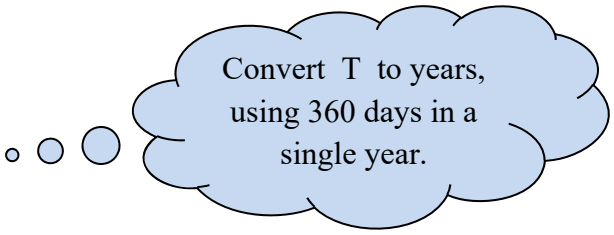
There are 12 months in 1 year.

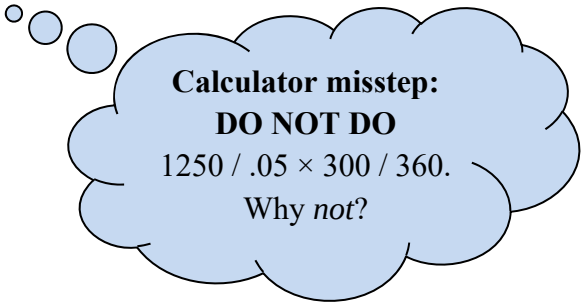
To find T (days): $T = \frac{I}{PR} \times 360$

Notice we are using 360 days in a single year, or banker's interest.

expl 1: Find the principal for this loan.

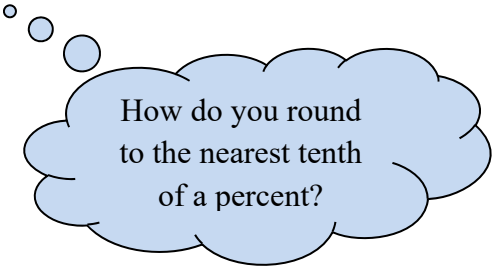
Rate: 5%
Time (days): 300
Interest: $1,250





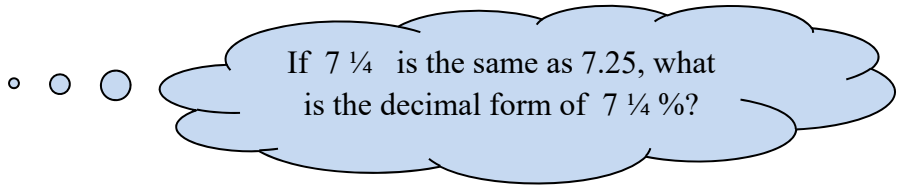
expl 2: Find the interest rate for this loan. Round to the nearest tenth of a percent.

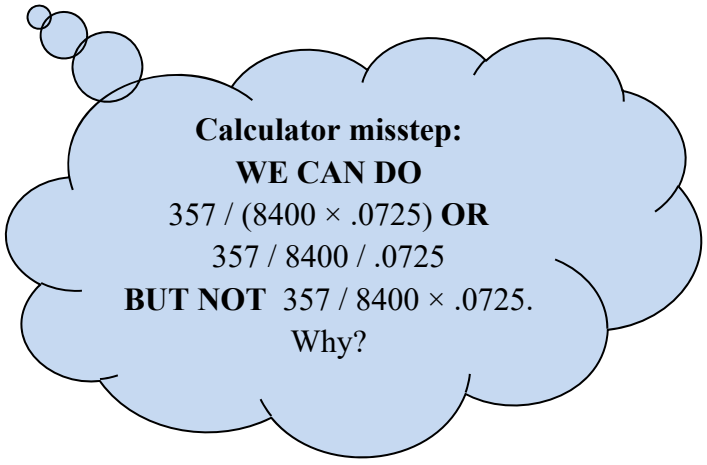
Principal: $15,600
Time (days): 90
Interest: $315



expl 3: Find the time period for this loan. Round to the nearest month.

Principal: $8,400
Rate: 7 ¼ %
Interest: $357





expl 4: Find how long Quinlan Enterprises must deposit $7,500 at 6% in order to earn $243.75 interest. Find the time to the nearest day.

Worksheet: Simple Interest: Finding Principal, Rate, and Time:

This worksheet will practice the formula usage in this section as well as review the Number of Each Day of the Year table from the previous section.