

# Simple Interest

$$I = Prt$$

Interest = Principal · Rate · Time in Years  
                  ↑  
                  Present Value

$$FV = P + I$$

Future Value

$$FV = P + Prt$$

$$FV = P(1 + rt)$$

ex: What is the simple interest on a \$340000 loan at 5.1% interest for 120 days?

$$I = Prt$$

$$P = 340000$$

$$r = 5.1\% = .051$$

$$t = \frac{120}{365} \text{ yr}$$

$$I = 340000 \cdot .051 \cdot \frac{120}{365} = \$5700.82$$

on calculator  $340000 * .051 * 120 / 365$  enter

At the end of 120 days we pay back \$345,700.82

ex: Find the future value of a \$8,950 loan at 9.5% paid back in 278 days.

$$FV = P(1 + rt) \quad P = 8950$$

$$FV = 8950 \left( 1 + .095 \cdot \frac{278}{365} \right) \quad r = .095$$

$$t = \frac{278}{365}$$

$$FV = \$9,597.59$$

on calculator  $8950(1 + .095 * 278 / 365)$  enter

ex:  $P = ?$

$$FV = \$1900$$

$$t = 2 \text{ yrs } 7 \text{ months} = 31 \text{ months}$$

$$r = 5.75\% = \frac{31}{12} \text{ yr}$$

$$FV = P(1 + rt)$$

$$1900 = P \left( 1 + .0575 \cdot \frac{31}{12} \right)$$

$$1900 = P \cdot 1.148541667$$

$$P = \$1654.27$$

$$1 + .0575 * 31 / 12$$

enter

$$1900 / \text{Ans enter}$$

ex: Avg. Daily Balance  
Finance Charge

6/26 → 7/25

Previous balance = \$7,036.40

Annual rate = 18%

6/27	payment	\$500
7/4	fireworks	\$99
7/15	dinner	\$213.53

	<u>amt she owes</u>	<u># of days</u>	
6/26	$\begin{array}{r} 7,036.40 \\ - 500 \\ \hline \end{array}$	1	7036.40
6/27 - 7/3	$\begin{array}{r} 6,536.40 \\ + 99 \\ \hline \end{array}$	7	45754.8
7/4 - 7/14	$\begin{array}{r} 6,635.40 \\ + 213.53 \\ \hline \end{array}$	11	72989.4
7/15 - 7/25	$\begin{array}{r} 6,848.93 \\ \hline \end{array}$	11	75338.23
		<u>30</u>	<u>201118.8</u>

Avg daily balance

$$= 7036.40 + \underbrace{6536.40 + \dots + 6536.40}_{7 \text{ times}} + \underbrace{6635.40 + \dots + 6635.40}_{11 \text{ times}} + 6848.93 + \dots + 6848.93$$

11 times

$$\text{Avg daily balance} = 20118.8 / 30 \\ = \$6703.96$$

$$\text{Finance Charge} = \text{Interest} = 6703.96 * 0.18 * 30 / 365 \\ = \$99.18$$