

Compound Interest

40

Name: Key

1. Complete the following chart:

Principal	Rate/a	Time	Compounded	Formula	Amount	Interest
\$1200	12%	5 a	Semi-annually	$A = 1200 \left(1 + \frac{0.12}{2}\right)^{10}$	\$2149.02	\$949.02
\$480	6%	3 a	Quarterly	$A = 480 \left(1 + \frac{0.06}{4}\right)^{12}$	\$573.90	\$93.90
\$10000	8%	12 a	Annually	$A = 10000 \left(1 + \frac{0.08}{1}\right)^{12}$	\$25191.70	\$15191.70
\$5600	$7\frac{1}{4}\%$	10 a	Semi-annually	$A = 5600 \left(1 + \frac{0.0725}{2}\right)^{20}$	\$11415.09	\$5815.09
\$80	$10\frac{1}{2}\%$	20 a	Monthly	$A = 80 \left(1 + \frac{0.105}{12}\right)^{240}$	\$647.35	\$567.35
\$1 200 000	5%	7 a	Quarterly	$A = 1200000 \left(1 + \frac{0.05}{4}\right)^{28}$	1699190.76	\$499190.76

2. Examine how varying interest rates and compounding intervals affects the following investment.

Principal	Rate/a	Time	Compounded	Formula	Amount	Interest
\$12 000	8%	15 a	Annually	$A = 12000 \left(1 + \frac{0.08}{1}\right)^{15}$	\$38066.03	\$26066.03
\$12 000	8%	15 a	Semi-Annually	$A = 12000 \left(1 + \frac{0.08}{2}\right)^{30}$	\$38920.77	\$26920.77
\$12 000	8%	15 a	Quarterly	$A = 12000 \left(1 + \frac{0.08}{4}\right)^{60}$	\$39372.37	\$27372.37
\$12 000	8%	15 a	Monthly	$A = 12000 \left(1 + \frac{0.08}{12}\right)^{180}$	\$39683.06	\$27683.06
\$12 000	8%	15 a	Daily	$A = 12000 \left(1 + \frac{0.08}{365}\right)^{5475}$	\$39836.16	\$27836.16
\$12 000	8%	15 a	Simple Interest	$I = 12000(0.08)(15)$	\$26400	\$14400

3. Which of the following investments would be worth the most money after 20 years?

\$5000 at 8%/a compounded semi-annually	\$7000 at 6%/a compounded daily	\$17000 at 2%/a compounded monthly
$A = 5000 \left(1 + \frac{0.08}{2}\right)^{40}$ = \$24005.10	$A = 7000 \left(1 + \frac{0.06}{365}\right)^{7300}$ = \$23238.53	$A = 17000 \left(1 + \frac{0.02}{12}\right)^{240}$ = \$25352.58