

## Math 1160 – Section 10.1 Answer Key

**2a.**  $i = .06$  or 6%  $n = 3$

**2b.**  $i = .005$  or .5%  $n = 54$

**2c.**  $i = .0225$  or 2.25%  $n = 15$

**4a.**  $i = .000865$  or .0865%  $n = 52$   $P = \$7170.12$   $F = \$7500$

**4b.**  $i = .005$  or .5%  $n = 360$   $P = \$3000$   $F = \$18,067.73$

**4c.**  $i = .02$  or 2%  $n = 1524$   $P = \$24$   $F = \$306,812,469,900,000$

**6.** \$8203.48

$N = 10$

$I\% = 2$

$PV = ?$  OR  $\frac{10000}{(1 + .02)^{10}}$

$PMT = 0$

$FV = 10000$

**8.** \$1075.72

$N = 365$

$I\% = 7.3/365 = .02$

$PV = -1000$  OR  $1000(1 + .0002)^{365}$

$PMT = 0$

$FV = ?$

**10.** Balance = \$2638.96 Interest = \$638.96 ( $FV - PV$ )

$N = 14$

$I\% = 2$

$PV = -2000$  OR  $2000(1 + .02)^{14}$

$PMT = 0$

$FV = ?$

**12a.** \$3047.82

$N = 60$

$I\% = 2$

$PV = ?$  OR  $\frac{10000}{(1 + .02)^{60}}$

$PMT = 0$

$FV = 10000$

**12b.**  $\$10,000 - \$3047.82 = \underline{\$6952.18}$  ( $FV - PV =$  interest earned)

**14.** \$7870.98

$N = 48$

$I\% = .5$

$PV = ?$  OR  $\frac{10000}{(1 + .005)^{48}}$

$PMT = 0$

$FV = 10000$

20. \$7000 now is more profitable. Compare the value of both options in 9 years. Find the FV of the \$7000 invested for 9 years and compare its value to \$10,000 received in 9 years. Which one is greater?

$$N = 36$$

$$I\% = 1$$

$$PV = -7000 \quad \text{OR} \quad 7000(1 + .01)^{36}$$

$$PMT = 0$$

$$FV = \textit{Calculated to be } \$10,015.38$$

22. 8% APR compounded annually is better.

To compare both rates, calculate the “effective rate” of 7.3% APR interest compounded daily.

$$\text{Eff}(7.3,365) = 7.57\% \quad \text{OR} \quad (1 + .073/365)^{365} - 1$$

\*\*7.3% interest compounded daily is the same as 7.57% interest compounded annually.\*\*

26a.  $r = .06, n = 2/3, P = \$1000, F = \$1040$

26b.  $r = .04, n = 5, P = \$3000, F = \$3600$

28.  $FV = 2000 \times (1 + (1.5 \times .06)) = \$2180$

30.  $PV = 2000 / (1 + (4 \times .07)) = \$1562.50$

32.  $1210 = 1000 \times (1 + (n \times .07))$

$$1210 = 1000 \times (1 + .07n)$$

$$1210 = 1000 + 70n$$

$$210 = 70n$$

$$n = 3$$

42. 8.81%  $\text{Eff}(8.45,52) \quad \text{OR} \quad (1 + .0845/52)^{52} - 1$

44. 8.19%  $\text{Eff}(7.95,4) \quad \text{OR} \quad (1 + .0795/4)^4 - 1$

54. **N = Substitute 5, 10, and 15 to solve for the 3 future values**

$$I\% = .5$$

$$PV = -10000$$

$$PMT = 0$$

$$FV = ?$$

$$N = 5 \rightarrow FV = 10252.51$$

$$N = 10 \rightarrow FV = 10511.40$$

$$N = 15 \rightarrow FV = 10776.83$$

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 $N = ?$

$$I\% = .5$$

$$PV = -10000$$

$$PMT = 0$$

$$\text{FV} = \text{Substitute } 11614 \text{ and } 13000 \text{ to solve for } N$$

$$FV = 11614 \rightarrow N = 30 \quad FV = 13000 \rightarrow N = 53$$