

Warm Up

1) Gil is taking out a \$15000 loan for his new car. He plans to make monthly payments for the next 3 years (6.5% interest). What will his payments have to be?

2) Cary is making \$75 monthly payments to an account with 4% interest. How much will be in the account in 8 years?

Warm Up

1) Gil is taking out a \$15000 loan for his new car. He plans to make monthly payments for the next 3 years (6.5% interest). What will his payments have to be?

$$15000 = P \left(\frac{1 - \left(1 + \frac{0.065}{12}\right)^{-12 \cdot 3}}{\frac{0.065}{12}} \right)$$

\$459.74

1) Gil is taking out a \$15000 loan for his new car. He plans to make monthly payments for the next 3 years (6.5% interest). What will his payments have to be?

\$459.74

How much would Gil pay over the course of the loan? $459.74 \cdot 12 \cdot 3 =$

How much would Gil pay in interest? $\frac{-15000}{}$

2) Cary is making \$75 monthly payments to an account with 4% interest. How much will be in the account in 8 years?

$$F_n = 75 \left(\frac{\left(1 + \frac{0.04}{12}\right)^{12 \cdot 8} - 1}{\frac{0.04}{12}} \right)$$

$75 \cdot 12 \cdot 8 =$ total deposit

\$8468.89

Thorium-234 has a half-life of 25 days, if you start with 256000 grams of Thorium-234, how much will remain after 175 days?

$$\frac{175}{25} = 7 \text{ cycles}$$

2000 g.

$$(1-r)$$
$$(1-\frac{1}{2})$$

$$y = 256000 \left(\frac{1}{2}\right)^7$$

A \$256000 home depreciates continuously at 8.5%, how much will it be worth in 12 years?

\$92,312.30

$$y = 256000 e^{-0.085(12)}$$

Brennan has \$1000 in the bank, the account compounds monthly at a rate of 8%. He has had the account for 7 years. How much money did he start with in the account (no deposits or withdrawals were made)?

\$572.27

$$1000 = P \left(1 + \frac{0.08}{12}\right)^{12 \cdot 7}$$

Brad has \$1000 in the bank, the account compounds continuously at a rate of 8%. He has had the account for 7 years. How much money did he start with in the account (no deposits or withdrawals were made).

\$571.21

$$1000 = P e^{0.08(7)}$$

Jason wants to buy a bike. He decides to invest \$4000 in the bank to save for it. He puts the money in an account bearing 6% compounded quarterly. How much will be in the account in three years?

\$4782.47

Jarod wants to buy a bike. He decides to invest \$4000 in the bank to save for it. He puts the money in an account bearing 7.5% compounded continuously. How much will be in the account in three years?

\$5009.29

Shawn is taking out a \$55,000 loan for college. A bank offers him 4% interest paid monthly for 18 years. What would his monthly payment be?

\$357.61

$$55000 = P \left[\frac{1 - \left(1 + \frac{0.04}{12}\right)^{-12 \cdot 18}}{\frac{0.04}{12}} \right]$$

Shawna's parents decided to save money in a college fund for her when she was born. They deposited \$225 each month at 4% interest. How much will be in the account when Shawna turns 18?

\$71008.30

Unit 8: Present Value and Future Value

Continuous -- $A = Pe^{rt} + \frac{r}{n}$

Task

Present

$$= P \left[\frac{1 - \left(1 + \frac{r}{n}\right)^{-nt}}{\left(\frac{r}{n}\right)} \right]$$

Future

$$F_n = P \left[\frac{\left(1 + \frac{r}{n}\right)^{nt} - 1}{\left(\frac{r}{n}\right)} \right]$$