

**Interest Formulas Homework**

**Directions:** Be sure to show all work, communicate your thought process, and justify your reasoning. Remember to check that your answers are complete, correct, and reasonable. Do not forget to complete the “Throwback” problems! 😊

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1. Tim takes out a \$5,000 loan to purchase a car. He will be charged 6% interest, compounded yearly. The duration of the loan is 5 years. How much money will Tim be charged in interest on his car loan?
2. You deposit \$300 into an account for 15 years and you accrue \$150 in interest. What is the simple interest rate?
3. Mario just won a \$300 football award. He wants to invest his money in an account that earns .45% interest, compounded quarterly for 5 years. How much money in interest will he have accrued at the end of the 5 years?
4. Jeff and Dale both won a \$300 prize. Jeff decides to invest his \$300 in account that earns .7% simple interest for 5 years. Dale decides to invest his money in an account that earns .5% interest compounded semiannually for 5 years. Whose prize will have grown the most five years from now?
5. You decide to open a new bank account with United Bank in order to start saving for college. You initially deposit \$2000 into the account and want to keep the account for at least 3 years. United Bank is offering a .25% interest rate, compounded quarterly. How much money you will have at the end of the three years?
6. After you have your money in United Bank for three years, you see that PV bank is offering a .5% semi-annual interest rate. You decide to withdraw your money from United Bank after the first three years, and deposit it into PV bank for the next two years. How much money will you have in your account after these two years?
7. An online savings account accrues simple interest annually. An initial deposit of \$850 is made.  $T(x)$  represents the total amount of money in the savings account after  $x$  years.  $T(4) = 892.5$ .
  - a. Write a function to model  $T(x)$ .
  - b. Another online bank accrues compound interest annually at a rate of 1.25%. Determine the initial amount required for both accounts to have the same amount of money after ten years.



Selected Solutions:

1. \$6691.13

3. \$306.82

5. \$2015.05

7. a.  $T(x) = 850 + 10.625x$ 

b. \$844.54

## Throwback:

a.  $g(x) = x^2 - 2x$

$g(x + 2) = (x + 2)^2 - 2(x + 2)$  [replace every x with x + 2]

$= x^2 + 4x + 4 - 2x - 4$  [expand]

$= x^2 + 2x$  [combine like terms]

b. the graph would translate two units to the left

\*Remember the transformation rules for  $A \cdot f(Bx + C) + D$ ! In this case, +2 is "C."