

- Question 1

2 points

How Did I Do?

Jose deposited \$2,500 into a CD account with an Annual Percentage Rate (APR) of 4%, compounded annually, and he must leave it in the account for at least 5 years.

Make sure that you fill in each answer area before checking "How Did I Do?"

- a. How much money would he have after 5 years?

Round to the nearest cent (2 decimal places).

\$

- b. How many years would it take for the account to reach or surpass \$4000?

Round up to the nearest whole year.

years

- Question 2

3 points

How Did I Do?

Lorrie bought a new car for \$22,134 and a friend who sells used cars told her that she could expect the car to depreciate by about 10% a year for the next 5 years.

Make sure that you fill in each answer area before checking "How Did I Do?"

- a. How much will the car be worth after 3 years? 5 years?

Round to the nearest dollar.

\$ after 3 years

\$ after 5 years

- b. How long will it take for the car to have a value of \$10,000?

Round to the nearest tenth of a year (1 decimal place).

Round to the nearest tenth of a year (1 decimal place).

Number

years

- Question 3

1 point

How Did I Do?

Recall that the *half-life* of a drug in the blood means that half of a drug in the blood at any given time is eliminated from the body after some given period of time. So, if the half-life of a drug is 2 hours, and 25 mg of the drug is in the blood at 5 p.m., then 12.5 mg ($\frac{1}{2}$ of 25) of the drug is left at 7 p.m., and 6.25 mg ($\frac{1}{2}$ of 12.5) is left at 9 p.m.

In some adults, the half-life for the common pain reliever acetaminophen (the active ingredient in, for example, Tylenol) is about 2 hours. If Janetta is one of those adults and she takes two 600 mg capsules of acetaminophen at 1 p.m., how many milligrams will be in her blood at 7 p.m.? (Hint: Think about how the half-life relates to how long it's been since she took the pain reliever?)

Number

mg

- Question 4

2 points

The following exchange was found on an online forum:[†]

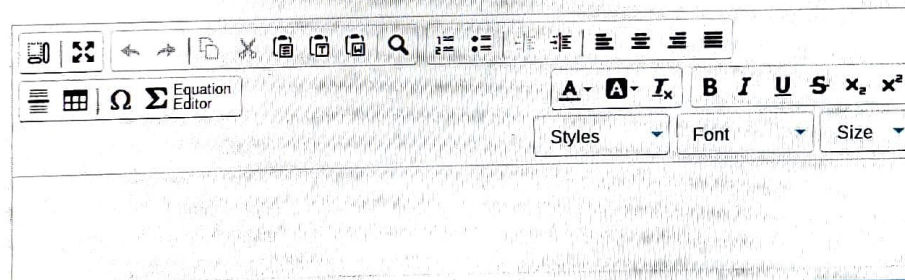
User 1: I took four extra strength Tylenol yesterday. I took the last two somewhere between 3 and 5 PM. It's been over 24 hours. Would it be safe for me to drink tonight?

User 2: The half-life in a normal adult of Tylenol is 2-3 hours, so a conservative estimate would say you have about 0.39% of the original Tylenol in your body after 24 hours. I'd say you're safe.

User 1: Is that estimate taking into account that I used extra strength Tylenol?

User 2: I believe extra strength is just more of the same, so the ratio should still hold.

a. Do you agree with User 2's original calculation? Why does User 2 call this a conservative estimate?

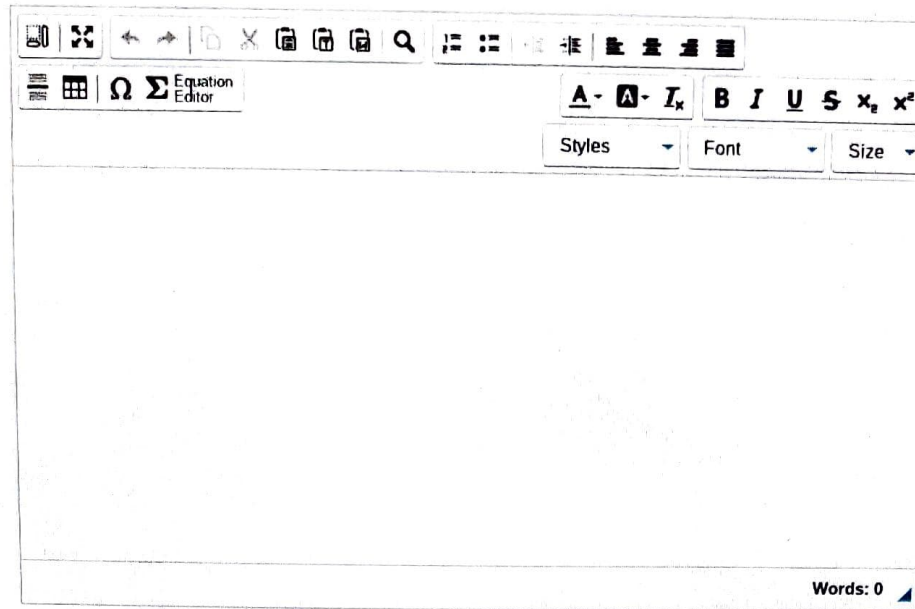


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Question

- b. Could you provide a more detailed explanation of User 2's second comment? What is User 2 really saying, and why doesn't the increased dosage of Tylenol affect User 2's original calculation?



[†]<http://forums.penny-arcade.com/discussion/117324/how-long-should-i-wait-to-drink-after-taking-tylenol>, accessed April 22, 2017.

- Question 5

2 points

How Did I Do?

Luke inherited \$10,000 dollars from an uncle when he was 12 years old, and it was deposited in a stock market fund at that time. The account will be turned over to him when he is 25 years old. Assume that the stock market fund increases an average of 6% a year.

Make sure that you fill in each answer area before checking "How Did I Do?"

- a. How much will be in the account when Luke turns 25?

Round to the nearest cent (2 decimal places).

\$

- b. If, when Luke turns 25, he decides to leave the money in the account to save for a down payment on a house, how

- Question 5

2 points

How Did I Do?

Luke inherited \$10,000 dollars from an uncle when he was 12 years old, and it was deposited in a stock market fund at that time. The account will be turned over to him when he is 25 years old. Assume that the stock market fund increases an average of 6% a year.

Make sure that you fill in each answer area before checking "How Did I Do?".

- a. How much will be in the account when Luke turns 25?

Round to the nearest cent (2 decimal places).

\$

- b. If, when Luke turns 25, he decides to leave the money in the account to save for a down payment on a house, how old will he be when he has \$50,000 in the account?

Round to the nearest whole year.

years

- Question 6

3 points

How Did I Do?

Financial institutions use the following formula to calculate the monthly payment, c , on a loan:

$$\text{Equation \#1: } c = \frac{P \cdot r \cdot (1 + r)^N}{(1 + r)^N - 1}$$

This formula can be re-written in this way:

$$\text{Equation \#2: } c = (c - P \cdot r) \cdot (1 + r)^N$$

In this formula,

- c represents the monthly payment on a loan
- r represents the monthly interest rate. (Note: The monthly interest rate is simply the annual percentage rate [APR], as a decimal, divided by 12.)
- N represents the number of monthly payments, which is called the loan's *term*.
- P represents the amount borrowed, which is known as the loan's *principal*.

Question 6

3 points

How Did I Do?

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$$\text{Equation \#1: } c = \frac{P \cdot r \cdot (1 + r)^N}{(1 + r)^N - 1}$$

This formula can be re-written in this way:

$$\text{Equation \#2: } c = (c - P \cdot r) \cdot (1 + r)^N$$

In this formula,

- c represents the monthly payment on a loan
- r represents the monthly interest rate. (**Note:** The monthly interest rate is simply the annual percentage rate [APR], as a decimal, divided by 12.)
- N represents the number of monthly payments, which is called the loan's *term*.
- P represents the amount borrowed, which is known as the loan's *principal*.

Suppose Janetta would like to buy a \$17,000 car. She has enough cash to pay for taxes and license fees, and she has \$3,000 from the sale of her previous car. She plans to take out a loan to cover the remaining costs. She is offered an APR of 7%.

Make sure that you fill in each answer area before checking "How Did I Do?".

- a. If Janetta takes a 4-year loan, what will her monthly payments be? Use Equation #1 above.

Round to the nearest cent (2 decimal places).

\$

- b. Suppose Janetta can only afford monthly payments of \$150. How many months would it take her to pay off the loan? Use Equation #2 above.

Round to the nearest month.

months

Round to the nearest cent (2 decimal places).

b. Suppose Janetta can only afford monthly payments of \$150. How many months would it take her to pay off the loan? Use Equation #2 above.

Number	months
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
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99	99
100	100

The image shows the Microsoft Word ribbon with the 'Equation Editor' tab selected. The ribbon contains several groups of icons for creating and editing equations, including basic operations, fractions, matrices, and more advanced functions. On the right side of the ribbon, there are three dropdown menus for 'Styles', 'Font', and 'Size'. The 'Equation Editor' tab is highlighted in blue. The background of the document is a light gray grid.