MATH 1311

Section 4.2

Percent of Increase and Decrease

Very often, exponential growth and decay problems are given in terms of percentages.

For example, you are making a salary of $35000 and you are told that you will receive a 2% cost of living increase every year.

Since we multiply to calculate percentages, this will become an exponential growth problem.

You are making a salary of $35000 and you are told that you will receive a 2% cost of living increase every year.

To work with the percent:

Percent increase should be added to 100%

Percent decrease should be subtracted from 100%

You are making a salary of $35000 and you are told that you will receive a 2% cost of living increase every year.

To work with the percent:

Percent increase should be added to 100%

An increase of 5% means 100% + 5% = 105% or 1.05

Percent decrease should be subtracted from 100%

You are making a salary of $35000 and you are told that you will receive a 2% cost of living increase every year.

The percent becomes the base number.

As before, we can determine the initial value from the context of the problem.

The exponent may be adjusted depending on the conditions specified.

You are making a salary of $35000 and you are told that you will receive a 2% cost of living increase every year.

Write the formula for calculating your salary after *t* years have passed.

Use this formula to find you salary in 10 years.

Try this:

It is estimated that the number of bald eagles in the country will decrease by 2% over the next 10 years. Currently, the number of bald eagles is 3500. Determine an equation to calculate the number of bald eagles in the country based on year. Use this equation to find the number of bald eagles in the country in 2 years and in 4 years.

Try this:

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Determine the initial value.

Determine the base number.

Determine the exponent.

A storm front is estimated to increase in intensity by 15% in the next day. Currently, the storm has winds of 75 mph. Create an equation to estimate the storm strength as a function of hourly growth. Use this to calculate the intensity of the storm in 6 hours and in 12 hours.

1. Is this exponential growth or decay?

2. What is the initial value?

3. What is the base value?

4. What is the exponent?

5. What is the equation?

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6. Determine storm intensity in 6 hours.

7. Determine storm intensity in 12 hours.