The weight of an iceberg is modeled by the equation  $h(x) = 200000(0.81)^x$ Where x is time in years and h(x) is the weight in tons

Initial amount of ice?
Is the iceberg gaining weight or losing weight?
What is the rate of decay/growth?
In 20 years, how much ice exists?
When will half the ice remain?

# Initial amount of ice? 200,000 tons

2. Is the iceberg gaining weight or losing weight? 3. What is the rate of decay/growth? 4. In 20 years, how much ice exists? 5. When will half the ice remain?

The population of Maxville is 2,621. The awesome mayor hopes his city will grow 3.5% each year. Find a model that can predict the population in x years. The population of Maxville is 2,621. The awesome mayor hopes his city will grow 3.5% each year. Find a model that can predict the population in x years.

 $y = 2621(1.035)^x$ 

A group of students head to the Carolina Ale House for an afternoon snack of cheese fries. The fries weighed 4 pounds when the students began eating them at a rate of 2.3% per minute. Find a model for the amount of fries that remain after each minute. When will half the fries remain?

A group of students head to the Carolina Ale House for an afternoon snack of cheese fries. The fries weighed 4 pounds when the students began eating them at a rate of 2.3% per minute. Find a model for the amount of fries that remain after each minute.

> $y = 4(0.977)^x$ Half the fries will remain after 29.79 minutes.



#### Since this section involves what can happen to your money, it should be of INTEREST to you!

Mr. Watson sold his boat for \$10,000.00. He wants to invest the money. How much money will he have after 1 year if he invests the \$10,000.00 in a savings account that pays 4% compounded interest per year?

- 1. What is the initial investment/ amount?
- 2. What is the rate of growth?
- 3. How much money will he have after 1 year?

Mr. Watson sees an advertisement for another type of savings account. The interest is 4% per year compounded quarterly. What's going to change in our equation  $v = 10,000(1.04)^{1}$ ?

- Think about what the interest rate would be for one quarter.
- Think about what the exponent would need to be for one quarter instead of one year. 0.04

$$y = 10,000(1 + \frac{0.04}{4})^{4 \times 6}$$

#### **COMPOUND INTEREST** FORMULA annual

**Principal** (amount at start)  $A = P \left( 1 + \frac{r}{n} \right)^{1}$  (in years)

percentage rate (APR) (as a decimal)

time

amount at the end

> number of times per year that interest in compounded

Find the amount that results from \$500 invested at 8% compounded quarterly after a period of 2 years.

$$A = 500 \left( 1 + \frac{.08}{.08} \right)^{4} \left( 2 - \frac$$

$$A = $585.83$$

- 1. What if I said it was compounded semi-annually? Re-write the equation.
- 2. What if I said it was compounded every month? Re-write the equation.

Flor started collecting chocolate bunnies 12 years ago. 4 years ago she had 16.08 pounds of bunnies, today she has 20.3 pounds. How many pounds of bunnies did Flor have when she began her collection?

## • Answer: 10.09 bunnies

### Exit Ticket

In 2003, 864 people attended the school's field day. In 2006, 1483 people attended. Assuming the population was growing exponentially, find the initial population when the event started in 2000.
Tyler inherited \$5,000. He deposited

2. Typer innerfied \$5,000. He deposited the money into an account earning 4.8% annual interest. Determine how much money he will have after 4 years if the \$5,000 is compounded semi-annually?