Money Math:
The Easy Way

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Part I

$$\frac{3a\left(y + \left(2\right)\right)^2}{a^2 \left(\begin{matrix} 3 \\ 1 \end{matrix}\right)(y + A)} + (3y + (y + 4A(x +$$

$$\frac{(y + A)^{13}}{39} + \frac{2}{3}$$

$$(x +$$

What we are going to do:

Calculations you should know

- Savings
- Cars
- Houses
- Credit Cards
- Taxes

$$I = E + S$$

Income = Expenses + Savings

How Much to Save?

- Age 25 – 10%
- Age 30 – 12%
- Age 40 – 15% ($50,000 in savings)

Example: Age 30, $50,000
    Savings – $6,000 per year

Payroll Deduction

Saving on Cars

New or Used or Lease?

How Much Do Cars Depreciate?

- Each Year – 15% to 20%

- After 4 years – 50%

Example:

- Buy a car and keep it for 8 years

  vs

- Lease a car for 4 years and then lease a second car for 4 more years

- Savings is about $8,640 over 8 years
- For 50 years, you save about $52,000

House vs Renting

It's a life-style decision:

How to Calculate Monthly Mortgage Payments

Using Excel:

= PMT(rate,nper,pv)

- PMT is monthly payment
- rate is mortgage rate
- nper is number of periods
- pv is amount of mortgage

= PMT(rate,nper,pv)

- PMT is monthly mortgage
- rate is 5%/12 payments per year
- nper is 12 times 30, or 360
- pv is $200,000

  = PMT(5%/12,360,200000)
  = $1,073 per month, or $12,883 a year

Multiplying 111,111,111 x 111,111,111 = 12,345,678,987,654,321

How Much <u>Interest</u> Do You Pay on a Mortgage?

- Mortgage is $200,000
- 30-Year mortgage at 5%, $1,073.64
- Total monthly payments for 30 years is $386,280
- $386,280 minus $200,000 = $186,280

How Much <u>Interest</u> Do You Pay on each payment?

$200,000 mortgage at 5% -- <u>$1073.64</u>

<u>Interest</u>   <u>Principal</u>

- First Payment -- $833.33 $240.31
- 194th Payment - $537.49 $536.16
- Last Payment -- $ 4.45 $1,069.19

Credit Cards – It's all about the Interest!

Example:

- $4,284 Outstanding Balance
- Minimum Payment: $141
- If no other charges, if payments are $173, balance will be paid off in 36 months.
- If only minimum payments are made, the balance will be paid off in 24 years.

Taxes:

Marginal Tax Rates (Married) 2011

Standard Deduction is $8,500 + two

Exemptions are $7,400 =

No Tax: <u>$15,900</u>

- $0 to $12,150 --- 10%
- $12,150 to $46,250 --- 15%
- $46,250 to $119,400 --- 25%
- $119,400 to $193,350 --- 28%

Jump$tart Coalition for Personal Financial Literacy:

- The average student who graduates from high school has no insight into the basic survival principles involved with earning, spending, saving and investing.

- Many young people fail in the management of their first consumer credit experience, establish bad financial management habits, and stumble through their lives learning by trial and error.

Program for International Student Assessment (PISA) 2010:

- 15-year-olds in U.S. are not well prepared to use math for life beyond the classroom.
- Overall, the U.S. comes out as an average performer in reading (rank 14 in OECD) and science (rank 17) but the U.S. drops below the OECD average in mathematics (rank 25).

Part II
Coming Attractions

- Percents

- Investments

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Part II

Math Applications:

- Percents
- Investments
- Weighted Average

Percents

Brings **meaning** to numbers

To Calculate:

- Find the <u>difference</u> and divide by the <u>beginning balance</u>

- Example:

   $2,500 grew to $3,300

   The difference is $800

   $800 divided by $2,500 = .32 or <u>32%</u>

If a house was worth $250,000 and lost value and now is worth $195,000, what percent decrease is that?

Difference is $250,000 minus $195,000 which equals $55,000. Divide that by $250,000 and get 0.22 or a decrease of 22%.

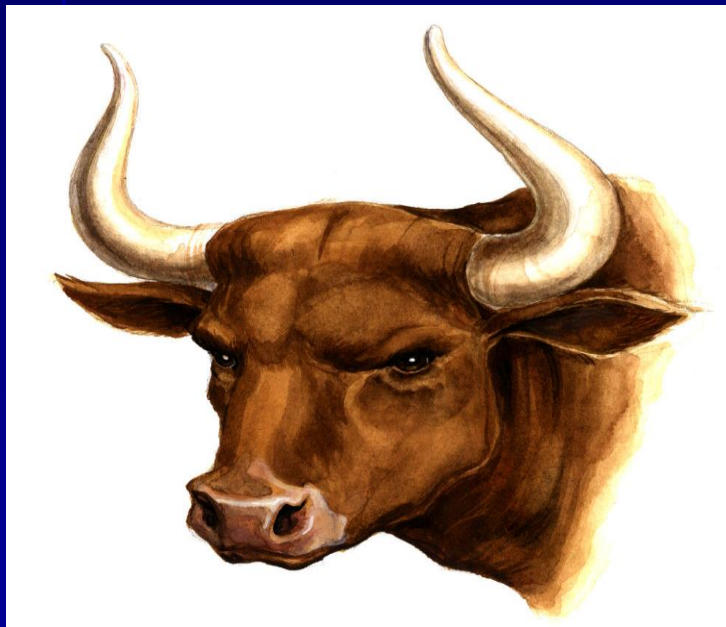What percent would the house have to increase to get back to the $250,000?

Answer:

- Difference is still $55,000
- The beginning of this second calculation is now $195,000.
- So, $55,000 divided by $195,000 is 0.28 or 28%

INVESTMENTS

S&P 500 Data Set

	Return	Today
• Stocks	11%	8%
• Bonds	6%	2%
• Money Market	4%	0%

Beware of Selective Data

S&P 500 returns:

- 3-years   14.6%
- 5-years   2.4%
- 10-years   4.9%
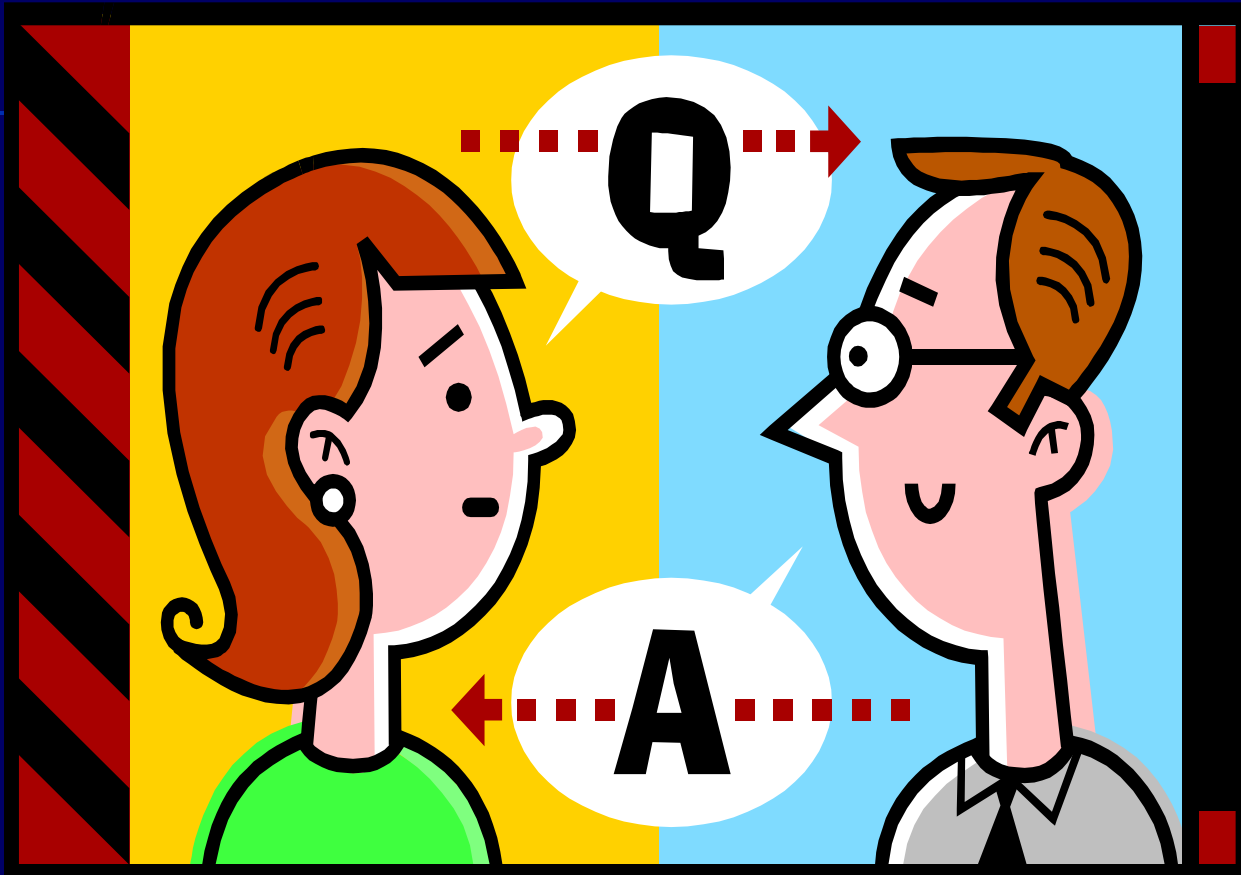- 15-years   7.4%
- 20-years   8.0%

Portfolio Percent:

	Conservative	Growth
• Stocks	35%	65%
• Bonds	55%	30%
• MM	10%	5%

Weighted Average:

	Return	Percent	
• Stocks	11%	65%	7.1%
• Bonds	6%	30%	1.8%
• MM	4%	5%	0.2%
			9.1%

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