Curriculum: Business Math

Curricular Unit: Income

Instructional Unit: A. Calculate different types of pay and the total (or gross) pay

Standard Alignments (Section 2)

GLE/CLE: N/A   Knowledge: (MA) 1   CCSS: 11-12.RST.4; 11-12.RST.7; A-SSE.1b; A-CED.1; A-CED.4; A-REI.3   NETS: 1a,d   Performance: 3.8

Unit (Section 3)

Learning Targets: • **Calculate straight time pay**   • **Calculate overtime and total pay**   • Calculate total hours on a weekly time card   • Compute total pay on a piecework basis   • Determine salary per pay period   • Calculate straight commission & determine gross pay   • Compute total graduated commission

Instructional Strategies:
 	
 • Daily re-looping
 • Explicit vocabulary building
 • MLT (model, learn, test)
 • Games (examples are trash-ball and tic-tac-toe)
 • Students will:
   • generate word problems: through construction of a problem, the students learn what to look for when solving word problems
   • complete an online practice test to assist in self-assessment of acquired skills
   • use graphic organizers (formula sheet)
   • participate in a station review activity involving computing various types of pay and commission
 • Guest speaker idea: A furniture salesman or car salesman will address the class regarding earning commission

Assessments/Evaluations:

- Students will be assessed on:
  - calculating pay:
    - Total
    - Straight time
    - Overtime
    - Total pay on piecework
  - determining salary per pay period
  - calculating commission:
    - Straight
    - Graduated
  - calculating gross pay

Sample Assessment Questions:

- Maria Gomez is a dental assistant and works a regular 40-hour work-week. She earns $12.12 per hour and time and a half for overtime. What is her total pay for a week in which she works 45 hours?
- Ray Donato sells equipment in an electronics store. He receives a graduated commission of 3% on the first $5,000 of sales, 5% on the next $7,000, and 6% on all sales over $12,000. Ray's sales for the past month totaled $17,600. What is his commission?

Instructional Resources/Tools:

- *Mathematic for Business & Personal Finance* (Glencoe, 2010)
- Calculators
- Website: Glencome.com
- SMART Board
- iPad
- Airserver
- Dropbox
- Internet

Cross Curricular Connections:

- ELA: Generating word problems

Depth of Knowledge (Section 5)

DOK: 2

Curriculum: Business Math

Curricular Unit: Net Pay

Instructional Unit: B. Calculate net pay by finding payroll deductions and withholdings

Standard Alignments (Section 2)

GLE/CLE: N/A
Knowledge: (MA) 1
CCSS: 11-12.RST.4; 11-12.RST.9; 11-12.WHST.9; A.SSE.1b; A-CED.1; A-CED.4;
      A.REI.3 N-Q.2
NETS: 3d
Performance: 1.2, 1.10

Unit (Section 3)

Learning Targets:

- Determine the amount withheld for federal income tax

- Compute state income tax on a straight percent basis

- Determine state taxes on a graduated income tax basis

- Compute the amount withheld for Social Security taxes

- Compute the amount withheld for Medicare taxes

- Calculate the deduction for group insurance

- **Calculate net pay per pay period**

Instructional Strategies:

- Daily re-looping
- Explicit vocabulary building
- MLT (model, learn, test)
- Games (examples are trash-ball and tic-tac toe)
- Students will:
  - generate word problems: through construction of a problem, the students learn what to look for when solving word problems
  - complete an online practice test to assist in self-assessment of acquired skills
  - use graphic organizers (withholdings)
- Students may participate in a state income tax project which includes:
  - research of state taxes in different states
  - comparison of the states
  - factors influencing cost of living
  - presentation of findings

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• Guest speaker idea: A human resource director or tax accountant will address the class on why taxes are important and further educate on deductions

Assessments/Evaluations:
 	
• Students will be assessed on calculating:
   • taxes:
      • Federal income
      • State income
      • Social Security
      • Medicare
   • deductions for group insurance
   • net pay per pay period

Sample Assessment Questions: • Warren Anderson's annual salary is $54,500. He receives his pay monthly. His exemptions total $4,000. Use the table below to determine how much his employer deducts for state income tax from each of his monthly paychecks.

State Tax	
Taxable Wages	**Tax Rate**
First $1,000	1.5%
Next $2,000	3.0%
Next $2,000	4.5%
Over $5,000	5.0%

• Juan Moore's gross weekly pay is $1,250. Each week she has $64.37 in deductions, plus state tax of 2% of her gross pay, Social Security taxes of 6.2%, and Medicare taxes of 1.45%. What is her net pay?
Instructional Resources/Tools: • *Mathematic for Business & Personal Finance* (Glencoe, 2010) • Calculators • Website: Glencome.com • SMART Board • iPad • Airserver • Dropbox • Internet • Paycheck stubs • PowerPoint • Google Drive

Cross Curricular Connections:
 	
• ELA:
   • Vocabulary
   • Generating word problems

Depth of Knowledge (Section 5)

DOK: 2

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Curriculum: Business Math

Curricular Unit: Budgeting (Including Checking/Savings Accounts)

Instructional Unit: C. Examine how to manage money

Standard Alignments (Section 2)

GLE/CLE: N/A
Knowledge: (MA) 1
CCSS: 11-12.SL.4; 11-12.RST.9; 11-12.WHST.4; A-SSE.1b; A-CED.1; A-CED.4;
     A-REI.3; N-Q.1; S-ID.4
NETS: 4a-c
Performance: 1.6, 2.1, 3.8

Unit (Section 3)

Learning Targets:

- Compute average monthly expenditures

- **Prepare a monthly budget sheet**

- Compare budgeted amounts to actual expenditures

- Figure out the balance in a check register

- **Reconcile a check register with a bank statement**

- Compute the balance on a savings account

- Calculate simple interest

Instructional Strategies:

- Daily re-looping
- Explicit vocabulary building
- MLT (model, learn, test)
- Games (examples are trash-ball and tic-tac toe)
- Students will:
  - generate word problems: through construction of a problem, the students learn what to look for when solving word problems
  - complete an online practice test to assist in self-assessment of acquired skills
  - participate in cooperative learning groups to develop an expense/budget portfolio based on the different living situations assigned to their group
  - present their portfolios to the class
- Guest speaker idea: Financial planner

Assessments/Evaluations:

• Students will be assessed on:
    • finding monthly expenses
    • preparing budget sheets
    • reconciling check registers with bank statements
    • computing a savings account balance
    • calculating simple interest

Sample Assessment Questions:
• Martha Jackson had a $396.25 average monthly expenditure for clothing during the first quarter of the year. She spent $401.50 in April and $250.00 in May. How much can Martha spend in June to have the same average as in the first quarter? • Jaycee Alvarez deposits $300 in a savings account at City Bank. The account pays an annual interest rate of 5%. She makes no other deposits or withdrawals. After three months the interest is calculated. How much simple interest does her money earn?

Instructional Resources/Tools:
• *Mathematic for Business & Personal Finance* (Glencoe, 2010) • Calculators • Website: Glencome.com • SMART Board • iPad • Airserver • Dropbox • Internet • Laptops • PowerPoint • Google Drive

Cross Curricular Connections:

• ELA:
    • Vocabulary
    • Generating word problems

Depth of Knowledge (Section 5)

DOK: 3

Curriculum: Business Math

Curricular Unit: Credit Cards and Loans

Instructional Unit: D. Investigate loans, loan payments, interest payments, costs of a loan, and various methods credit card companies use to compute finance charges

Standard Alignments (Section 2)

GLE/CLE: N/A
Knowledge: (MA) 1
CCSS: 11-12.RST.7; 11-12.WHST.4; A.SSE.1b; A-CED.1; A-CED.4; A.REI.3; N-Q.3
NETS: 4c
Performance: 1.8, 3.8

Unit (Section 3)

Learning Targets:

- **Calculate the new balance on a charge account**

- Use the unpaid-balance method to compute a finance charge

- Use the average-daily-balance method, excluding new purchases, to compute a finance charge

- Use the average-daily-balance method, including new purchases, to compute a finance charge

- **Compute the maturity value and interest rate of a single-payment loan**

- Calculate the amount financed on an installment loan

- **Find monthly payment, total amount repaid, and finance charge on an installment loan**

- Determine payment-to-interest, payment-to-principal, and new balance

- Compute final payment of a simple interest installment loan

- Use a table to find the APR of a loan

Instructional Strategies:

- Daily re-looping
- Explicit vocabulary building
- MLT (model, learn, test)
- Games (examples are trash-ball and tic-tac-toe)
- Students will:
  - generate word problems: through construction of a problem, the students learn what to look for when solving word problems
  - complete an online practice test to assist in self-assessment of acquired skills
  - use graphic organizers
  - participate in a station review activity involving computing credit/charge account balances, interest amounts and maturity values p
  - fill out loan applications based on assigned scenarios
- Guest speaker idea – a loan officer will:
  - come in and critique the applications and approve or disapprove the loan
  - address factors that influence the approval of a loan

Assessments/Evaluations:

- Students will be assessed on:
  - calculating:
    - balances on charge accounts
    - the amount financed on an installment loan
  - computing:
    - finance charges
    - computing maturity value and interest rate of a single-payment loan
    - final payment of a simple interest installment loan
  - finding, on an installment loan, the:
    - monthly payment
    - total amount repaid
    - finance charge
  - determining:
    - payment-to-interest
    - payment-to-principal
    - new balance of a loan
  - using a table to determine the APR of a loan

Sample Assessment Questions:

- Peggy Andrews has a charge account at Davis Jewelers, which uses the unpaid-balance method of computing finance charges. The periodic rate is 1.75%. Peggy's previous balance is $9,472.08. She had payments of $250.00, and new purchases of $45.00. What is the new account balance?
- Manuel Fraser's bank granted him a single-payment loan of $9,650. He agreed to repay the loan in 146 days at an exact interest rate 7.75%. What is the maturity value of the loan?

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Instructional Resources/Tools:

- *Mathematic for Business & Personal Finance* (Glencoe, 2010)
- Calculators
- Website: Glencome.com
- SMART Board
- iPad
- Airserver
- Dropbox
- Internet

Cross Curricular Connections:

- ELA:
  - Vocabulary
  - Generating word problems

Depth of Knowledge (Section 5)

DOK: 2

Curriculum: Business Math

Curricular Unit: Vehicle Costs

Instructional Unit: E. Focus on costs involved in buying (and maintaining), leasing, or renting a vehicle

Standard Alignments (Section 2)

GLE/CLE: N/A
Knowledge: (MA) 1
CCSS: 11-12.SL.4; 11-12.RST.9; 11-12.WHST.4; 11-12.WHST.9; A-SSE.1b; A-CED.1;
     A-CED.4; A-REI.3; N-Q.3; S-ID.4
NETS: 3
Performance: 3.5, 3.8

Unit (Section 3)

Learning Targets:

- Compute sticker price of a new vehicle

- Calculate the dealer's cost of a new vehicle

- Figure out the average retail price of a used vehicle

- Use tables to compute the annual premium for vehicle insurance

- **Compute the total cost per mile of operating and maintaining a vehicle**

- Calculate the total cost of leasing a vehicle

- Determine the cost-per-mile of renting a vehicle

Instructional Strategies:

- Daily re-looping
- Explicit vocabulary building
- MLT (model, learn test)
- Games (examples are trash-ball and tic-tac-toe)
- Students will:
  - generate word problems: through construction of a problem, the students learn what to look for when solving word problems
  - complete an online practice test to assist in self-assessment of acquired skills
  - complete a vehicle project and present their findings to the class
- Guest speaker idea: Car salesman

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Assessments/Evaluations:
 	
 • Students will be assessed on computing the:
     • new vehicle sticker price
     • dealer's cost of a new vehicle
     • average retail price of a used vehicle
     • annual premium for vehicle insurance
     • total cost, per mile, of operating and maintaining a vehicle
     • total cost of leasing a vehicle
     • cost per mile of renting a vehicle

Sample Assessment Questions: • Fred and Mary Merrill want to purchase a new car. The car has a base price of $16,700, options totaling $1,950, and a destination charge of $325. They read in the consumer magazine that the dealer's cost for the car is 90% of the base price and 87% of the options price. What should they estimate as the dealer's cost?   • William Meyer bought a used car for $6,500 two years ago. He spent an average of $1,299 for gas per year, $160 for oil changes per year, $209 for maintenance per year, and $200 for new tires per year. Each year he paid $657 for insurance and $158 for registration and licenses. William also drove the car an average of 16,789 miles per year. He estimates the car's present value is $4,400. What was the cost per mile to operate and maintain his car?
Instructional Resources/Tools: • *Mathematic for Business & Personal Finance* (Glencoe, 2010)   • Calculators   • Website: Glencome.com   • SMART Board   • iPad   • Airserver   • Dropbox   • Internet   • Laptops   • PowerPoint   • Google Drive

Cross Curricular Connections:
 	
 • ELA:
     • Vocabulary
     • Generating word problems

Depth of Knowledge (Section 5)

DOK: 3

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Curriculum: Business Math

Curricular Unit: Housing Costs

Instructional Unit: F. Investigate costs associated with owning a home, such as mortgage, insurance, and maintenance

Standard Alignments (Section 2)

GLE/CLE: N/A
Knowledge: (MA) 1
CCSS: 11-12.RST.3; 11-12.RST.7; 11-12.WHST.4; A-SSE.1b; A-CED.1; A-CED.4;
      A-REI.3; N-Q.1; N-Q.3; S-ID.6a
NETS: 1a; 3b
Performance: 1.8, 3.8

Unit (Section 3)

Learning Targets:

- Compute a mortgage loan amount

- Determine the monthly payment, total amount paid, and total interest charged

- Figure out total closing costs

- Compute allocation of monthly payment toward principal, interest, and the new principal

- Calculate assessed value and real estate taxes

- Work out the amount of insurance coverage

- Calculate the annual homeowners insurance premium

- **Compute the total housing cost and compare it with suggested guidelines**

Instructional Strategies:

- Students will complete the "dream home" project and present their findings
- Guest speaker idea: A home loan officer from a bank will address the home loan process or a real estate agent

Assessments/Evaluations:

- Students will be assessed on:
  - determining:
    - monthly payment
    - total amount paid
    - interest charged
    - insurance coverage amounts

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- calculating:
  - total closing costs
  - annual homeowners insurance premium
  - assessed value and real estate taxes
- computing:
  - a mortgage loan amount
  - allocation of monthly payment toward principal
  - interest
  - new principal
  - the total housing cost

Sample Assessment Questions:

- Hazaline Allen's mortgage loan amount is $87,750. She financed her house for 30 years with monthly payments of $725. How much interest was she charged at the end of the 30 years?
- The Butler County tax determines that the market value of Greg Wilson's home is $123,00. The rate of assessment in Butler County is 28% of market value. What is the assessed value of Greg's home?

Instructional Resources/Tools:

- *Mathematic for Business & Personal Finance* (Glencoe, 2010)
- Calculators
- Website: Glencome.com
- SMART Board
- iPad
- Airserver
- Dropbox
- Internet
- Laptops
- PowerPoint
- Google Drive

Cross Curricular Connections:

- ELA: Presentations

Depth of Knowledge (Section 5)

DOK: 3

Curriculum: Business Math

Curricular Unit: Investments

Instructional Unit: G. Focus on investments such as certificates of deposit, stocks, and bonds

Standard Alignments (Section 2)

GLE/CLE: N/A
Knowledge: (MA) 1
CCSS: 11-12.RST.4; 11-12.RST.7; A-SSE.1b; A-CED.1; F-FI.8b
NETS: 3b
Performance: 3.5, 3.8

Unit (Section 3)

Learning Targets:

- Use tables to compute interest on certificates of deposit

- Determine the effective annual yield

- Solve for the total cost of a stock investment

- Compute the annual yield and annual dividend of a stock investment

- Calculate the profit or loss from a stock sale

- Compute the annual interest and annual yield of a bond investment

- **Explore the effects of compound interest on an investment**

- Compute the future value of an ordinary annuity and an annuity due

Instructional Strategies:

- Daily re-looping
- Explicit vocabulary building
- MLT (model, learn test)
- Games (examples are trash-ball and tic-tac-toe)
- Students will:
  - generate word problems: through construction of a problem, the students learn what to look for when solving word problems
  - complete an online practice test to assist in self-assessment of acquired skills
  - complete a vehicle project and present their findings to the class
  - write a persuasive essay convincing workers to save for retirement
  - include:
    - potential results showing how even a small investment can grow into a large retirement fund

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- reasons why people should not rely solely on social security and corporate retirement plans
- options for how to save and invest to maximize savings growth over different periods of time
- Guest Speaker Idea: A stockbroker to speak to the value of investing early and/or to the different types of investing or financial advisor/planner

Assessments/Evaluations:

- Students will be assessed on:
  - using tables to compute interest on certificates of deposit
  - determining the effective annual yield
  - solving for the total cost of a stock investment
  - computing the:
    - annual yield and annual dividend of a stock investment
    - annual interest and annual yield of a bond investment
    - future value of annuities
  - calculating the profit or loss from a stock sale
  - examining the effects of compound interest on an investment

Sample Assessment Questions:

- Match the following terms with the descriptions
  a. certificate of deposit (CD)   e. bonds
  b. stocks   f. individual retirement account (IRA)
  c. dividend   g. Roth IRA
  d. mutual fund   h. required minimum distribution (RMD)

  _____ Money you earn as a shareholder of the company
  _____ Purchased for specific amounts for a specific time, usually earns more interest than a regular savings account
  _____ Matures with interest that is tax deferred
  _____ The amount of money you must withdraw each year from your IRA
  _____ Matures with interest that is tax free
  _____ When you purchase one of these, you become part owner in a corporation
  _____ A written pledge that you will be repaid a certain amount of money with interest
  _____ Usually has a charge attached to it

Figure 12.1

Amount of $1.00 Invested, Daily, Monthly, and Quarterly Compounding			
Annual Rate	Interest Period – 1 Year		
	Daily	Monthly	Quarterly
5.00%	1.051267	1.051162	1.050945
5.25%	1.053899	1.053782	1.053543
5.50%	1.056536	1.056408	1.056145
5.75%	1.059180	1.059040	1.058752
6.00%	1.061831	1.061678	1.061364
6.25%	1.064489	1.064322	1.063980
6.50%	1.067153	1.066972	1.066602
6.75%	1.069824	1.069628	1.071859
7.00%	1.072501	1.072290	1.071859

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• Use Figure 12.1. Randy Strigle can invest $12,000 at either 6% compounded daily for 1 year or 7% compounded quarterly for 1 year. Use the figure to calculate the interest. What is the annual percentage yield of the better investment?
Instructional Resources/Tools: • *Mathematic for Business & Personal Finance* (Glencoe, 2010) • Calculators • Website: Glencome.com • SMART Board • iPad • Airserver • Dropbox • Internet • Laptops • PowerPoint • Google Drive

Cross Curricular Connections:
 	
• ELA:
   • Vocabulary
   • Generating word problems
   • Writing essays

Depth of Knowledge (Section 5)

DOK: 3