

**Curricular Area: Business & Technology**

**Course Title: Business Math**

**Grade Level(s): 9-12**

**Development Date: May 2018**

**Board Approval Date:**

**Course Description:** This introductory course is designed to prepare students to be more informed shoppers, taxpayers, and valued employees. This includes a brief review of fundamental operations including fractions and problems of percentage. This comprehensive course includes personal and business-related math topics, which include: gross and net pay, banking services, loans and credit cards, insurance, etc.

**Essential Questions:**

- What is a down payment?
- What are closing costs?
- How is the monthly payment calculated?
- What is an amortization?
- How do you calculate the total paid over the life of a mortgage?
- How do you calculate the interest paid on a mortgage?
- What extra expenses are associated with the purchase of an automobile?
- How do you calculate the down payment?
- How do you calculate interest paid on an auto loan?
- What is depreciation?
- How does depreciation affect the value of an automobile?
- How much auto insurance do you need?
- What are the components of auto insurance?
- How much home owner insurance do you need?
- What are the components of home owner insurance?
- Should you have a disability insurance policy?
- Do you need life insurance?

- How do you track income and expenses?
- How do you create a budget/spending plan?
- For what time period should you have a budget?
- How do you make adjustments for the next time period?
- How often should you reevaluate a budget?
- How do you calculate gross pay?
- When is commission stated?
- What is a graduated commission?
- What is a quota?
- Where to you find federal income tax withholding?
- How to you calculate state income tax? Social security? Medicare?
- What other common deductions can individuals have withheld from their pay?
- What is a job benefit?
- How do you calculate total job benefits?
- How do you calculate net job benefits?
- Why is it important to compare job offers?
- How do you determine which job is best for you?
- What is interest?
- What are three different types of bank accounts?
- How do you record transactions in a register?
- How do you reconcile a register to a bank statement?
- When is it feasible to use credit cards?
- How do you calculate the balance due?
- How do you calculate interest on a credit card using a variety of methods?
- How do you determine the monthly payment on a loan?
- When should you use a short-term vs a long-term loan?
- How do you calculate the total interest paid on a loan?
- How do you determine the payoff amount of a loan?
- What is interest as it relates to savings accounts?
- How do you calculate simple interest?

- How do you calculate compound interest?
- How do you use a compound interest table?
- How do you compare interest earned on various accounts?
- How do you calculate the effective rate of interest?
- How do you calculate interest on interest-bearing promissory notes?
- What is the exact interest method?
- What is the ordinary interest method?
- How do you calculate the rate of interest?
- How do you calculate the interest and the proceeds for discounted promissory notes?
- How do you calculate the true rate of interest on a discounted promissory note?
- How do you use an interest table to calculate interest on a note?
- How do you find the due date of a note?
- How do you use a days of the year calendar?
- How do you calculate the interest, principal payment, and new balance on an installment loan?
- How do you calculate simple interest?
- How do you calculate compound interest?
- How do you use a compound interest table?
- How do you calculate the effective rate of interest?
- What is the difference between interest earned on a savings account and interest owed on a loan?
- Is interest calculated the same way for all types of loans and savings accounts?
- Which type of interest is best in a given situation for savings accounts?
- Which type of interest is best in a given situation for a loan?
- How do you calculate prime cost and total manufacturing costs?
- What is a company's breakeven point?
- How is a breakeven point calculated?
- What is depreciation?
- How is depreciation calculated?
- How are shipping charges calculated?
- What are overhead costs for a business?
- What are some other costs incurred to a business?

- **What is the purpose of a sales invoice?**
- **Why is it important to maintain accurate customer accounts?**
- **What is a discount?**
- **Why are discounts offered?**
- **How are rates of discounts calculated?**
- **What is a markup?**
- **How is the rate of markup calculated?**
- **What is a markdown?**
- **How is the rate of markdown calculated?**
- **What is a sales trend?**
- **How can sales trend information be used by a business?**
- **How does a company decide what to spend on advertising?**
- **How are advertising costs calculated?**
- **What is the cost associated with advertising for an employee?**
- **What is a hiring cost?**
- **What is cost-of-living-adjustment(COLA)**
- **How is a COLA calculated?**
- **What is a bonus?**
- **What is profit sharing?**
- **How is an employee determined to be part-time?**
- **What constitutes a full-time employee?**
- **What is an inventory balance?**
- **How is an inventory balance calculated?**
- **What is a reorder point?**
- **How is a reorder point determined?**
- **How inventory value is calculated using FIFO?**
- **How inventory value is calculated using LIFO?**
- **How do you calculate the ordering costs of inventory?**
- **How do you calculate the carrying costs of inventory?**
- **How do you calculate a country's per capita production cost?**

- How do you complete a currency conversion and what does it mean?
- What is a company's net sales?
- How are net sales calculated?
- How are costs of goods sold calculated?
- How do you calculate gross profit?
- How do you calculate net income?
- How is an income statement used by a business?
- How do you calculate total assets, liabilities and equity.
- How do you calculate the debt to equity ratio?
- How do you calculate return on equity?
- What is bankruptcy?

Standards	Content (What the Student Will Know)	Performance (What the Student will Do)	Activities/Assessments
<b>11.2.9.E</b> <b>13.3.11.D</b> <b>15.1.12.H</b>	<ul style="list-style-type: none"> <li>• Home buying</li> </ul>	<ul style="list-style-type: none"> <li>• Calculate the down payment on a home.</li> <li>• Calculate the closing costs on a home purchase.</li> <li>• Calculate the monthly payment.</li> <li>• Calculate the total repaid on a mortgage.</li> <li>• Calculate the total interest paid over the life of a mortgage.</li> <li>• Determine whether you are financially ready to purchase a home.</li> </ul>	<ul style="list-style-type: none"> <li>• Amortization</li> <li>• Closing costs</li> <li>• Interest</li> <li>• Mortgage</li> </ul>
<b>15.6.12.J</b>	<ul style="list-style-type: none"> <li>• Auto purchasing</li> </ul>	<ul style="list-style-type: none"> <li>• Calculate the delivered price of an automobile.</li> <li>• Calculate the down payment and balance due.</li> <li>• Calculate the interest paid over the life of a loan.</li> <li>• Understand the concept of depreciation as it relates to automobiles.</li> </ul>	<ul style="list-style-type: none"> <li>• Depreciation</li> <li>• Interest</li> <li>• License</li> <li>• Property tax</li> <li>• Registration</li> <li>• Sales tax</li> </ul>
<b>15.6.12.N</b>	<ul style="list-style-type: none"> <li>• Insurance</li> </ul>	<ul style="list-style-type: none"> <li>• Determine the need and the cost of home and auto insurance.</li> <li>• Determine your need for disability insurance and life insurance.</li> </ul>	<ul style="list-style-type: none"> <li>• Auto insurance</li> <li>• Disability insurance</li> <li>• Home owner insurance</li> <li>• Liability insurance</li> <li>• Life insurance</li> <li>• Premium</li> <li>• Workers compensation</li> </ul>

<p>13.3.11.D</p>	<ul style="list-style-type: none"> <li>• <b>Budgets</b></li> </ul>	<ul style="list-style-type: none"> <li>• Track income and expenses.</li> <li>• Create a budget/spending plan for the next week/month.</li> <li>• Track actual spending again.</li> <li>• Compare actual spending to budgeted amounts.</li> </ul>	<ul style="list-style-type: none"> <li>• Adjustment</li> <li>• Budget</li> <li>• Expenses</li> <li>• Income statement</li> <li>• Spending plan</li> <li>• Track</li> </ul>
<p>13.3.8.D 13.3.11.D 15.1.12.M</p>	<ul style="list-style-type: none"> <li>• <b>Gross Pay</b></li> </ul>	<ul style="list-style-type: none"> <li>• Calculate gross pay using a variety of payment methods. (salary, hourly, piece work, commissions, tips, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Average</li> <li>• Commission</li> <li>• Double-time pay</li> <li>• Employee</li> <li>• Employer</li> <li>• Graduated commission</li> <li>• Gross pay</li> <li>• Hourly rate</li> <li>• Mean</li> <li>• Overtime</li> <li>• Per diem</li> <li>• Piece rate</li> <li>• Quota</li> <li>• Salary</li> <li>• Straight commission</li> <li>• Time-and-a-half pay</li> <li>• Tip</li> </ul>
<p>13.3.8.D 15.1.12.M</p>	<ul style="list-style-type: none"> <li>• <b>Net Pay</b></li> </ul>	<ul style="list-style-type: none"> <li>• Determine net pay by calculating taxes and other deductions</li> </ul>	<ul style="list-style-type: none"> <li>• Adjusted gross income</li> <li>• Cafeteria plan</li> <li>• Deduction</li> <li>• Deduction</li> <li>• Employee benefit</li> <li>• Exemption</li> </ul>

			<ul style="list-style-type: none"> <li>• Flat tax</li> <li>• Gross income</li> <li>• Net pay</li> <li>• Standard deduction</li> <li>• Taxable income</li> <li>• Withholding allowance</li> <li>• Withholding tax</li> </ul>
13.2.11.B	<ul style="list-style-type: none"> <li>• Job Benefits</li> </ul>	<ul style="list-style-type: none"> <li>• Calculate the value of job benefits which are added to salary/wages.</li> </ul>	<ul style="list-style-type: none"> <li>• Job expense</li> <li>• Net job benefits</li> <li>• Total job benefits</li> </ul>
13.4.8.A	<ul style="list-style-type: none"> <li>• Compare job offers</li> </ul>	<ul style="list-style-type: none"> <li>• Calculate net job benefits for each job offer to determine which job is best for you.</li> </ul>	<ul style="list-style-type: none"> <li>• Compare</li> </ul>
15.1.12.P	<ul style="list-style-type: none"> <li>• Banking</li> </ul>	<ul style="list-style-type: none"> <li>• Calculate account balances.</li> <li>• Calculate interest and its effect on various accounts.</li> <li>• Determine which accounts should be used in various situations.</li> <li>• Use and balance a check register.</li> <li>• Reconcile a register to the bank statement.</li> </ul>	<ul style="list-style-type: none"> <li>• Certificate of deposit</li> <li>• Checking account</li> <li>• Compound interest</li> <li>• Interest</li> <li>• Money market account</li> <li>• Savings account</li> <li>• Simple interest</li> </ul>
11.1.9.B 15.6.12.L	<ul style="list-style-type: none"> <li>• Credit Cards</li> </ul>	<ul style="list-style-type: none"> <li>• Calculate the balance due, interest per month, and penalties possible when using credit cards.</li> </ul>	<ul style="list-style-type: none"> <li>• Adjusted balance method</li> <li>• Average daily balance method</li> <li>• Borrowing</li> <li>• Credit</li> <li>• Interest</li> </ul>

			<ul style="list-style-type: none"> <li>• Previous balance method</li> <li>• Revolving credit</li> </ul>
<p>11.1.9.B 15.6.12.J</p>	<ul style="list-style-type: none"> <li>• Loans</li> </ul>	<ul style="list-style-type: none"> <li>• Distinguish between different types of loans.</li> <li>• Calculate the monthly payment.</li> <li>• Calculate the interest paid over the life of a loan.</li> <li>• Calculate the total repaid over the life of a loan.</li> </ul>	<ul style="list-style-type: none"> <li>• Simple interest loan</li> <li>• Installment loan</li> <li>• Mortgage</li> </ul>
<p>15.6.12G 15.6.12A</p>	<ul style="list-style-type: none"> <li>• Interest on Savings Accounts</li> </ul>	<ul style="list-style-type: none"> <li>• Students will learn what interest is as it relates to savings accounts.</li> <li>• Students will learn how to calculate interest on different types of savings accounts.</li> </ul>	<ul style="list-style-type: none"> <li>• compound amount</li> <li>• compound interest</li> <li>• Interest</li> <li>• Loan</li> <li>• maturity date</li> <li>• service charge</li> <li>• Savings Account</li> <li>• Simple Interest</li> <li>• Term</li> </ul>
<p>15.6.12G 15.6.12A</p>	<ul style="list-style-type: none"> <li>• Interest on Loans</li> </ul>	<ul style="list-style-type: none"> <li>• Students will learn what interest is as it relates to loans.</li> <li>• Students will learn how to calculate interest on different types of loans</li> </ul>	<ul style="list-style-type: none"> <li>• compound amount</li> <li>• compound interest</li> <li>• Interest</li> <li>• Loan</li> <li>• maturity date</li> <li>• service charge</li> <li>• Term</li> <li>• Savings Account</li> <li>• Simple Interest</li> </ul>

<b>15.6.12G</b> <b>15.6.12A</b>	<ul style="list-style-type: none"> <li>• <b>Compare &amp; Contrast Different Types of Interest</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Students will compare and contrast interest as it relates to savings and loans.</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>compound amount</b></li> <li>• <b>compound interest</b></li> <li>• <b>Interest</b></li> <li>• <b>Loan</b></li> <li>• <b>maturity date</b></li> <li>• <b>Savings Account</b></li> <li>• <b>service charge</b></li> <li>• <b>Simple Interest</b></li> <li>• <b>Term</b></li> </ul>
<b>15.8.12B</b> <b>15.8.12E</b> <b>15.1.12X</b>	<ul style="list-style-type: none"> <li>• <b>Business Costs</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Students will learn how to calculate manufacturing costs.</b></li> <li>• <b>Students will learn what a breakeven point is and how to calculate it.</b></li> <li>• <b>Students will learn what depreciation is and how it is calculated and used in a business setting.</b></li> <li>• <b>Students will evaluate shipping costs and how to calculate.</b></li> <li>• <b>Students will learn about basic operating costs and budgets</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Prime Cost</b></li> <li>• <b>Overhead</b></li> <li>• <b>Manufacturing cost</b></li> <li>• <b>Breakeven point</b></li> <li>• <b>fixed costs</b></li> <li>• <b>variable costs</b></li> <li>• <b>Declining balance method</b></li> <li>• <b>Depreciation</b></li> <li>• <b>Freight</b></li> <li>• <b>Distribution</b></li> <li>• <b>Overhead</b></li> <li>• <b>Mileage reimbursement</b></li> <li>• <b>Operating cost</b></li> <li>• <b>Per diem</b></li> </ul>
<b>15.9.12B</b> <b>15.9.12C</b> <b>15.9.12E</b> <b>15.9.12F-J</b>	<ul style="list-style-type: none"> <li>• <b>Sales &amp; Marketing</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Students will learn the purpose of a sales invoice.</b></li> <li>• <b>Students will learn the purpose of maintaining accurate customer accounts.</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Sales invoice</b></li> <li>• <b>Discount</b></li> <li>• <b>Rate of discount</b></li> <li>• <b>Markup</b></li> <li>• <b>Markdown</b></li> </ul>

		<ul style="list-style-type: none"> <li>• Students will learn about discounting items and how to calculate rates of discount.</li> <li>• Students will learn what a markup is and how to calculate one.</li> <li>• Students will learn what a markdown is and how to calculate one.</li> <li>• Students will learn how to look at sales trends and apply the information to the business.</li> <li>• Students will learn about the cost of advertising</li> </ul>	<ul style="list-style-type: none"> <li>• Sales forecast</li> <li>• Sales trend</li> <li>• Sales Reach</li> <li>• Advertising/Marketing</li> </ul>
<p>15.8.12L-Q 15.1.12J</p>	<ul style="list-style-type: none"> <li>• Managing People &amp; Inventory</li> </ul>	<ul style="list-style-type: none"> <li>• Students will learn why a business advertises for employees.</li> <li>• Students will learn about the costs associated with hiring an employee.</li> <li>• Students will learn about cost-of-living-adjustment (COLA) and how it is calculated.</li> <li>• Students will learn what a bonus is.</li> <li>• Students will learn what profit-sharing is and why a company might choose this.</li> <li>• Students will learn the difference between a full-time and part-time employee.</li> <li>• Students will learn how to calculate inventory balances.</li> <li>• Students will learn what a reorder point is.</li> </ul>	<ul style="list-style-type: none"> <li>• Contract employee</li> <li>• Exempt employee</li> <li>• Non-exempt employee</li> <li>• Recruiter</li> <li>• Cost-of-living-adjustment (COLA)</li> <li>• Bonus</li> <li>• Profit Sharing</li> <li>• Part-time employee</li> <li>• Full-time employee</li> <li>• Stock</li> <li>• Stock record</li> <li>• Inventory</li> <li>• Reorder point</li> <li>• First in, first out (FIFO)</li> <li>• Last in, first out (LIFO)</li> <li>• Ordering costs</li> </ul>

		<ul style="list-style-type: none"> <li>• Students will learn the process of FIFO (First in, first out)</li> <li>• Students will learn the process of LIFO (Last in, first out)</li> <li>• Students will learn about the costs of ordering and carrying inventory.</li> </ul>	<ul style="list-style-type: none"> <li>• Carrying cost</li> </ul>
15.7.12F-H	<ul style="list-style-type: none"> <li>• International Business</li> </ul>	<ul style="list-style-type: none"> <li>• Students will learn what per capita means.</li> <li>• Students will learn what a currency exchange rate is.</li> </ul>	<ul style="list-style-type: none"> <li>• Gross domestic product</li> <li>• Per capita</li> <li>• Domestic business</li> <li>• International business</li> <li>• Exporting</li> <li>• Importing</li> <li>• Trade surplus</li> <li>• Trade deficit</li> <li>• Foreign Exchange Rate</li> </ul>
15.1.12H 15.1.12Q 15.1.12S	<ul style="list-style-type: none"> <li>• Business Profit &amp; Loss Income Statements</li> </ul>	<ul style="list-style-type: none"> <li>• Students will learn to calculate net sales, cost of goods sold, gross profit and net income.</li> </ul>	<ul style="list-style-type: none"> <li>• Income Statement</li> <li>• Cost of goods sold</li> <li>• Gross profit</li> <li>• Net income</li> <li>• Net loss</li> <li>• Gross Profit Margin</li> <li>• Net Profit Margin</li> <li>• Merchandise turnover rate</li> </ul>
15.1.12U	<ul style="list-style-type: none"> <li>• Business Profit &amp; Loss Balance Sheet</li> </ul>	<ul style="list-style-type: none"> <li>• Students will learn to interpret a balance sheet and the difference between assets and liabilities.</li> </ul>	<ul style="list-style-type: none"> <li>• Balance Sheet</li> <li>• Assets</li> <li>• Liabilities</li> <li>• Equity</li> </ul>

			<ul style="list-style-type: none"><li>• Debt to equity ratio</li><li>• Return on equity</li></ul>
<b>15.6.12G</b> <b>15.6.12A</b> <b>15.6.12B</b>	<ul style="list-style-type: none"><li>• Bankruptcy</li></ul>	<ul style="list-style-type: none"><li>• Students will learn what bankruptcy is.</li></ul>	<ul style="list-style-type: none"><li>• Bankruptcy</li></ul>