

A Fortnight of Furlongs

A Math and Social Studies Unit, Grades 6-8

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Organizing Question

Where does my money from the horse track go?

Academic Expectations and Demonstrators

Academic Expectation 1--Apply Communication and Math Skills:

- 1.5 - 1.9 Students use mathematical ideas and procedures to communicate, reason, and solve problems.
Use deductive/inductive reasoning to synthesize information related to problems, making conjectures, exploring, validating, and convincing others.
- 1.11 Students write using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
*Practice a process approach to writing.
Write for a variety of purposes and forms to a variety of audiences.*
- 1.16 Students use computers and other kinds of technology to collect, organize, and communicate information and ideas.
*Express information and ideas creatively using technology.
Integrate the use of a variety of technologies*

Academic Expectation 2--Mathematics:

- 2.13 Students understand and appropriately use statistics and probability.
*Make predictions and evaluate conclusions based on statistical analysis.
Analyze probabilities to make decisions involving real world situations.*

Academic Expectation 2--Social Studies:

- 2.18 Students understand economic principles and are able to make economic decisions that have consequences in daily living.
Predict consequences of personal or group economic choices (e.g., spending versus saving, economic development versus environmental preservation).

Academic Expectation 4--Responsible Group Membership:

- 4.2 Students use productive team membership skills.
Use effective team skills to complete a task.

Academic Expectation 5--Thinking and Problem Solving:

- 5.3 Students organize information to develop or change their understanding of a concept.

Develop and test concepts based on new information and experience.

Essential Questions

- What are the basic parts of the horse industry? (e.g., horse owners, breeders, trainers/stable owners, jockeys, track owners)
- How are other industries impacted by the horse industry? (e.g., vets, feed growers, transportation, tourism, gambling)
- What are the factors that caused the horse industry to develop in Central Kentucky? (e.g., climate, cultural heritage)
- Is spending my money on the horse industry give my community the biggest bang for my buck?

Culminating Performance:

Group Activities

Students will use a webquest to research information about the horse industry. They will be looking at the economic and cultural impact of the horse industry on Central Kentucky.

Groups will create a presentation that addresses all of the essential questions. They will share this presentation with the rest of the middle school students. Students will share their information in one of the following means: collage/scrapbook, skit (skit must videotaped), multimedia presentation, web site, etc.

Individual Activities

Each student will be responsible for evaluating each presentation in order to encourage active listening.

Students will write a real-world piece to a specific audience that reflects their particular opinion on a topic affecting the horse industry. An example might be to write an editorial piece to be submitted to the local newspaper or government sharing their opinion about the role and importance of the horse industry to the local economy.

Scoring Guide/Rubric

	Webquest Research	Presentation	Student Evaluation	Portfolio Piece
10	<ul style="list-style-type: none"> Group members share in responsibility and leadership opportunities by utilizing group member's strengths. Students work as a team in order to facilitate completion of required individual and group tasks. Group completes all work within time frame. Students remain on task. 	<ul style="list-style-type: none"> Content presented addresses all four Essential Questions and answers them in an insightful and original manner. Presentation is well organized with creative transitions between sections. Group uses effective communication skills in order to engage the audience. All group members participate equitably in the presentation and development of project utilizing each team member's strengths. Presentation fits within an acceptable time frame. 	<ul style="list-style-type: none"> Student will complete evaluation of group projects. Evaluation includes appropriate supporting comments. 	<ul style="list-style-type: none"> Establishes a purpose and maintains clear focus; strong awareness of audience; evidence of distinctive voice and/or appropriate tone. Depth and complexity of ideas supported by rich, engaging, and/or pertinent details; evidence of analysis, reflection, insight. Careful and/or subtle organization Variety in sentence structure and length enhances effect. Precise and/or rich language Control of spelling, punctuation, and capitalization
9	<ul style="list-style-type: none"> Group members share in responsibility and leadership opportunities. Students work as a team in order to facilitate completion of required individual and group tasks. Group completes all work within time frame. Students remain on task. 	<ul style="list-style-type: none"> Content presented addresses all four Essential Questions and answers them in an effective manner. Presentation is well organized with effective transitions between sections. Group uses effective communication skills in order to hold the audience's attention. All group members participate equitably in the presentation and development of project. Presentation fits within an acceptable time frame. 	<ul style="list-style-type: none"> Student will complete evaluation of group projects. Evaluation includes appropriate supporting comments. 	<ul style="list-style-type: none"> Focused on a purpose; communicates with an audience; evidence of voice and/or suitable tone. Depth of idea development supported by elaborated, relevant details. Logical, coherent organization Controlled and varied sentence structure Acceptable, effective language Few errors in spelling, punctuation, and capitalization relative to length and complexity
8	<ul style="list-style-type: none"> Group members share in responsibility. Students work as a team in order to complete required individual and group tasks. Group completes most work within time frame. Students have to be reminded to be on-task. 	<ul style="list-style-type: none"> Content presented addresses three of the Essential Questions and answers two of them. Presentation is organized but has lapses of continuity. Group uses communication skills in order to present information. Most group members participate in the presentation of project. Presentation does not fit within an acceptable time frame. 	<ul style="list-style-type: none"> Student will complete evaluation of group projects. Evaluation includes supporting comments. 	<ul style="list-style-type: none"> Some evidence of communicating with an audience for a specific purpose; some lapses in focus. Unelaborated idea development; unelaborated and/or repetitious details. Lapses in organization and/or coherence. Simplistic and/or awkward sentence structure. Simplistic and/or imprecise language Some errors in spelling, punctuation, and capitalization that do not interfere with communication
7	<ul style="list-style-type: none"> Group dynamic no longer exists. Individual students dominate task completion. Some of the work is completed within time frame. Students rarely on-task. 	<ul style="list-style-type: none"> Content presented addresses two of the Essential Questions and answers one of them. Presentation is poorly organized and has ineffective or poor transitions. Group uses poor communication skills in order to present information. Some group members participate in the presentation of project. Presentation does not fit within an acceptable time frame. 	<ul style="list-style-type: none"> Student will complete evaluation of group projects. 	<ul style="list-style-type: none"> Limited awareness of audience and/or purpose Minimal idea development; limited and/or unrelated details. Random and/or weak organization. Incorrect and/or ineffective sentence structure Incorrect and/or ineffective language. Errors in spelling, punctuation, and capitalization are disproportionate to length and complexity.
6	<ul style="list-style-type: none"> Research not completed 	<ul style="list-style-type: none"> Presentation not completed 	<ul style="list-style-type: none"> Evaluation not completed 	<ul style="list-style-type: none"> Writing piece not completed

Teacher reserves the right to add or subtract points on an individual basis based upon student performance and work effort

Unit Assessment

The unit will be assessed with a pre-test/post-test. Students will be given a test with the four essential questions as well as a matching section of content specific vocabulary. Terms may include economy, industry, investment, interest, ROI, opportunity cost, probability, odd(s), independent and dependent variables, stakes, statistics, simple and compound interest.

Knowledge

- **WR-M-1 Purpose/Audience**--The writer establishes and maintains a focused purpose to communicate with an audience by: narrowing the topic to establish a focus; analyzing and addressing the needs of the intended audience; adhering to the characteristics of the form; employing a suitable tone; allowing voice to emerge when appropriate
- **WR-M-1 Idea Development**--The writer develops and supports main ideas and deepens the audience's understanding by using: logical, justified, and suitable explanation; relevant elaboration; related connections and reflections; idea development strategies appropriate for the form
- **WR-M-1 Organization**--The writer creates unity and coherence to accomplish the focused purpose by: engaging the audience and establishing a context for reading; placing ideas and support in a meaningful order; guiding the reader through the piece with transitions and transitional elements; providing effective closure
- **WR-M-1 Sentences**--The writer creates effective sentences that are: varied in structure and length; complete and correct
- **WR-M-1 Language**--The writer demonstrates: effective word choice (strong verbs and nouns, concrete and/or sensory details, language appropriate to the content, purpose, and intended audience); concise use of language; correct usage/grammar
- **WR-M-1 Correctness**--The writer demonstrates: correct spelling; correct punctuation; correct capitalization; appropriate documentation (e.g., citing authors or titles within the text, listing sources) of ideas and information from outside sources
- **WR-M-1.4** Characteristics of transactive writing may include text and language features of the selected form
- **WR-M-1.4** Characteristics of transactive writing may include information to engage/orient the reader to clarify and justify purposes
- **WR-M-1.4** Characteristics of transactive writing may include ideas which communicate the specific purpose for the intended audience
- **WR-M-1.4** Characteristics of transactive writing may include explanation and support to help the reader understand the author's purpose
- **WR-M-1.4** Characteristics of transactive writing may include well-organized idea development and support (e.g., facts, examples, reasons, comparisons, anecdotes, descriptive detail, charts, diagrams, photos/pictures) to accomplish a specific purpose
- **WR-M-1.4** Characteristics of transactive writing may include effective conclusions
- **MA-M-3.2.4** Calculate theoretical probabilities and tabulate experimental results from simulations
- **MA-M-3.2.5** Make predictions and draw conclusions from statistical data and probability experiments
- **MA-M-3.3.2** How theoretical probability and experimental probability are related

- **SS-M-3.1.2** To make informed choices, consumers must analyze advertisements, consider personal finances, and examine the opportunity cost.
- **SS-M-3.4.3** Personal, national, and international economic activities are interdependent.
- **PL-M-4.1.1** People work to provide for their wants (e.g., entertainment, hobbies, brand-name clothing/shoes) and needs (e.g., food, clothing, shelter) and often for personal satisfaction (e.g., self-worth).
- **PL-M-4.4.3** Both individual and team skills (e.g., identify goals, use listening skills, follow directions, communicate orally, ask questions about tasks, use problem-solving skills) contribute to the successful completion of a task.

Skills/Abilities

- **ELA-8-R-1** read and understand a variety of materials, making connections to students' lives, to real world issues, and/or to current events.
- **ELA-8-R-3** analyze transactive reading material (informational, practical/workplace, and persuasive) to create responses through addressing issues, confirming predictions, paraphrasing information to support ideas, and formulating/supporting opinions.
- **ELA-8-W-2** access technology and other resources to learn and to write, developing independent ideas, synthesizing information to support ideas, and using appropriate source citations.
- **ELA-8-W-3** write transactive pieces (writing produced for authentic purposes and audiences beyond completing an assignment to demonstrate learning) that demonstrate independent thinking about literature, issues, and events relevant to students' lives.
- **M-8-GM-2** derive and use formulas for various rates (e.g., distance/time, miles per hour).
- **M-8-PS-6** analyze situations, such as games of chance, board games, or grading scales, and make predictions using knowledge of probability.
- **M-8-PS-8** investigate and explain the role of probability in everyday decision making.
- **M-8-PS-11** determine theoretical (mathematical) probabilities, compare that to experimental results, and explain reasons why there might be differences (e.g., express probability as a ratio, decimal, percent as appropriate for a given situation).
- **SS-8-G-1** examine patterns of human movement, settlement, and interaction in early American history and investigate how these patterns influenced culture and society in the United States.
- **SS-8-E-4** understand how the desire to earn profits influenced the establishment and growth of economic institutions in early United States history.
- **SS-8-CS-3** analyze social interactions among diverse groups and individuals in United States history.

Technology Standards

- T3.1 Use proper citations
- T4.4 Locate Information using the Internet
- T5.1 Use proper keyboarding with speed and accuracy relative to the task
- T5.3 Evaluate information from the Internet

- T5.6 Enter and edit word processing information
- T5.7.2 Enter, manipulate and create visual representation of data.
- T6.1 Select appropriate software for a task.

The following standards will be addressed depending upon the presentation medium:

- T6.2 Publish information on the Internet
- T6.3 Integrate two or more programs.
- T6.4 Use a Word Processor to present information.
- T6.5 Create a presentation or product using application software.
- T6.6 Use digital imaging and audio

Instructional/Assessment Activities

Timeline

		Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	Math				Intro & Pre-Test (Use concurrent blocks in each class to intro unit.)	Chance & Probability
	SS					Economics Basics
	Lab				Intro Stock Market Game (on-going)	Intro to Excel
Week 2	Math	Chance & Probability	Chance & Probability	Chance & Probability (re-teach w/ assessment)	Introducing Webquest (assign groups)	Webquest
	SS	Economics Basics	Economics Basics	The Horse Industry	The Horse Industry	The Horse Industry
	Lab	Graphing w/ Excel	Graphing w/ Excel	Data Manipulation w/ Excel	Data Manipulation w/ Excel	Webquest
Week 3	Math	Guest Speaker (Use concurrent blocks in each class to present lesson.)	Webquest	Webquest	Wrap-up Stock Market Game	Analyze Webquest Data
	SS		Webquest	Webquest	Gambling and Disposable Income	(Use concurrent blocks in each class to present lesson.)
	Lab		Webquest	Webquest	Webquest	
Week 4	Math	Presentation/ Culminating Activity	Presentation/ Culminating Activity	Presentation/ Culminating Activity	Trial presentation and assessment of presentation to class.	Give presentation to school. (Top presentation and portfolio piece presented to school.)
	SS	Presentation/ Culminating Activity	Presentation/ Culminating Activity	Presentation/ Culminating Activity		
	Lab	Used as necessary to complete CA.	Used as necessary to complete CA.	Used as necessary to complete CA.		
	LA	Work on Portfolio Piece	Work on Portfolio Piece	Work on Portfolio Piece	Work on Portfolio Piece	

Instructional Activities

Lesson 1: Chance and Probability (Math)

Objective: Students will explore the nature of chance by hand-on experimentation and manipulation.

Description: Teacher will set up five stations equipped with chance games. Students will work in groups of four to collect data to analyze (using a spreadsheet program) and evaluate. Teacher will cover terminology while discussing the collected data. The data will be used to make examples. The concepts of these games and chance will be related to the horse industry and the odds of winning. The economic impact of these odd will be correlated with students' concepts of money, investment, and income.

Assessment: Students will be assessed of standard group participation and scoring guide used with many activities. They will also turn in data collection sheets that are with each station.

Lesson 2: Economics Basics (Social Studies)

Objective: Students will gain an understanding of basic economics concepts with a specific emphasis based on supply and demand and opportunity costs.

Description: The students will be grouped together and be introduced into a set economy. The teacher will set up a "store" where students must decide how their "money" will be spent based upon what an object is worth (opportunity costs). A few objects will cost a great amount to help students understand the concept of supply and demand.

Assessment: Students will record their decisions and reasons for those decisions in their journals.

Lesson 3: The Horse Industry (Social Studies)

Objective: Students will learn the basic players and history of the horse industry.

Description: The teacher will set up a series of centers and activities that address the various aspects of the horse industry. These may include:

- The different people directly involved in breeding, training, racing and selling horses.
- The history of the horse industry.
- Racing in Lexington.
- Economic impact and distribution of money from the horse industry.
- African Americans (and diversity) in the horse racing industry.
- Lifestyle of the different people in the horse industry.

Assessment: Students will complete basic questions to be answered at each center.

Lesson 4: Webquest (Math and Social Studies)

Objective: Students will complete teacher created webquest.

Description: The teacher will create a webquest where the students will be studying the following:

- exploration of the economics of gambling and consequences of gambling.

- gain a better understanding of the horse industry, its components, and its players.
- learn how and where money in the horse industry goes.
- collect data on the economics of the horse industry.

Assessment: The group participation scoring guide will be used. The webquest data sheet will be collected.

Lesson 5: Stock Market Game (Computer Lab)

Objective: Students will investigate the concepts of how the stock market operates and how it is similar to the operation of horse racing.

Description: The teacher will set up a stock market simulation. A sample stock market of relatively unknown companies will be generated for students to buy and sell stock and calculate their earnings and losses. This will be compared to earnings and losses at a horse track as well as games of pure chance (lottery, slot machine, etc.). Particular attention will be paid to the educated investor concept.

Assessment: The record of investments and the explanations of why money was gained or lost will be collected.

Lesson 6: Gambling and Disposable Income (Social Studies)

Objective: Students will gain an understanding of the gambling mentality and role of disposable income.

Description: The teacher will present information on the risk of gambling and mentality of the gambler. A presentation from Gamblers Anonymous will be given as well. This will correlate with the use (and possession) of disposable income. Alternative methods of "investing" money will also be discussed.

Assessment: Portfolio piece from culminating activity.

Lesson 7: Presentation

Objective: Students will work in groups to create a presentation based upon the completion of the culminating activity.

Description: The teacher will provide a means to create a presentation to address the essential questions. Students will be able to choose a medium for their presentation. Teachers will provide guidance, but the presentation will be completed by the group. The group is responsible for dividing tasks and ensuring that all group members participate.

Assessment: The culminating activity will be the assessment.

Critical Resources

Technology Resources

- Internet
- MS Word
- MS Excel
- MS PowerPoint
- MS FrontPage
- MS Publisher

- Laptop w/ Projector
- Mobile Lab

Social Studies Resources

- Guest Speakers
 - Gambler’s Anonymous
 - Fayette County Extension
 - Horse Industry (owner, breeder, trainer, jockey, etc.)
- Horse industry history resources (books, pamphlets, videos, etc.)
- Items/Materials for Economics Basics “store” (tickets, pens, notebooks, etc.)
- Current economic data (Equine Research Commission, etc.) for horse industry.

Math Resources

- Math manipulatives (colored disks, spinners, dice, containers, playing cards, etc.)
- Overhead manipulatives
- Classroom set of statistical or graphing calculators

General Resources

- Work journal
- Binder to store information
- Art Supplies for presentation

Match each term with its definition by writing the letter in the blank.

- | | |
|---------------------------|---|
| ___ Economy | A. The anticipated profit resulting from expenditures. |
| ___ Industry | B. A collection or set of numerical data. |
| ___ Investment | C. A ratio expressing the probability of an outcome. |
| ___ Return on Investment | D. The purchase of property for future benefit. |
| ___ Opportunity cost | E. Interest computed on accumulated unpaid interest as well as on the original principal. |
| ___ Probability | F. Likelihood |
| ___ Odd(s) | G. Its value is determined by the value assumed by an independent variable. |
| ___ Independent variables | H. The science dealing with the production, distribution and consumption of goods and services. |
| ___ Dependent variables | I. The things given up to make an economic choice. |
| ___ Stakes | J. Interest paid only on the original principal. |
| ___ Statistics | K. The production and sale of goods and services. |
| ___ Simple interest | L. Its value is determined by the value of other variables. |
| ___ Compound interest | M. The prize awarded the winner of a contest or race. |