Cross-Curricular Connections
Mathematics Extensions
Grades 4-6

$50,000 Smackers!!!!!!

National Standards: Mathematics> Number and Operations
NM-NUM.3.-5.3, NM-NUM.6-8.3
Compute fluently and make reasonable estimates **(Grades 4-5) (Grade 6)**

- Develop fluency in adding, subtracting, multiplying, and dividing whole numbers.
- Develop and use strategies to estimate the results of whole-number computations and to judge the reasonableness of such results.
- Select appropriate methods and tools for computing with whole numbers from among mental computation, estimation, calculators, and paper and pencil, according to the context and nature of the computation, and use the selected method or tools.
- Select appropriate methods and tools for computing with fractions and decimals from among mental computation, estimation, calculators or computers, and paper and pencil, depending on the situation, and apply the selected methods.
- Develop and analyze algorithms for computing with fractions, decimals, and integers and develop fluency in their use.
- Develop and use strategies to estimate the results of rational-number computations and judge the reasonableness of the results.

National Standards: Mathematics> Problem Solving
NM-Prob.PK-12.1,
Build new mathematical knowledge through problem solving **(Grades 4, 5 & 6)**
NM-PROB.PK-12.2
Solve problems arising in mathematics and in other contexts **(Grades 4, 5 & 6)**
NM-Prob.PK-12.3
Apply and adapt a variety of appropriate strategies to solve problems **(Grades 4, 5, & 6)**
NM-Prob.PK-12.4
Monitor and reflect on the process of mathematical problem solving **(Grades 4, 5 & 6)**

Kentucky: Mathematics Standards

- Develop and apply strategies to problems from everyday and mathematical situations by evaluating the solutions relative to the original problem situation.
- Develop multiple strategies for modeling, interpreting, and formulating problems based in real-world situations, within and outside mathematics, and aids in investigating and understanding mathematical content.
- Recognizing patterns and relationships and using model, known facts, and mathematical properties to explain and justify thinking.
- Relate concepts to other concepts and procedures.
- Relate mathematical ideas within mathematics and to other disciplines using graphic, numerical, physical, algebraic, and verbal models.
- Relate concepts of a mathematical topic to other disciplines.

Number and Computation

M-4-NC-10

- Understand and apply computational procedures for adding, subtracting, multiplying and dividing whole numbers using memorized basic facts.

M-4-NC-12, M-6-NC-7

- Add, subtract, multiply and divide whole numbers.

M-5-NC-12

- Explore appropriate estimation procedures.

M-6-NC-11

- Use prime numbers, composite numbers, factors, multiples and divisibility to solve problems.

Probability and Statistics

M-4-PS-2, M-5-PS-2, M-6-PS-3

- Choose appropriate means to collect and represent data

M-4-PS-5, M-6-PS-2

- Draw conclusions based on data

M-4-PS-4, M-5-PS-2, M-6-PS-1

- Pose questions, collect, organize, and display data; and choose an appropriate way to collect and represent data; analyze, and interpret data in a variety of graphical methods, including line plots, line graphs, bar graphs, and stem and leaf pods.

Ohio: Mathematics> Number, Number Sense and Operations Standards

- Demonstrate number sense, including an understanding of number systems and operations and how they relate to one another.
- Compute fluently and make reasonable estimates using paper and pencil, technology-supported and mental methods.

Benchmark(s)

Grade 4

J. Estimate the results of whole number computations using a variety of strategies, and judge the reasonableness.

K. Analyze and solve multi-step problems involving addition, subtraction, multiplication and division of whole numbers.

L. Use a variety of methods and appropriate tools (mental math, paper and pencil, calculators) for computing with whole numbers.

Grades 5 & 6

F. Apply number system properties when performing computations.

I. Use a variety of strategies, including proportional reasoning, to estimate, compute, solve and explain solutions to problems involving integers, fractions, decimals and percents.

Ohio: Mathematics> Mathematical Processes Standard

- Use mathematical processes and knowledge to solve problems.
- Apply problem-solving and decision-making techniques, and communicate mathematical ideas.

Benchmark(s)

Grades 4, 5, & 6

A-K.

Objective

Students will demonstrate an understanding of estimation and its use in mathematical problem solving. Students will use numbers and number sense to calculate and compute monetary values for various needs.

Materials

- Computer(s) with Internet access
- Spreadsheet or graphing software
- Newspaper advertisements
- Paper
- Pencil
- Handout, *Estimation Chart*

Vocabulary

- Estimate
- Estimation

Activity

Teacher will:

- Facilitate student discussion for feedback and personal response to the play, *Annie Jr*.
- Inquire of students their favorite part of the production. *If no student reflects on the $50,000 reward, ask students what they thought about it.*
- Ask students if they think that $50,000 is a lot of money.
- Have students write a list of items that they would buy if given a reward of $50,000. *Tell them the total cannot exceed $50,000 (to be calculated in the following steps).*
- Have students list and estimate cost for each item they would purchase with the $50,000.
- Have students add and total the estimated costs. The total should reflect $50, 000. *If a total is over, have student remove items from their list. If estimate is too low, have students add items to their list.*
- Instruct students to verify item costs through research of sources such as newspaper advertisements, the Internet, or first-hand shopping. *This task may be addresses in a homework assignment if more time is needed for completion.*
- Instruct students not to change information on their original list, even after researching and discovering the real prices.
- Have students record, list and total the cost for all items using the real prices gathered through researched sources.
- Instruct students to compare prices and totals for the estimated cost with that of the real prices or authentic market value.
- Have students create bar graphs to visually illustrate differences in the estimated cost items and the actual cost/market value items. *Use of a spreadsheet or graphing program is helpful with this task. Students could also create a circle graph illustrating the percentage of money out of the entire $50,000 that was spent on each item category (e.g., entertainment, transportation, food, clothing, etc.)*

Performance Assessment:

Teacher will evaluate students' abilities to:

- Estimate, calculate and create representative graphs for number displays.
- Discuss the purpose of estimation and actual calculations, and decide which is more appropriate for this type of activity and decision-making.

Estimation Table

Item	Estimate Total	+ - (nearness to $50, 000)	Actual Market Price (Real price	Total	+ - (nearness to $50, 000)