



Math and the Mercantile



Fourth Grade Math Problems
Derived from the Andrew Wylie Family Accounts

MATH & the MERCANTILE

Some BACKGROUND Information

We are very lucky to have copies of the records that Thomas and John McCalla kept for Andrew Wylie's family at their general store on the Square in downtown Bloomington. The McCalla brothers opened their mercantile (another name for a general "dry goods" store) sometime during the early 1840s. In 1852, Thomas sold his partnership in the store to John. John continued to operate the mercantile until approximately 1888.

Dr. Andrew Wylie came with his family to Bloomington from southwestern Pennsylvania in 1829 to become the first President of Indiana University. Like many other Bloomingtonians, the Wylies purchased things at the general store that they did not, or could not, grow or make themselves.

During the time between 1840 – 41, eight of the Wylie's twelve children were still living at home, four boys and four girls. You will see some of their names on the records we've reproduced for you. These include John, Anderson, and Samuel (Sam'l).

John McCalla married Andrew and Margaret Wylie's second eldest daughter, Elizabeth or "Liz" Wylie in 1856. One of Liz's brothers, Redick McKee Wylie, was a successful farmer in Bloomington and he eventually also went into business with John McCalla. John died in 1899. Many of the Wylies and McCallas are buried at Rose Hill Cemetery in Bloomington including Andrew & Margaret Wylie, their son, Redick, and John and Elizabeth McCalla.

Math and the Mercantile **A Guide for Teachers**

This exercise has been designed to be used in the classroom in conjunction with a visit to the Wylie House Museum in Bloomington, Indiana or as a way to bring part of the Wylie House experience into the classroom when field trips are not possible.¹ Based on ledgers of actual accounts the Andrew Wylie family held with the McCalla Bros., one of several Bloomington general stores during the 1840s, these problems have been created as a way to reinforce math skills in a way that brings the realities of everyday living in nineteenth-century Indiana to life.

The math problems are correlated with the Indiana's Academic Standards for Grade 4 Mathematics (available at <http://www.doe.state.in.us/standards/Docs-2004/English/Word/Grade04/4-Math.doc>) and are organized with the intent that they could be completed in their entirety or bit by bit as each standard is addressed in the classroom. While the exercises are particularly appropriate for fourth grade curriculum due to its introduction of these math standards and its focus on Indiana history, they would also be a useful and fun review exercise for students older than fourth grade.

The vocabulary that may not be familiar to students has been explained briefly to provide relevant historical content. The problems provide excellent conversation starters or writing inspiration for interdisciplinary exercises. Information from these accounts gives us fascinating insights into the life of Andrew Wylie and his family. What did they eat? During what time of year did they buy various items or undertake various domestic tasks? What merchandise could be purchased at local stores in the 1840s?

This teacher's guide contains the answers and, when applicable, the problems in bold italic red font for easy use. The student worksheets follow the answer guide. The pie graph and chart of the Wylies' expenses from March-August of 1841 are on separate pages at the end of the packet so they can be removed and viewed by students without the need to switch back and forth between documents. The problems are grouped according to the standard they address, and this correlation is shown in the following chart.

Indiana Mathematics Academic Standard Number	"Math and the Mercantile" Problem Number
4.1.8	8, 12
4.1.9	8
4.2.3	5, 6
4.2.9	2, 3, 4, 14,15
4.3.7	2, 3, 4
4.5.10	7
4.6.1	9
4.6.2	1, 9, 10, 11
4.7.1	16
4.7.4	13
4.7.8	16

We hope you and your students will enjoy "Math and the Mercantile." If you have any questions about this resource or Wylie House, please call 812-855-6224 or email libwylie@indiana.edu with the subject heading "Math and the Mercantile." You can also visit us online at www.indiana.edu/~libwylie.

¹ Wylie House can bring or loan a Math and the Mercantile "outreach basket" containing several items mentioned in the McCalla ledger upon request.

Help with the Wylie Accounts!

NAME _____

During the 1840s there were several local stores where people could buy what they needed. One of these stores in Bloomington was run by Thomas & John McCalla. The McCallas wrote their records in a **ledger**, which was the book merchants used to keep track of what people purchased. It was very unusual for people to have cash, so most people set up an account and paid for all of their purchases at one time once or twice a year. The McCallas had to keep very detailed notes about purchases so he could prepare accurate bills!

Sometimes it is difficult to read the handwriting in the ledger. To make it easier to read, some of the entries have been **transcribed**. When you **transcribe** handwriting, it means you read the original handwriting and type it out neatly.

Use the information from the McCalla ledger to answer the following questions.

1. During which month (March-August) does the McCalla ledger show the most purchases by the Wylie family?

_____ **July (10)** _____

2. Look at the two purchases made on August 23. Add the prices of $\frac{1}{2}$ yard of book muslin and 1 cedar pencil. How much money did the Wylies spend at the store on August 23?

\$0.31 (book muslin)
+\$0.06 (cedar pencil)

\$0.37

3. John Wylie bought 2 boxes of blacking and 2 dozen quills on March 24. He spent \$0.62 in total. The boxes of blacking cost \$0.25. Write a problem sentence to show how you would find out how much John spent on the quills, then solve the problem.

Subtract twenty-five cents for the blacking from the total cost of sixty-two cents to find the cost of the quills.

OR

Sixty-two cents total minus twenty-five cents for the blacking equals the cost of the quills.

\$0.62
- \$0.25

How much did the quills cost? **\$0.37**

Express $43\frac{3}{4}\text{¢}$ as a decimal. 43.75¢

Round $43\frac{3}{4}\text{¢}$ to the nearest whole cent. 44¢

Would rounding $43\frac{3}{4}\text{¢}$ to the nearest cent have been more beneficial (helpful) for the store owner or for the customer? Why?

Rounding $43\frac{3}{4}\text{¢}$ to the nearest cent would have benefited the store owner because it meant he received slightly more money.

9. A **seamstress** is a person whose job is sewing for other people. In 1841, this would have been a woman's job. Andrew Wylie's family, with twelve children, probably hired a seamstress sometimes to help make some of their clothing.

Create a frequency chart for purchases in the sewing or **seamstress** categories and in the (ready-made) clothing category. Put the date of each purchase in your chart.

August 23, 1841	
August 13, 1841	
July 22, 1841	
July 22, 1841	
July 22, 1841	
June 12, 1841	
June 12, 1841	
June 12, 1841	July 22, 1841
April 8, 1841	June 5, 1841
April 8, 1841	May 25, 1841
April 8	March 26, 1841
Sewing or Seamstress	Clothing (ready-made)

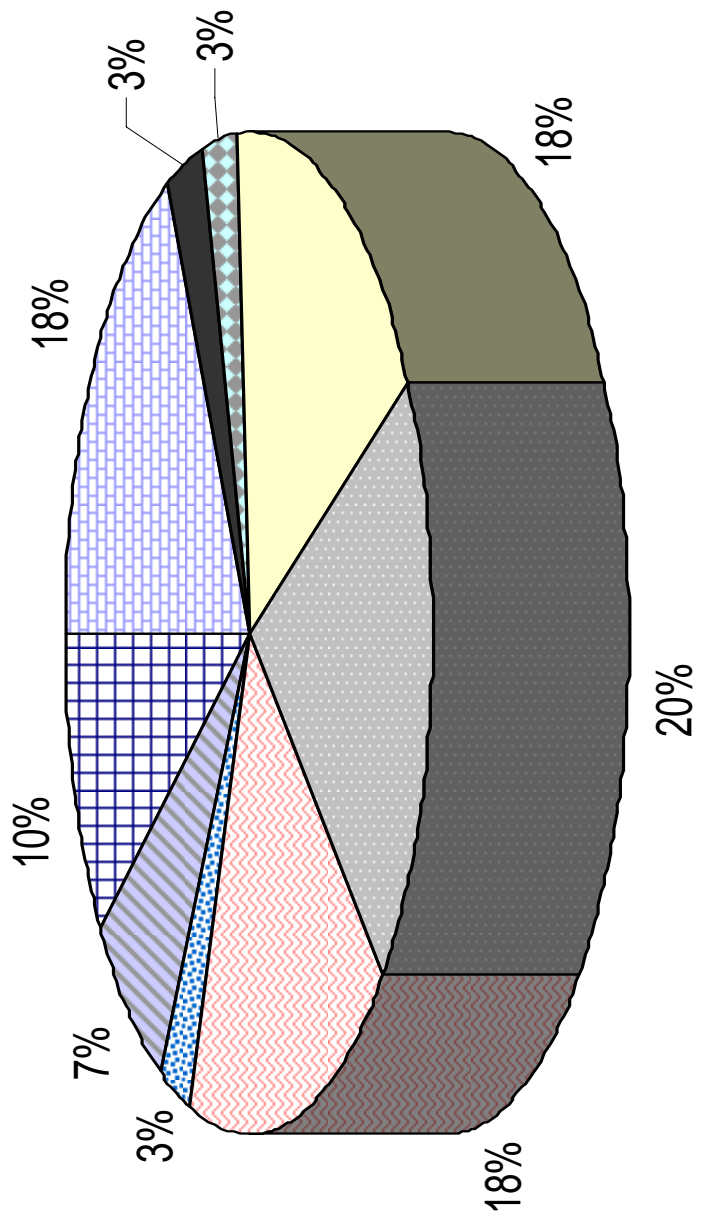
In this time period, did the Wylie family more often buy ready-made clothes, or did they more often purchase sewing materials to make clothes?

They more often purchased sewing materials during this period.

10. The pie graph below shows all the types of purchases made at the McCallas' store in the year 1841. Each wedge of the pie shows what percent of the total amount the Wylie family spent on that specific category. Use the graph to answer the following questions.
- A. On what category did the Wylie family spend the most amount of money at the McCallas' store in the year 1841?

Sewing

- food
- gun supplies
- hygiene
- Sectarianism pamphlet
- sewing
- seamstress
- tobacco
- writing
- clothes



Date	Items	Cost	Category
March 24, 1841	2 boxes blacking 25 & 2 dozen quills 37 per John	\$0.62	Writing
March 24, 1841	1 lb. alum per Anderson	\$0.13	Food
March 26, 1841	1 pair straps per John	\$0.37	clothes
April 8, 1841	4 yds. + bor'd muslin per Lady 33 1/2	\$1.33	seamstress
April 8, 1841	1/2 yd. Blond net	\$0.31	sewing
April 8, 1841	5 yds. Blond Footing 10	\$0.50	sewing
April 10, 1841	1 ring per John	\$1.00	?
April 17, 1841	2 lbs. nails	\$0.25	farm or house
May 10, 1841	1 hair brush	\$0.50	hygiene
May 25, 1841	1 silk cravat per John	\$1.38	clothes
May 25, 1841	1 box matches	\$0.12	farm or house
May 28, 1841	1 piece wading	\$0.13	?
June 5, 1841	1 palm hat per John	\$0.62	clothes
June 7, 1841	1 Steel pen & handle per Sam'l	\$0.06	writing
June 8, 1841	4 slate pencils	\$0.06	writing
June 12, 1841	2 doz. buttons per Lady	\$0.13	seamstress
June 12, 1841	4 Boxes Hooks & Eyes 50 & 1 do (ditto) 6	\$0.56	sewing
June 12, 1841	4 corset laces 13 & 3 bunches flowers 37	\$0.50	sewing
July 19, 1841	1 Qr (quire) Paper per John	\$0.37	writing
July 22, 1841	1 pair pumps per John	\$1.50	clothes
July 22, 1841	2 doz. Screws per Anderson	\$0.19	farm or house
July 22, 1841	3 lbs.	\$0.33	?
July 22, 1841	2 papers of needles per Lady	\$0.25	seamstress
July 22, 1841	5 yds. Twilled linen 37	\$1.88	sewing
July 22, 1841	1/2 yd Book Muslin	\$0.31	sewing
July 24, 1841	3 gals. linseed oil per Spencer	\$3.00	farm or house
July 31, 1841	3 gals. linseed oil per Spencer	\$3.00	farm or house
July 31, 1841	2 slates per your son	\$0.19	writing
August 4, 1841	1 pint sp. Turpentine per Spencer	\$0.19	farm or house
August 7, 1841	1 cedar pencil per Sam'l	\$0.06	writing
August 13, 1841	1/2 yd book muslin per wife	\$0.31	sewing
August 14, 1841	2 1/2 bushel Dry'd peaches @ 1.50	\$3.75	food
August 14, 1841	1 lb. Ginger & 1/2 Powder	\$0.44	food
August 23, 1841	1/2 yd. book muslin per wife	\$0.31	sewing
August 23, 1841	1 cedar pencil per daughter	\$0.06	writing
August 28, 1841	1 lb. Sal Eratus	\$0.25	food