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MAT 221: Fall 2010  
Book Review

Score \_\_\_\_\_/20

Title: *Houghton Mifflin Math* Grade Level: 5<sup>th</sup>

Author(s): Dr. Carole Greenes, Dr. Matt Larson, Dr. Miriam A. Leiva, et. al

Publisher: Houghton Mifflin Company

Publication Date: 2007

ISBN Number: 978-0-618-59095-7

- 1) Explain how the topic is treated in the elementary/middle school text in terms of what we are studying in class—**be specific**. (You may copy and paste examples from your scans into this document.)

The vocabulary words in this text are: common factor, greatest common factor (GCF), and greatest common divisor. The vocabulary words are defined in the first part of the chapter. This text has two methods for solving for the GCF: writing out the factors and prime factorization (factor trees). It clearly identifies the steps for using each of these methods and uses prime factorization several ways for better student understanding. It gives multiple examples for each method to solve. It also shows the ring method, but doesn't go into detail about it. The problems in the section include number problems and word problems. The chapter also references the Sieve of Eratosthenes. In a later section of the chapter, Venn diagrams are used to show the GCF.

### Greatest Common Factor

**Key Ideas:**  
 Vocabulary, Factor Trees, Greatest Common Factor, Common Factor

**Standard Numbers:**  
 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

**Problem Solving Strategy**  
 Use Logical Reasoning

Write the prime factorization of each number using exponents. Then find the GCF of the numbers.

18	19	24	25	27	30
32	33	36	40	42	45
48	54	60	63	72	75
81	90	96	100	105	112
120	125	135	144	150	160
168	180	192	200	210	225
240	252	270	280	288	300

**Algebra & Geometry** Find three possible values for  $x$ .

Number	GCF
25	5
30	6
35	7
40	8
45	9
50	10

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### Key Ideas:

Vocabulary, Factor Trees, Greatest Common Factor, Common Factor

**Standard Numbers:**  
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### Key Ideas:

Greatest Common Divisor, Greatest Common Factor, Factor Trees, Ring Method, Prime Factorization

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### Key Ideas:

Greatest Common Divisor, Greatest Common Factor, Factor Trees, Ring Method, Prime Factorization

**Standard Numbers:**  
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### Key Ideas:

Greatest Common Factor, Real Life Examples, Prime Factorization

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### Key Ideas:

Greatest Common Factor, Real Life Examples, Prime Factorization

**Standard Numbers:**  
 1, 2, 4, 5, 7, 8, 9, 11

### Key Ideas:

Prime Factorization, Sieve of Eratosthenes

**Standard Numbers:**  
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### Key Ideas:

Prime Factorization, Sieve of Eratosthenes

**Standard Numbers:**  
 1, 4, 6, 11

### Key Ideas:

Greatest Common Factor, Venn Diagrams, Factor Trees

**Standard Numbers:**  
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### Key Ideas:

Greatest Common Factor, Venn Diagrams, Factor Trees

**Standard Numbers:**  
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### Key Ideas:

Greatest Common Factor, Real Life Examples, Prime Factorization

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### Key Ideas:

Greatest Common Factor, Real Life Examples, Prime Factorization

**Standard Numbers:**  
 1, 2, 3, 4, 5, 6, 7, 10, 11

2) Look over the *NCTM Table on Standards and Expectations* inside the front cover of our textbook and give a **specific** example of how the elementary/middle school text addresses the topic in terms of the Content Standards. If it does not, explain how it fails.

1. "Describe classes of numbers according to characteristics such as the nature of their factors."
2. "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 tool."
3. "Develop fluency in adding, subtracting, multiplying, and dividing whole numbers."
4. "Develop and use strategies to estimate the results of whole number computations and to judge the reasonableness of such results."
5. "Develop and use strategies to estimate computations involving fractions and decimals in situations relevant to students."
6. "Recognize and use connections among mathematical ideas."
7. "Understand how mathematical ideas interconnect and build on one another to produce a coherent whole."
8. "Build new mathematical knowledge through problem solving."
9. "Solve problems that arise in mathematics and in other contexts."
10. "Apply and adapt a variety of appropriate strategies to solve problems."
11. "Use factors, multiples, prime factorization, and relatively prime numbers to solve problems."

Title: *Math Connects* Grade Level: 6<sup>th</sup>

Author(s): Roger Day, Patricia Frey, Arthur C. Howard, et. al

Publisher: The McGraw-Hill Companies

Publication Date: 2009

ISBN Number: 978-0-07-874042-8

- 1) Explain how the topic is treated in the elementary/middle school text in terms of what we are studying in class—**be specific**. (You may copy and paste examples from your scans into this document.)

The sixth grade text assumes that students already know how to use factor trees. The text shows two methods to solve for greatest common factor: writing the prime factorization (factor trees) and dividing by prime numbers. It gives an example for each of these methods, while writing out the steps to take. The text gives a couple real world examples, as well. The text does review the vocabulary of greatest common factor, common factor, and Venn diagrams. The text defines these terms at the beginning of the chapter. Although students may already be familiar with Venn diagrams, this is the first and only time they are used in the text. The problems in the book include number problems and word problems. Greatest common factor is used throughout the rest of the book as well. References to standards are numbered below in question 2.

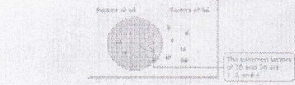
READING TO SOLVE PROBLEM

Make a Diagram

Making a diagram is a good strategy to use when you want to solve a problem or when you are asked to draw a diagram. A flow diagram shows the steps in a process. A Venn diagram shows the similarities and differences of two groups of items. Any diagram that helps you solve a problem is a good strategy to use.



You can use a Venn diagram to compare two sets. The Venn diagram below shows the factors of 24 in one circle and the factors of 36 in the other circle.



Example 4 Write a diagram that shows the factors for each pair of numbers.

1. 12, 24      2. 20, 30  
3. 25, 35

Key Ideas:

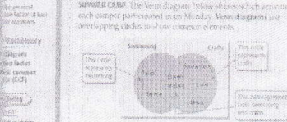
Venn Diagrams

Standard Numbers:

2, 6, 7, 10, 11

4-1 Greatest Common Factor

GET READY for the Lesson



1. Write the prime factors of each number.  
2. Write the common factors.  
3. Write the greatest common factor.

Example 1 Identify Common Factors  
Identify the common factors of 18 and 24.

Factors of 18	Factors of 24
1, 2, 3, 6, 9, 18	1, 2, 3, 4, 6, 8, 12, 24
Common factors: 1, 2, 3, 6	

Example 2 Find the greatest common factor of each set of numbers.  
a. 20, 30      b. 18, 27, 36

Key Ideas:

Greatest Common Factor, Venn Diagrams, Vocabulary

Standard Numbers:

1, 2, 5, 6, 7, 10, 11

Key Ideas:

Venn Diagrams, Greatest Common Factor, Factor Trees, Common Factors, Dividing by Prime Numbers

Standard Numbers:

1, 2, 3, 4, 6, 7, 8, 9, 10, 11

WORK EXAMPLES

Example 1 A bakery arranges three different types of muffins in a display case. There should be an equal number of muffins in each row in the case. What is the greatest possible number of muffins in each row?

Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24  
Factors of 32: 1, 2, 4, 8, 16, 32  
Factors of 48: 1, 2, 3, 4, 6, 8, 12, 16, 24, 48

The GCF of 24, 32, and 48 is 8. So, the greatest number of muffins that could be placed in each row is 8.

Example 2 How many rows of muffins are there if there are 8 in each row? There are a total of  $48 \div 8 = 6$  rows of muffins. So, the number of rows of muffins is 6.

Example 3 HORRIBLE Terrence makes and sells beaded necklaces. She earned \$48 on Friday, \$32 on Saturday, and \$24 on Sunday selling necklaces at a local craft sale.  
1. If Terrence sold each necklace for the same amount, what is the most she could have charged per necklace?  
2. How many necklaces did she sell?

YOUR UNDERSTANDING

- Identify the common factors of each set of numbers.  
a. 12, 24      b. 18, 27, 36
- Find the GCF of each set of numbers.  
a. 24, 40      b. 12, 18
- For Exercises 7 and 8, use the following information.  
Oliver has 14 chocolate cookies and 21 fruit cookies.  
1. If Oliver gives each friend an equal number of each type of cookie, what is the greatest number of friends with whom he can share his cookies?  
2. How many cookies did each friend receive?

Key Ideas:

Greatest Common Factors, Common Factors, Real Life Example, Word Problems

Standard Numbers:

1, 2, 3, 6, 7, 8, 9, 10, 11

Key Ideas:

Greatest Common Factor, Real Life Examples, Number Problems, Word Problems

Standard Numbers:

1, 2, 3, 4, 6, 7, 8, 9, 10, 11

Key Ideas:

Greatest Common Factor, Real Life Examples, Common Factors, Number Problems, Word Problems

Standard Numbers:

1, 2, 3, 4, 6, 7, 8, 9, 10, 11

READING TO SOLVE PROBLEM

Example 1 Identify the common factors of each set of numbers.  
a. 12, 24      b. 18, 27, 36  
c. 18, 27, 36      d. 12, 24, 36

Example 2 Find the GCF of each set of numbers.  
a. 12, 24      b. 18, 27, 36  
c. 18, 27, 36      d. 12, 24, 36

Example 3 For Exercises 3 and 4, use the following information.  
A group of 12 students is going to a museum. Each student needs to pay \$12 for the admission and \$3 for the lunch. The group has \$150.

3. How many students can go to the museum?  
4. How many students can go to the museum if the group has \$150?

Example 4 For Exercises 5 and 6, use the following information.  
A group of 12 students is going to a museum. Each student needs to pay \$12 for the admission and \$3 for the lunch. The group has \$150.

5. How many students can go to the museum?  
6. How many students can go to the museum if the group has \$150?

Example 5 The school is planning a field trip. The school has \$150. Each student needs to pay \$12 for the admission and \$3 for the lunch. The school has \$150.

Example 6 The school is planning a field trip. The school has \$150. Each student needs to pay \$12 for the admission and \$3 for the lunch. The school has \$150.

Example 7 For Exercises 7 and 8, use the following information.  
Oliver has 14 chocolate cookies and 21 fruit cookies.  
1. If Oliver gives each friend an equal number of each type of cookie, what is the greatest number of friends with whom he can share his cookies?  
2. How many cookies did each friend receive?

Example 8 For Exercises 9 and 10, use the following information.  
Oliver has 14 chocolate cookies and 21 fruit cookies.  
1. If Oliver gives each friend an equal number of each type of cookie, what is the greatest number of friends with whom he can share his cookies?  
2. How many cookies did each friend receive?

Example 9 For Exercises 11 and 12, use the following information.  
Oliver has 14 chocolate cookies and 21 fruit cookies.  
1. If Oliver gives each friend an equal number of each type of cookie, what is the greatest number of friends with whom he can share his cookies?  
2. How many cookies did each friend receive?

Example 10 For Exercises 13 and 14, use the following information.  
Oliver has 14 chocolate cookies and 21 fruit cookies.  
1. If Oliver gives each friend an equal number of each type of cookie, what is the greatest number of friends with whom he can share his cookies?  
2. How many cookies did each friend receive?

Example 11 For Exercises 15 and 16, use the following information.  
Oliver has 14 chocolate cookies and 21 fruit cookies.  
1. If Oliver gives each friend an equal number of each type of cookie, what is the greatest number of friends with whom he can share his cookies?  
2. How many cookies did each friend receive?

Example 12 For Exercises 17 and 18, use the following information.  
Oliver has 14 chocolate cookies and 21 fruit cookies.  
1. If Oliver gives each friend an equal number of each type of cookie, what is the greatest number of friends with whom he can share his cookies?  
2. How many cookies did each friend receive?

Example 13 For Exercises 19 and 20, use the following information.  
Oliver has 14 chocolate cookies and 21 fruit cookies.  
1. If Oliver gives each friend an equal number of each type of cookie, what is the greatest number of friends with whom he can share his cookies?  
2. How many cookies did each friend receive?

Example 14 For Exercises 21 and 22, use the following information.  
Oliver has 14 chocolate cookies and 21 fruit cookies.  
1. If Oliver gives each friend an equal number of each type of cookie, what is the greatest number of friends with whom he can share his cookies?  
2. How many cookies did each friend receive?

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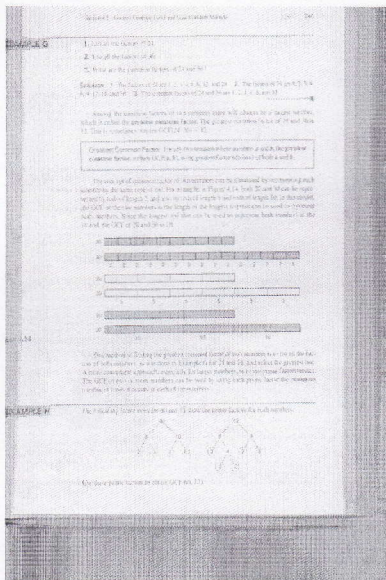


**Key Ideas:**

Greatest Common Factor

**Standard Numbers:**

1

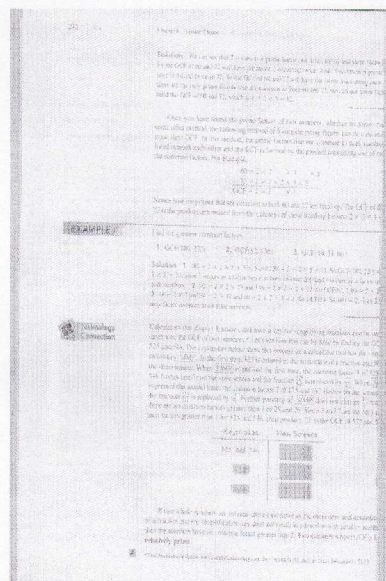


**Key Ideas:**

Greatest Common Factor, Factor Tree, Common Factors

**Standard Numbers:**

1, 3, 4, 6, 7, 8, 9, 10, 11



**Key Ideas:**

Greatest Common Factor, Fractions and Decimals, Prime Factorization

**Standard Numbers:**

1, 2, 3, 4, 6, 7, 8, 9, 10, 11