

Suggested Internet Sources

Periodically, Internet Resources are updated on our web site at www.LibraryVideo.com

- mathforum.org/
This Drexel University site offers a multitude of math problems, lesson plans, math resources and a question/answer section for students and teachers.
- math.rice.edu/~lanius/fractions/index.html
Rice University presents a series of activities based on fraction concepts using graphics and concise explanations.
- illuminations.nctm.org/lessonplans/3-5/fractions/index.html
Review basic fraction concepts using pattern blocks during this 7-lesson unit sponsored by the National Council of Teachers of Mathematics.
- mtn.merit.edu/resources/math/fractions_decimals_and_percents.html
Michigan Teacher Network has compiled over 30 sites, supported by their state standards, designed to aid students in practicing fraction facts.

Suggested Print Sources

- Caron, Lucille and Philip M. St. Jacques. *Fractions and Decimals*. Enslow Publishers, Berkeley Heights, NJ; 2000.
- Gifford, Scott. *Piece=Part=Portion: Fractions=Decimals=Percents*. Tricycle Press, Berkeley, CA; 2003.
- Long, Lynette. *Fabulous Fractions: Games and Activities That Make Math Easy and Fun*. John Wiley & Sons, New York, NY; 2002.

TEACHER'S GUIDE

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TITLES IN THIS SERIES

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|---|--|--|
| • 3-D Shapes | • Equations | • Operations With Large Numbers |
| • Complements: Making 100 & 1000 | • Equivalent Fractions & Mixed Numbers | • Percentages |
| • Decimals | • Fractions | • Rounding Numbers |
| • Decimals: Adding, Subtracting & Comparing | • Integers | • Shapes |
| • Doubles & Halves | • Multiples & Factors | • Zeros: Multiplying & Dividing by 10, 100, 1000 |
| | • Number Patterns | |
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Fractions

Grades 4-6

Review and practice of math concepts is an essential component in maintaining prior knowledge and problem-solving skills. This series reinforces important skills taught in grades 4-6 through the use of animated characters and an engaging storyline.

In each episode, students will become Special Agents to assist Top Secret Agent Matt Mattics in solving two sets of math problems focusing on a core math concept. Paper and pencil need to be ready as your students record their answers to these math questions (between 7-16 total problems). Each question allows students a certain time limit for answers. Students will check their answers and score points that will qualify them as Cadet, Secret Agent or Master Spy.

Please note that this series was produced in Great Britain, where some terminology and phrases might be different than in the United States. For example, the word "naught" is sometimes used for zero as in 0.2 (naught point two) and "maths" is used for math.

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Secret Mission

Dr. Strangelove has taken over a top secret Space Station and plans to destroy all the numbers in the world. It is up to Matt Mattics and his Special Agents to solve two sets of review questions about fractions in order to save the world! In the first set of problems, students must use division to find fractional parts of a whole number. Fraction concepts are extended in the second set of problems as students are asked to convert improper fractions to whole and mixed numbers.

Background Knowledge & Strategies

In order to handle this secret mission, students must have a firm understanding of fractions and the conversion of fractions to whole and mixed numbers. Revisit the concept of fractions as equal parts of a whole and how division can be used to find fractional parts of a whole. Students must also be able to recognize an improper fraction and how to use division to convert it to a different form. Manipulatives such as fraction strips or pattern pieces should be made available for student use as they view this episode. Prepare your Special Agents by using the following sample problems. A question and answer key follow each sample.

Set A: What is $\frac{1}{7}$ of 28?

Strategies:

- Draw or count out 28 blocks. Divide that group into 7 equal sets. Find out how many blocks make up one set, or $\frac{1}{7}$ of 28.
- Use a division algorithm to solve: $28 \div 7$

Answer: 4

Question & Answer Key

for Set A (*Answers appear in bold*)

1. $\frac{1}{3}$ of £21 = **£7**
2. $\frac{1}{6}$ of 42 cm = **7 cm**
3. $\frac{1}{5}$ of 55 g = **11 g**
4. $\frac{1}{8}$ of 72 km = **9 km**
5. $\frac{1}{4}$ of 84 p = **21 p**
6. $\frac{2}{3}$ of £15 = **£10**
7. $\frac{3}{4}$ of 20 m = **15 m**

Set B: Change the improper fraction to a whole or mixed number. $\frac{17}{2} = ?$

Strategies:

- Use manipulatives such as counters.
- Think of any improper fraction whose denominator is 2 as being halved, or cut in half.
- Use a division algorithm to solve: $17 \div 2$.

Answer: $8\frac{1}{2}$

Question & Answer Key for Set B

(*Answers appear in bold*)

1. $\frac{16}{2} = \mathbf{8}$
2. $\frac{20}{2} = \mathbf{10}$
3. $\frac{15}{2} = \mathbf{7\frac{1}{2}}$
4. $\frac{19}{2} = \mathbf{9\frac{1}{2}}$
5. $\frac{21}{2} = \mathbf{10\frac{1}{2}}$
6. $\frac{30}{2} = \mathbf{15}$
7. $\frac{41}{2} = \mathbf{20\frac{1}{2}}$

Vocabulary

The following words are included for teacher reference and for use with students to refresh and extend the subject matter in the show.

denominator — The bottom number in a fraction that tells how many equal parts something has.

common denominators — Denominators that are the same.

division — An operation that tells how many equal groups there are in a set.

equivalent fraction — A fraction that names the same amount as another fraction.

fraction — A way to compare equal parts to a whole.

improper fraction — A fraction in which the numerator is equal to or more than the denominator.

mixed number — A number that has a whole number and a fractional part.

numerator — The top number of a fraction that tells how many equal parts are being discussed.

quotient — The number that is the result of dividing.

Follow-Up Discussion & Activities

- Have students explain how they solved these mental math problems.
- Discuss with students when fractions are used in everyday life. In what occupations might you use fractions? How are fractions useful to us?
- Use dot paper to review skills in naming and writing fractions. Brainstorm fraction names and list them on the board. Students can choose fractions to illustrate on dot paper by drawing shapes with a shaded part to represent the fraction.
- Students can play an equivalent fraction memory game to practice their fraction skills. On individual file cards, write improper and mixed fractions that are equal to each other. Place the cards face down. Students can take turns flipping over cards to try to make an equivalent fraction match.
- Have students search through old magazines or newspapers to locate and cut out pictures of containers, such as a glass of juice or pie plate, which is partially full. Students can estimate what fractional part of each container is shown and share with the class.
- Challenge your students to add or multiply using fractions. Examine a recipe and discuss the fractional quantities of its ingredients. By increasing the number of servings in the recipe, students can practice doubling or tripling its ingredients. Students can draw the amounts needed for a larger recipe and convert these quantities into whole numbers, mixed numbers or equivalent fractions. Discuss patterns found using this technique and show its relationship to addition or multiplication using fractions.