



### Further investigations:

Below are some activities you can share with your child. You will need a deck of cards without the face cards.

#### Factors, Multiples, and Divisibility

Turn over two cards and make a two-digit number. Is your number odd or even?

How do you know?

Find all the factors of your number.

Find the first five multiples of your number.

Find out if your number is divisible by 2, 3, 4, 5, 6, and 10.

Is your number prime or composite?

How do you know?

#### Fraction Action

Turn over two cards and make a proper fraction. Turn over 2 more cards and make another proper fraction. Use  $>$ ,  $<$ , or  $=$  to compare your fractions.

Variation: Add, subtract, or multiply the fractions.

### Terminology:

**Common denominator:** A common multiple of the denominators

**Composite:** A number with more than two factors

**Divisibility:** The characteristic of dividing evenly into another number

**Factor:** A number that is multiplied by another number to find a product

**Greatest common factor (GCF):** The biggest number that will divide two or more numbers exactly

**Least common multiple (LCM):** The lowest common multiple of the denominators.

**Improper fraction:** A fraction larger than one; the numerator is larger than the denominator

**Multiple:** The product of two whole numbers

**Prime:** A number that has exactly two factors, one and the number itself

**Proper fraction:** A fraction smaller than one; the numerator is smaller than the denominator

**Simplify the fraction:** To rewrite a fraction so that the numerator and the denominator are the smallest numbers possible

**Variable:** A letter or symbol that represents an unknown quantity

### Book'em:

**Fraction Fun** by David Adler

### Related Files:

[www.ceismc.gatech.edu/csi](http://www.ceismc.gatech.edu/csi)

## Fractions

### Students will:

- Classify counting numbers into subsets
- Find factors and multiples
- Analyze and use divisibility rules
- Find equivalent fractions and compare fractions using  $<$ ,  $>$ , or  $=$
- Add and subtract fractions and mixed numbers with unlike denominators
- Use common fractions (proper and improper) and decimal fractions interchangeably
- Model multiplication and division of fractions (denominators not to exceed 12)
- Estimate products and quotients
- Use variables to represent unknown quantities
- Use formulas to represent the relationship between quantities

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### Classroom Cases:

1. Cups are sold in packs of 15 and sell for \$1.50. Drinks are sold in cases of 24 and sell for \$6.75. Write algebraic expressions for the total cost of the cups and the total cost of the drinks. How much will it cost to provide drinks to 36 students?

#### Case Closed - Evidence:

The total price of the cups is  $\$1.50c$  or  $1.50c$  where  $c$  is the number of packs of cups.



The total price of the drinks is  $\$6.75d$  or  $6.75d$  where  $d$  is the number of cases of drinks. You'll need three packs of cups and two cases of drinks to provide drinks for 36 students.

Substituting 3 for the  $c$  and 2 for the  $d$ , you can find the total price for the drinks and cups.  
 $(1.50 \times 3) + (6.75 \times 2) = \$18.00$

2. Joey and Sarah are sharing a pizza that has been cut into 10 slices. Joey eats six of the pizza slices and Sarah eats four slices. What part of the pizza did each of them eat? Write your final answer in simplest form.

#### Case Closed - Evidence:

Joey ate  $\frac{6}{10}$  of the pizza which is the same as  $\frac{3}{5}$ .

Sarah ate  $\frac{4}{10}$  of the pizza which is the same as  $\frac{2}{5}$ .

3. For each pattern below, determine the rule. Write each rule as an algebraic expression. Find the next three numbers in the pattern.

a. 1, 1.5, 2, 2.5, 3, 3.5, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

b.  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ , 1,  $\frac{5}{4}$ , \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

#### Case Closed - Evidence:

a. 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5

Rule:  $n + 0.5$  where  $n$  is the previous term

b.  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ , 1,  $\frac{5}{4}$ ,  $1\frac{1}{2}$ ,  $1\frac{3}{4}$ , 2

Rule:  $b + \frac{1}{4}$  where  $b$  is the previous term

### Clues:

Writing a fraction in lowest terms or simplifying a fraction has also been called reducing a fraction. However, the term "reduce" means to make smaller but the new fraction is not smaller in value than the original fraction. Now, students encounter the terms "simplify" or "lowest terms" in order to avoid confusion about the size of the fraction.