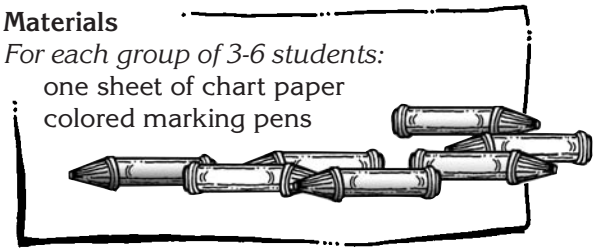
Seeing FRACTIONS Among Ourselves

Topic
Fractions
Group/Set Model

Learning Goals
- To recognize and name fractions as representative of a counted part of a group or set of objects
- To understand the meaning of numerator and denominator in the symbolic form of a fraction

Guiding Document
*NCTM Standard 2000**
- *Develop understanding of fractions as parts of unit wholes, as parts of a collection, as locations on number lines, and as divisions of whole numbers*

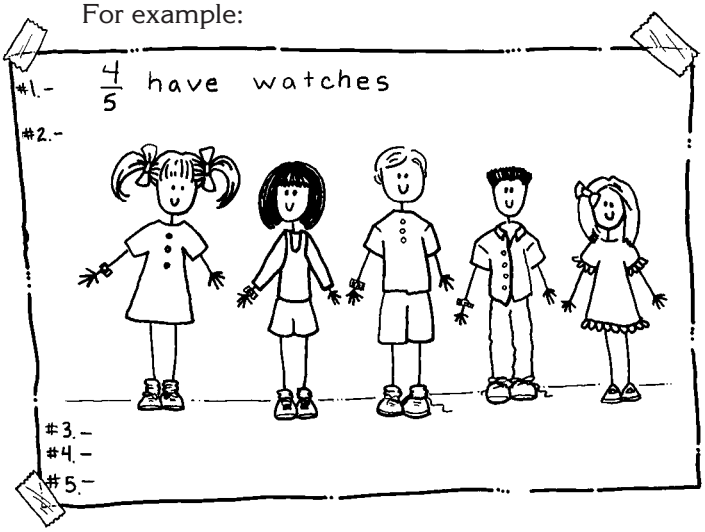
Materials
For each group of 3-6 students:
one sheet of chart paper
colored marking pens



Background Information

A group of people or a set of objects may represent a whole and any part of the group or set may be expressed as a fraction where the denominator represents the total number in the group or set and the numerator represents the number or part of the set that shares a common attribute or characteristic being described. The size of the group is a counted number. In other fraction models, size is determined by a measured number.

Procedure
1. Distribute colored marking pens and chart paper to each group of 3-6 students.
2. Explain that each group will be illustrating themselves and calling attention to special characteristics that they may have in common with each other.
3. In small groups, have students observe and discuss features and attributes of each member paying attention to those that are in common among the group. Attributes should be observable or verifiable through discussion. For instance, wearing glasses or a watch is observable. Having a cat or dog for a pet is verifiable through conversation.
4. On chart paper, direct students to draw simple stick figures to represent each person in their group.
5. Have them write five true statements about the group using fractions to express what they have observed.
6. Tell them to illustrate each statement by exaggerating the attribute or characteristic featured. For example:



7. Advise students to be prepared to share with the class their discoveries and observations and to participate in class discussion.

Discussion
1. How are all the fractions alike? [same denominator] Why is this so? [The denominator tells how many are counted in the whole group. Denominator also comes from Latin “de nom” and means to give a name.]
2. How are some of the fractions different? [different numerators] Why is this the case? [Numerator comes from the Latin that means number and the numerator tells how many share one attribute.]
3. When the denominators of several fractions are the same, what do you know about the groups or sets of objects represented? [They are the same size or number.]
4. When the numerators of several fractions are the same, but the denominators are different, such as $\frac{2}{3}$ and $\frac{2}{5}$, what do you know about the groups or sets represented? [The groups are different sizes but the number of objects sharing a common attribute are the same in each set.]

5. How does the shadow fraction or complement of each part of a group relate to the whole? [$\frac{2}{5}$ are wearing watches; $\frac{3}{5}$ are not.]

Evaluation

Display picture of a group of six. See *Group Pictures You Can Count On*.

Group evaluation

Picture may be enlarged for group evaluation. Each student writes **one** fraction sentence describing an observed characteristic in the picture. Post number sentences on the board.

Independent evaluation

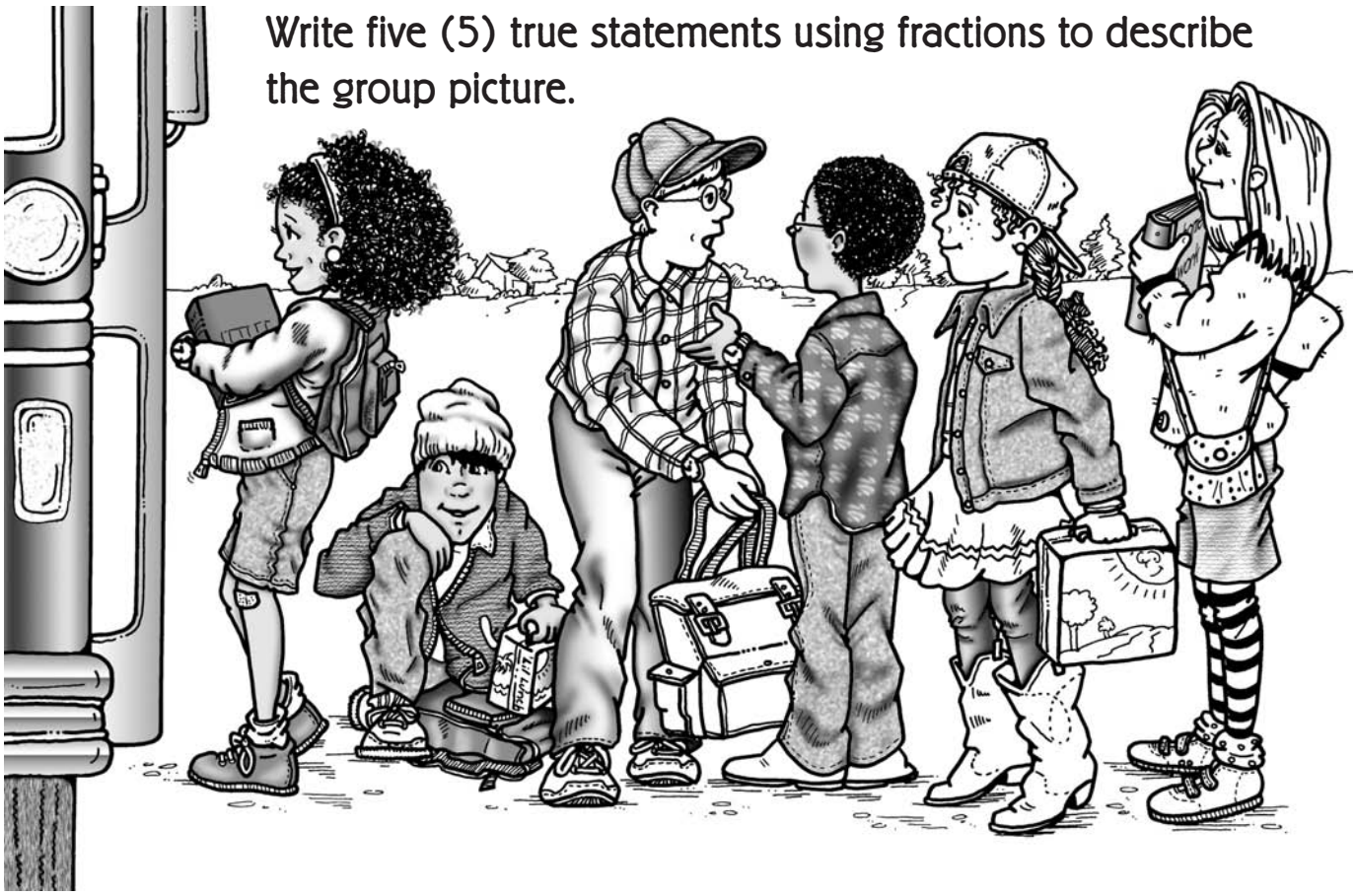
If used as an independent evaluation or as an extended experience at home, duplicate the picture as is and have each student write five fraction sentences about the picture.

Evidence of Learning

1. Look for accurate representation of numerator and denominator connected to the picture.
2. Listen for appropriate explanation of reasoning in response to class discussion.
3. Ask for an example of a fraction in the real world that shows understanding of the meaning of numerator and denominator.

Seeing FRACTIONS Among Ourselves :

Group Pictures You Can Count On



Write five (5) true statements using fractions to describe the group picture.

Think of another group of people or objects and write a fraction sentence that shows you understand the meaning of the numerator and denominator.

