Equivalent Fractions

Subject: Mathematics
Strand: Number

Creator: Alison Kimbley
Grade: 5

Content (topic)

Exploring Equivalent Fractions

Outcomes	Indicators
N 5.5: Demonstrate understanding of whole numbers to 1000 (concretely, pictorially, physically, orally, in writing, and symbolically) including: • Representing (including place value) • Describing • Estimating with referents • Comparing to numbers • Ordering three or more numbers	**N 5.5b:** Model and explain how equivalent fractions represent the same quantity **N5.5d:** Generalize and verify a symbolic strategy for developing a set of equivalent fractions **N 5.5f:** Explain how to use equivalent fractions to compare two given fractions with unlike denominators

Mathematical Processes:
- Communication
- Reasoning
- Visualization

Lesson Preparation
Equipment/materials:
- Two printed copies of Appendix 1 for each student.

Advanced Preparation:
- Print off enough copies of Appendix 1 for students

Presentation
Development
- Remind the students of the history of the Red River cart and review the information from the PowerPoint. Ask students specific questions that relate to the history of the Red River cart. Some questions may include:
  - *How did the Red River cart cross waterways?* (Answer: The high wheels provide stability and could be removed and lashed to the bottom to form a raft and float across the waterway)
  - *Where were the two materials the Red River cart was made of? (*Answer: wood and leather)
- Show the students pictures of the Red River cart and have the students brainstorm a number of uses the carts would have had at the time of the buffalo hunt.
- Hand out one copy of appendix 1 to each student. On the first wheel have the students draw two lines to represent spokes and divide the wheel into two equal sectors. Have each student shade one of the

sectors.

- On the second wheel, have the students draw three lines to represent spokes and divide the wheel into three equal sectors. Have the students shade one sector. Hence 1/3 of this wheel is shaded and 2/3 of the wheel is not shaded. Each student now has three reference fractions ½, 1/3 and 2/3.
- On each of the three remaining wheels, have students draw six lines to represent spokes and divide the wheel into six equal sectors. On each of these wheels, shade a different number of sectors and hence form three fractions with different numerators and all with denominator 6. Ask the students if any of the regions just shaded are the same proportion of the wheel as the three reference fractions. These are *equivalent fractions*. From the responses generated from the entire class, which fractions with denominator 6 are equivalent to a fraction with denominator 2 or 3 and are not equivalent to a fraction with denominator 2 or 3?
- On a second copy of appendix 1 have each student draw 4 spokes on one of the wheels to divide the wheel into four equal sectors. Shade one sector to form the reference fraction ¼ and ¾. They now have five reference fractions ½, 1/3, 2/3, ¼ and ¾. Ask the students why they don't need 2/4 as a reference fraction.
- On each of the four remaining wheels have the students draw eight lines to represent spokes and divide the wheel into eight equal sectors. Repeat the process done for the denominator 6, but with a denominator of 8 this time.
- Ask about 0/8 and 8/8; so consider having two more reference wheels for 0/8 and 8/8. Ask the students for a strategy to determine which fractions are equivalent without reference to the diagrams.
- (Extension) In groups of four, play a fraction game by having groups create ten different fractions with denominators 2, 3, 4, 6 or 8. As the teacher, call out a fraction and any group that has your fraction or a fraction equivalent to your fraction will stand up. For example, if you call out 6/8, then any group that has 6/8 or ¾ should stand up. If the first group to stand up has your fraction or a fraction equivalent to your fraction, then they get two points. If they don't have a fraction or a fraction equivalent to your fraction, then they lose 1 point. The first group to 10 wins.
- (Extension) Have the students write the fractions 0/9, 1/9, 2/9… 9/9 and use their strategy to determine which are equivalent to the reference fractions. Have the students write the fractions 0/12, 1/12, 2/12… 12/12 and use their strategy to determine which are equivalent to the reference fractions.
- (Extension) Repeat the game allowing fractions with denominators 9 and 12 to be included.

Appendix 1