Fraction Circles

What are Fraction Circles?

Fraction circles are a set of nine circles of various colours. Each circle is broken into equal fractional parts and uses the same-sized whole. The circles included are one whole as well as circles divided into halves, thirds, quarters, fifths, sixths, eighths, tenths, and twelfths. Depending on the manufacturer, fraction circles can be transparent for use on an overhead projector for whole class activities or opaque for use at students' desks or with a document camera. Fraction rings are clear plastic rings that are open in the middle and can hold the fraction circles in the center.

How do Fraction Circles help students?

Fraction circles can be used to help students see relationships between fractional parts of the same whole. Students can compare and order fractions, see equivalent fractions, explore common denominators, as well as explore basic operations with fractions. Fraction rings can be used in conjunction with fraction circles to make connections to time, decimals, and percent. They can also be used to make circle graphs.

How many are recommended?

Students usually use fraction circles in pairs or small groups. Each pair of students will need a set of fraction circles. When students are first exposed to fraction circles they should be given some time for exploration of the circles and the relationships among their parts.

Sample Activities

1. Have students orally count the 'purple' pieces to create a whole. Have someone else count the 'blue' pieces after that. This allows students to practise saying the names of the parts that make up the whole.
2. Pairs discuss what it means to compare a circle divided into more parts with one divided into a lesser number of parts.
3. Which is larger $\frac{4}{8}$ or $\frac{3}{4}$? How do you know?
4. Compare and order $\frac{1}{2}, \frac{2}{3}, \frac{1}{8}, \frac{3}{5}$.
5. How many different ways can you make a half? a quarter? a third? one and one sixth?
6. Is there another fractional part(s) that can cover $\frac{9}{12}$?
7. Add $\frac{1}{2}+\frac{1}{3}$. Are there other equal fractional parts that can fit on top of what was created?
8. If you add $\frac{2}{4}$ and $\frac{1}{5}$, how much of the circle is not completed?
9. Show 25%, 33%, 50%, 75%, 70% with the fraction circles.
10. Which fractional parts can be combined to equal $\frac{1}{2}$?
11. Solve this problem, using fraction circles: Sumeet's team won $\frac{1}{3}$ of their soccer games this season. Wayne's team won 25% of their soccer games. Which team won more games?
12. How many tenths are in $\frac{3}{5}$? Or what is $\frac{3}{5} \div \frac{1}{10}$?
13. Show $3 \times \frac{1}{8}$ by joining fractional pieces. Try $3 \times \frac{2}{8}$. What do you notice?

14. Show $\frac{1}{2} \times \frac{3}{4}$ (Prompt students to first find an equivalent of $\frac{3}{4}$ so that it can be divided in half.). Ask what students notice about the question and the answer.

15. Solve this problem, using fraction circles: A survey was taken in the class as to the top five sports the class enjoys. Cricket accounted for 25% of class' preference, soccer accounted for $\frac{3}{8}$. The remaining sports of basketball, swimming and snowboarding were all equal in amount. What fraction or percentages of the class enjoys the last three sports? If you arrange the sports into a circle graph, what are the degree measures of each fractional part in the measure of the central angle?

16. Solve this problem (from eWorkshop): At a camp, the campers stayed in 4 cabins. In the Grizzly Bear cabin, there were 4 campers, in the Snowy Owl cabin 5 campers, in the Caribou cabin 8 campers, and in the Salmon cabin 6 campers. One day, the campers were treated to pizza. All the pizzas were the same size and could be cut into any number of equal pieces. The pizzas were given out in the following way:
    - Grizzly Bear cabin – 3 pizzas
    - Snowy Owl cabin – 4 pizzas
    - Caribou cabin – 7 pizzas
    - Salmon cabin – 5 pizzas

    Discuss how the number of pizzas given to each cabin was always one less than the number of campers. Did some campers get more pizza than others, or did all the campers receive the same amount of pizza?

Recommended Websites

http://nlvm.usu.edu/en/nav/frames_asid_105_g_4_t_1.html?from=topic_t_1.html equivalent fractions

http://www.youtube.com/watch?v=vWAWrf0jPAQ using fraction circles

http://www.youtube.com/watch?v=KkEE3hvG-V8&feature=related using fraction circles

http://www.visualfractions.com/ – practising with fraction circles

http://www.eworkshop.on.ca/edu/pdf/Mod22_lesson_summary.pdf camper problem

http://www.explorelearning.com/index.cfm?method=cResource.dspView&ResourceID=252 improper fractions and mixed numbers

http://www.edu.gov.on.ca/eng/studentsuccess/lms/files/tips4rm/gr7Unit7.pdf fractions and decimals

http://www.edu.gov.on.ca/eng/studentsuccess/lms/files/tips4rm/gr8Unit5.pdf fractions and percents