iMath Readers

Ivy Sue Needs a House:
Building with Equivalent Fractions
by John Perritano

Math Objective
Children use fractions to help build a doghouse for Ivy Sue. They learn how to write fractions and how to describe the numerator and denominator. They use fraction bars to find out if fractions or equivalent. Children understand that they can compare fraction lines. And they learn how to use fraction circles to model fractions.

iMath Discover Activity
In this activity, children find household objects to measure within the nearest 1/4 inch. Then, they record the measurements in a chart. They use fraction bars, lines, or circles to compare and rank measurements.

Materials
- a collection of objects
- a ruler
- paper
- pencil

➤ **Objectives**

Children will:
• measure objects to the nearest 1/4 inch.
• use fraction bars, fraction lines, and fraction circles.
• compare measurements.
• record measurements in a chart by rank.

Lesson Plan

Before Reading

Investigation	**Math Concepts**
pp. 4–5: Ask children to look at the picture on p. 4. Invite a volunteer to read the text on p. 5. Ask: *Who is Ivy Sue? Why is measuring the doghouse carefully so important?*	Connecting to what they know helps children engage in the topic.
Ask: *Do you know any dogs? What are their names? Are they big or small? About how many inches tall are they? Do they live*	Accessing prior knowledge gets children to think about and engage with the topic.

inside or outside? Record children's answers on the board.

In this book, children meet a huge dog named Ivy Sue who needs a doghouse. Children use measuring skills and different strategies to understand fractions and equivalent fractions.

During Reading

Investigation	**Math Concepts**
pp. 6–9: Have children read these pages silently. Then, reread p. 6 aloud. Write the fraction 1/4 on the board. Ask: *Can anyone tell me which is the numerator? What can you tell from the numerator? Where is the denominator? What does it tell us?* Label the parts of the fraction, 1/4. Then, distribute various sizes of screws that are labeled with their width in fractions. Have volunteers write the size of their screws on the board. Have them identify and label the numerator and the denominator of their fractions. Reread the bottom of p. 6 and p. 7. Ask: *Can you tell me what an equivalent fraction is? A clue is in the word. The word equivalent is made up of the base word, equal.* Let children give their definitions. Then, have them answer the question at the bottom of the page by studying the fraction bar charts. Reread p. 8 aloud. Ask: *Do you think using a fraction line is a good way to find out if fractions are equivalent? Why or why not?* Read p. 9 aloud. Distribute paper plates and rulers. Have children draw and label two fraction circles like the ones on the bottom of p. 8 and color in the appropriate parts. Answer the question on that page.	Children understand the makeup of a fraction (numerator and denominator) and can explain equivalence of fractions in special cases, and they can compare fractions by reasoning about their size. They understand a fraction as a number on the number line; represent fractions on a number line diagram. They also understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts as in a circle. Children compare fractions and recognize that comparisons are valid only when the two fractions refer to the same whole.
pp. 11–13: First, have children read these pages silently. Ask: *How are Ivy Sue and Sophie different? How many cups of food does Ivy eat a day? What might make Ivy Sue sick?* Reread p. 13 aloud. Invite a volunteer to list on the board the materials that the storyteller needs. Then, have all the children help you put the board fractions in order from the least wide to the most wide. Have children refer to the fraction bars on p. 7.	Children explain equivalence of fractions, and compare fractions by reasoning about their size. Compare two fractions with the same numerator or the same denominator by reasoning about their size.

During Reading (continued)

pp. 14–15: First, have children read these pages silently. Reread p. 14 aloud. Read p. 15 aloud. Distribute screws, a phillips-head screwdriver, and a block of wood to each group. (In the group of screws, include 2/3, 6/8, and 4/6 inch screws in the mix.) Have the groups make a line plot like the one on p. 15 to show the number and size of screws they have. Then have the groups make fraction lines to answer the question on the bottom of p. 15. Refer back to p. 8. Let children experiment with using the screwdriver and driving screws into the block of wood.	Children understand a fraction as a number on a number line; represent fractions on a number line diagram. Children compare fractions and reason about their size and recognize simple equivalent fractions. Children acquire hands-on experience with engineering tools and grasp the need for different sized tools.
pp. 16–19: Read pp. 16–19 silently and then reread p. 16 aloud. Ask: *What other common items or tools use screw-like technology?* Record children's answers. (screw-on lids, corkscrew, post-hole digger, light bulb) Read p. 17 aloud. Invite volunteers to draw fraction circles on the board that represent the fractions at the bottom of that page. Ask: *Which two of the fractions are equivalent to 4/5?* Read pp. 18–19 aloud. Let children choose a strategy to solve the problem at the bottom of that page.	Children understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts. They explain equivalence of fractions, and compare fractions by reasoning about their size. Children use fraction bars, fraction lines, and circles to answer problems.
pp. 20–23: Let children read these pp. 20–21 silently. Then reread p. 21 aloud. Have the children answer the question on this page. Have them share the strategy they used to arrive at the answer. Read pp. 19–20 silently and then read p. 22 aloud. Have children refer to the fraction bars on p. 7 to answer the question. Read p. 23 aloud. Have volunteers draw fraction circles on the board to find the answer. Ask: *How else could we find the answer to this problem?*	Children can explain equivalence of fractions, and compare fractions by reasoning about their size. Children reason about strategies: fraction bars, fraction lines, and circles to answer problems.

During Reading (continued)

Investigation	**Math Concepts**
pp. 24–25: Read p. 24 silently. Then, reread p.	Children work together to pick the

24 aloud. Let children work in pairs to find the answer to the problem on p. 24. Remind the children of the different strategies they might use on pp. 6–9. Have the pairs share their strategies and answers. Read p. 25 aloud. Pass around a piece of pipe with a screw edge on it. Ask: *How does this pipe use screw-like technology?*	best strategy and present their findings. Children connect to real-world uses of technology.
pp. 26–28: Read pp. 26–28 together. Work with children to help them think about how they will approach the problem on p. 27. Talk about the different strategies that children might use. Have volunteers write fraction lines on the board to represent the problem. Then, find the answer together.	Children choose the best division strategy to solve a particular problem. They understand a fraction as a number on the number line; they represent fractions on a number line diagram.
pp. 29: Read p. 29 together. Provide drawing materials to help children plan their birdhouse. Encourage them to make their drawings to scale and label parts and measurements.	Children draw birdhouse plans and label them as a first step in building.

After Reading

Ask children to restate the key ideas in the book.

Investigation	**Understanding Math**
Children have a pizza party and cut pizza circles into different numbers of pieces. They write and compare fractions.	Children understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$. Children fluently write fractions.
Create four stations in the classroom. At each station have items of a certain length that can be measured as a fraction. Let children travel to each station and measure and record the four fractions. Then, have them write fraction lines to order the fractions from least to greatest. Children make a chart.	Children measure to find fractions. They understand a fraction as a number on the number line; represent fractions on a number line diagram. They also record information in an ordered chart. Children explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.