3 Develop the Concept: Visual

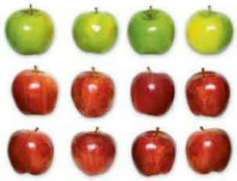
ELL STRATEGY Visual Learning

Visual Learning

Equivalent Fractions

How do you find equivalent fractions?

Out of 12 apples, 8 are red. So, $\frac{8}{12}$ of the apples are red. Hannah says that $\frac{4}{6}$ of the apples are red, and Sam says that $\frac{2}{3}$ are red. Who is correct?



Why is 12 the denominator? [There are 12 apples total and the denominator is always the total number of things.] *What does the phrase "out of" mean?* [It indicates the number of equal parts in the whole.]

You can multiply or divide the numerator and denominator by the same nonzero number to get equivalent fractions.

1 Visual Learning

Set the Purpose Call students' attention to the **Visual Learning Bridge** at the top of the page. *In this lesson, you will find equivalent fractions by multiplying or dividing by a fraction that is equal to 1.*

2 Guided Practice

Formative Assessment

Remind students to divide or multiply the numerator and denominator by the same number.

Exercise 5

Error Intervention

If students have difficulty determining when to multiply or divide, **then** ask: *What do you need to do to find a numerator and denominator that are less than 9 and 18: multiply or divide?* [Divide] *What number can you use to divide both the numerator and denominator of $\frac{9}{18}$?* [3] *What number can you divide by to make the equivalent fraction $\frac{3}{6}$ even smaller?* [3] *What do you need to do to make the numerator and denominator greater than 9 and 18, multiply or divide?* [Multiply] *What number could you use to find an equivalent fraction that has a greater numerator and denominator than $\frac{9}{18}$ has?* [Sample answer: 2 or 3] *What is a fraction that is equivalent to $\frac{9}{18}$ with a greater numerator and denominator?* [Sample answer: $\frac{18}{36}$ or $\frac{27}{54}$]

Reteaching Find two fractions equivalent to $\frac{1}{4}$. [Sample answer: $\frac{2}{8}$, $\frac{3}{12}$] For another example and more practice, assign **Reteaching** Set D on p. 251.

3 Independent Practice

Remind students to use basic multiplication facts to find equivalent fractions. Use Exercise 15 as an example. *What can you divide into 40 to get 8 as a quotient?* [5] *Is 30 also divisible by 5?* [Yes] *What do you get if you divide both the numerator and denominator by 5?* [$\frac{6}{8}$]

Lesson 9-4

Understand It! A part of a whole or a part of a set can be named by equivalent fractions.

Equivalent Fractions

How do you find equivalent fractions?

Out of 12 apples, 8 are red. So, $\frac{8}{12}$ of the apples are red. Hannah says that $\frac{4}{6}$ of the apples are red, and Sam says that $\frac{2}{3}$ are red. Who is correct?

Guided Practice*

Do you know HOW?

In **1** through **6**, find two equivalent fractions for each fraction. Sample answers are given.

1. $\frac{1}{3}$ $\frac{2}{6}$, $\frac{3}{9}$
2. $\frac{5}{6}$ $\frac{10}{12}$, $\frac{15}{18}$
3. $\frac{2}{5}$ $\frac{4}{10}$, $\frac{6}{15}$
4. $\frac{3}{8}$ $\frac{6}{16}$, $\frac{9}{24}$
5. $\frac{9}{18}$ $\frac{3}{6}$, $\frac{1}{2}$
6. $\frac{8}{10}$ $\frac{4}{5}$, $\frac{16}{20}$

Do you UNDERSTAND?

7. Sam said that $\frac{4}{12}$ of the apples are green. Name two equivalent fractions for $\frac{4}{12}$. Sample answer: $\frac{1}{3}$; $\frac{8}{24}$
8. **Writing to Explain** Jon said that it would be impossible to write all fractions equivalent to $\frac{1}{2}$. Is he right? See margin.

Independent Practice

In **9** through **12**, find the missing nonzero number to make the fractions equivalent.

9. $\frac{1 \times \square}{3 \times \square} = \frac{6}{18}$ 6
10. $\frac{17 \div \square}{34 \div \square} = \frac{1}{2}$ 17
11. $\frac{30 \div \square}{35 \div \square} = \frac{6}{7}$ 5
12. $\frac{9 \times \square}{12 \times \square} = \frac{36}{48}$ 4

In **13** through **16**, find the missing numerator to make the fractions equivalent.

13. $\frac{1}{3} = \frac{\square}{9}$ 3
14. $\frac{7}{9} = \frac{\square}{63}$ 49
15. $\frac{30}{40} = \frac{\square}{8}$ 6
16. $\frac{15}{35} = \frac{\square}{7}$ 3

In **17** through **24**, find the missing denominator to make the fractions equivalent.

17. $\frac{5}{12} = \frac{10}{\square}$ 24
18. $\frac{2}{7} = \frac{10}{\square}$ 35
19. $\frac{14}{80} = \frac{7}{\square}$ 40
20. $\frac{6}{18} = \frac{3}{\square}$ 9
21. $\frac{80}{100} = \frac{20}{\square}$ 25
22. $\frac{12}{\square} = \frac{3}{16}$ 64
23. $\frac{10}{\square} = \frac{2}{5}$ 25
24. $\frac{7}{\square} = \frac{21}{36}$ 12

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8. Yes; You can keep mutiplying the numerator and denominator by a greater number no matter what the numerator and denominator are.