Visual Learning Animation

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How can you write 1 as a fraction? [$\frac{1}{1}$] *How can you rewrite 1 using 4 as a numerator?* [$\frac{4}{4}$] *The number 1 can be rewritten with any nonzero number as its numerator and the same number as its denominator.*

One Way

Use multiplication.

Multiply 4 and 6 by 2.

$\frac{4}{6} = \frac{8}{12}$ (×2 on both)

The fractions $\frac{4}{6}$ and $\frac{8}{12}$ are equivalent fractions.

Another Way

Use division.

Divide 4 and 6 by 2.

$\frac{4}{6} = \frac{2}{3}$ (÷2 on both)

The fractions $\frac{4}{6}$ and $\frac{2}{3}$ are equivalent fractions.

So, Hannah and Sam were both correct since $\frac{8}{12}$ is equivalent to $\frac{4}{6}$, and $\frac{2}{3}$ is equivalent to $\frac{4}{6}$.

Prevent Misconceptions

Remind students that what you do to the top you must do to the bottom or the fraction's meaning changes. Some students will multiply or divide either the numerator or denominator not both.

Why were both students right? [The fractions are equivalent.]

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

One Way

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Multiply 4 and 6 by 2.

$\frac{4}{6} = \frac{8}{12}$ (×2 on both)

The fractions $\frac{4}{6}$ and $\frac{8}{12}$ are equivalent fractions.

Another Way

Use division.

Divide 4 and 6 by 2.

$\frac{4}{6} = \frac{2}{3}$ (÷2 on both)

The fractions $\frac{4}{6}$ and $\frac{2}{3}$ are equivalent fractions.

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Problem Solving

25. Ming dropped a package of 8 light bulbs and 2 of the bulbs broke. Write two equivalent fractions to represent the fraction of the bulbs that broke.
See margin.

26. Marcus spelled 20 out of 25 words correctly. What fraction of the words did he spell correctly? What fraction of the words did he spell incorrectly? Write two equivalent fractions for each.
Sample answer: $\frac{20}{25}, \frac{4}{5}; \frac{5}{25}, \frac{1}{5}$

27. What is the least amount you can spend to buy 7 books?
$19.50

28. Writing to Explain Explain why $\frac{6}{15}$ and $\frac{3}{5}$ are NOT equivalent fractions.
Sample answer: If you divide the numerator and denominator of $\frac{6}{15}$ by 3 you get $\frac{2}{5}$, not $\frac{3}{5}$.

29. It rained 0.45 inch on Friday, 2.2 inches on Saturday, and 1.02 inches on Sunday. How much more did it rain on Saturday than on Friday and Sunday combined?
0.73 inch

30. It takes about 12 minutes to hard boil an egg. What fraction of an hour is 12 minutes?

A $\frac{1}{4}$ C $\frac{2}{5}$
(B) $\frac{1}{5}$ D $\frac{2}{3}$

31. A 2-year old goliath bird-eating spider weighs 6 oz, or $\frac{6}{16}$ lb. Which fraction is equivalent to $\frac{6}{16}$?

A $\frac{1}{4}$
B $\frac{1}{3}$
C $\frac{1}{8}$
(D) $\frac{3}{8}$

32. Maurice ran $\frac{1}{2}$ of a mile, or 2,640 feet in 3 minutes 30 seconds. Which of the following is NOT an equivalent fraction for $\frac{1}{2}$?

A $\frac{2}{4}$ C $\frac{17}{34}$
B $\frac{10}{20}$ (D) $\frac{16}{30}$

25. Sample answer: $\frac{2}{8}$ and $\frac{1}{4}$

26. Sample answer: $\frac{20}{25}, \frac{4}{5}, \frac{8}{10}; \frac{5}{25}, \frac{1}{5}, \frac{2}{10}$

Problem Solving

Exercise	Content
25	Equivalent fraction for $\frac{2}{8}$
26	Equivalent fractions $\frac{20}{25}$ and $\frac{5}{25}$
27	Multiple step [($5.50 × 3) + $3]
28	Communicate math understanding Equivalent fractions
29	Multiple step [2.2 − (0.45 + 1.02)]
30	Equivalent fraction for $\frac{12}{60}$
31	Equivalent fraction for $\frac{6}{16}$
32	Equivalent fractions ($\frac{1}{2}$)

Students use underlying processes and mathematical tools for Exercises 25–32. Remind students to check for reasonableness when solving each problem.

Exercise 31

Test-Taking Tip: Make a Plan Think about problem-solving skills and strategies. *What is the question asking you to find?* [An equivalent fraction] *Are the numerator and denominator in each answer choice greater than or less than the numerator and denominator given in the question?* [Greater than] *Will you multiply or divide by the same nonzero number?* [Divide]

Early Finishers *Are $\frac{6}{9}$ and $\frac{8}{12}$ equivalent fractions?* [Yes] *Explain your answer. Show your work.* [Both fractions are equal to $\frac{2}{3}$.]