

### Equivalent Fractions on Number Lines

Equivalent fractions show the same amount. On number lines, equivalent fractions are the same distance from 0. For example, these number lines show that  $\frac{1}{2}$  and  $\frac{2}{4}$  are equivalent.

**Discuss**

- Look at the three number lines below. Use them to find as many equivalent fractions as you can.
- Use the number lines below to find more sets of equivalent fractions.

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Equivalent Fractions on Number Lines

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Look at the number lines on the Fractions on Number Lines Chart to help solve the following problems. A ruler will help you line up the fractions as you look for equivalent fractions.

- A. List all fractions on the chart that are equivalent to  $\frac{1}{2}$ .

B. What pattern do you see?

C. Name a fraction that is equivalent to  $\frac{1}{2}$  that is not on the chart. Explain how you know this fraction is equivalent to  $\frac{1}{2}$ .
- A. List all fractions on the chart that are equivalent to 1.

B. What pattern do you see?

C. Name a fraction that is equivalent to 1 that is not on the chart. Explain how you know this fraction is equivalent to 1.
- A. List all fractions on the chart that are equivalent to  $\frac{3}{4}$ .

B. What pattern do you see?

C. Name a fraction that is equivalent to  $\frac{3}{4}$  that is not on the chart. Explain how you know this fraction is equivalent to  $\frac{3}{4}$ .
- A. List all fractions on the chart that are equivalent to  $\frac{5}{12}$ .

B. What pattern do you see?

C. Name a fraction that is equivalent to  $\frac{5}{12}$  that is not on the chart. Explain how you know this fraction is equivalent to  $\frac{5}{12}$ .

**✓ Check-In: Questions 7-9**

- Find a value for  $n$  that will make the number sentence true. The Fractions on Number Lines Chart can help. Write the complete number sentence.
 

A. $\frac{1}{3} = \frac{n}{6}$	B. $\frac{10}{12} = \frac{n}{6}$	C. $\frac{1}{4} = \frac{n}{12}$
D. $\frac{1}{4} = \frac{2}{n}$	E. $\frac{1}{2} = \frac{n}{8}$	F. $\frac{1}{3} = \frac{n}{12}$
- Emily used number lines to find an equivalent fraction for  $\frac{2}{3}$ .
 

Use multiplication or division to find another fraction equivalent to  $\frac{2}{3}$ . Show or tell how you found it.

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\*Answers and/or discussion are included in the lesson.

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**Equivalent Fractions on Number Lines (SG pp. 76–79)**

**Questions 1–9**

1. \*  $\frac{1}{2} = \frac{3}{6}, \frac{1}{3} = \frac{2}{6}, \frac{2}{3} = \frac{4}{6}, \frac{2}{2} = \frac{3}{3} = \frac{6}{6}, \frac{0}{2} = \frac{0}{3} = \frac{0}{6}$

2.  $\frac{1}{5} = \frac{2}{10}, \frac{2}{5} = \frac{4}{10}, \frac{1}{2} = \frac{5}{10}, \frac{3}{5} = \frac{6}{10}, \frac{4}{5} = \frac{8}{10}, \frac{2}{2} = \frac{5}{5} = \frac{10}{10}, \frac{0}{2} = \frac{0}{5} = \frac{0}{10}$

3. A. \*  $\frac{1}{2}, \frac{2}{4}, \frac{3}{6}, \frac{4}{8}, \frac{5}{10}, \frac{6}{12}$

B. \* All these fractions are the same distance from 0 and line up on the chart. Students should also notice that for fractions equivalent to  $\frac{1}{2}$ , the denominator is always twice the numerator.

C. Answer will vary. Possible response:  $\frac{10}{20}$  because 10 is half of 20.

4. A.  $\frac{2}{2}, \frac{3}{3}, \frac{4}{4}, \frac{5}{5}, \frac{6}{6}, \frac{8}{8}, \frac{10}{10}, \frac{12}{12}$

B. \* The numerator and denominator are the same for fractions equivalent to 1.

C. Answers will vary. Possible response:  $\frac{20}{20}$  because the numerator is the same as the denominator.

5. A.  $\frac{6}{8}, \frac{9}{12}$

B. Answers will vary. Students should notice that 6 is two times 3 and 8 is two times 4. One way to find equivalent fractions is to multiply the numerator and denominator by the same number.

C. Answers will vary. Possible response:  $\frac{2 \times 5}{3 \times 5} = \frac{15}{20}; \frac{3}{4}$  is equivalent to  $\frac{15}{20}$  because I multiplied both the numerator and denominator by 5.

6. A.  $\frac{2}{3}, \frac{4}{6}$

B. The numerator and denominator are divided or multiplied by the same amount to find an equivalent fraction.

$\frac{2 \times 2}{3 \times 2} = \frac{4}{6}$  or  $\frac{2 \times 4}{3 \times 4} = \frac{8}{12}$  or  $\frac{8 \div 4}{12 \div 4} = \frac{2}{3}$

C. Answers will vary. Possible response:  $\frac{8 \times 4}{12 \times 4} = \frac{16}{24}; \frac{8}{12}$  is equivalent to  $\frac{16}{24}$

because I multiplied both the numerator and denominator by 2.

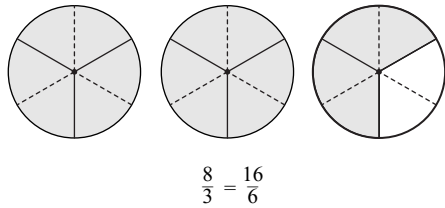
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7. A.  $\frac{1}{3} = \frac{2}{6}$  B.  $\frac{10}{12} = \frac{5}{6}$  C.  $\frac{1}{4} = \frac{3}{12}$   
 D.  $\frac{1}{4} = \frac{2}{8}$  E.  $\frac{1}{2} = \frac{4}{8}$  F.  $\frac{1}{3} = \frac{4}{12}$
8. Possible response:  $\frac{2 \times 2}{3 \times 2} = \frac{4}{6}$  or  $\frac{8 \div 2}{12 \div 2} = \frac{4}{6}$
9. A.  $\frac{1}{4} = \frac{5}{20}$  B.  $\frac{2}{5} = \frac{8}{20}$  C.  $\frac{4}{3} = \frac{12}{9}$   
 D.  $\frac{8}{16} = \frac{2}{4}$  E.  $\frac{3}{15} = \frac{1}{5}$  F.  $\frac{1}{4} = \frac{25}{100}$   
 G.  $\frac{9}{6} = \frac{3}{2}$  H.  $1\frac{2}{3} = \frac{10}{6}$  I.  $\frac{8}{4} = \frac{16}{8}$

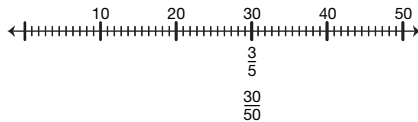
**Homework (SG p. 27)**  
**Questions 1–4**

1. A.  $\frac{8}{10} = \frac{4}{5}$  B.  $\frac{8}{3} = \frac{16}{6}$  C.  $\frac{75}{100} = \frac{3}{4}$   
 D.  $\frac{5}{8} = \frac{10}{16}$  E.  $\frac{10}{3} = \frac{30}{9}$  F.  $\frac{30}{50} = \frac{3}{5}$   
 G.  $\frac{7}{3} = \frac{28}{12}$  H.  $\frac{2}{5} = \frac{8}{20}$  I.  $\frac{6}{9} = \frac{2}{3}$   
 J.  $2\frac{1}{3} = \frac{7}{3}$  K.  $\frac{8}{6} = \frac{4}{3}$  L.  $1\frac{7}{8} = \frac{15}{8}$

2. Possible response:



3. Possible response:



Both fractions are the same distance from zero.

4. Possible response:  $\frac{20}{8}; \frac{5 \times 4}{2 \times 4} = \frac{20}{8}$

9. Use your method from Question 8 to complete the following number sentences to show equivalent fractions.

- A.  $\frac{1}{4} = \frac{n}{20}$  B.  $\frac{2}{5} = \frac{n}{20}$  C.  $\frac{4}{3} = \frac{n}{9}$   
 D.  $\frac{8}{16} = \frac{n}{4}$  E.  $\frac{3}{15} = \frac{1}{n}$  F.  $\frac{1}{4} = \frac{n}{100}$   
 G.  $\frac{9}{6} = \frac{3}{n}$  H.  $1\frac{2}{3} = \frac{n}{6}$  I.  $\frac{8}{4} = \frac{n}{8}$

Use equivalent fractions and number lines in the *Fraction Trails Games* in the *Student Activity Book*.

**Homework**

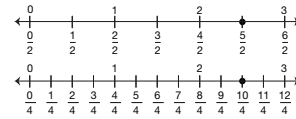
1. Complete the following number sentences.

- A.  $\frac{8}{10} = \frac{?}{5}$  B.  $\frac{8}{3} = \frac{?}{6}$  C.  $\frac{75}{100} = \frac{?}{4}$   
 D.  $\frac{5}{8} = \frac{10}{?}$  E.  $\frac{10}{3} = \frac{?}{9}$  F.  $\frac{30}{50} = \frac{3}{?}$   
 G.  $\frac{7}{3} = \frac{?}{12}$  H.  $\frac{2}{5} = \frac{8}{?}$  I.  $\frac{6}{9} = \frac{2}{?}$   
 J.  $2\frac{1}{3} = \frac{?}{3}$  K.  $\frac{8}{6} = \frac{?}{3}$  L.  $1\frac{7}{8} = \frac{15}{?}$

2. Use a drawing or number lines to show that your answer to Question 1B is correct.

3. Show or tell how you know that Question 1F is correct.

4. Jason used number lines to find an equivalent fraction for  $\frac{5}{2}$ .



Use multiplication to find another fraction equivalent to  $\frac{5}{2}$ . Show or tell how you found it.

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