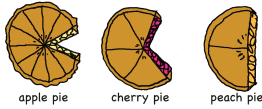


Comparing Fractions Using  $\frac{1}{2}$

Discuss

- Wednesday is pizza day at Bessie Coleman School. Each table in the lunchroom gets one pizza to share equally among the students at the table. There are three students at Table A and four students at Table B.
  - Use your fraction circle pieces to show how the pizzas are shared at each table.
  - What fraction of their pizza will each student get at Table A?
  - What fraction of their pizza will each student get at Table B?
  - Who gets to eat more pizza, each student at Table A or each student at Table B?
  - Which fraction is larger,  $\frac{1}{3}$  or  $\frac{1}{4}$ ? Explain how you know.
- The baker made three small fruit pies that are all the same size. She divided the apple pie into 12 pieces, the cherry pie into 6 pieces, and the peach pie into 4 pieces. John ate 2 pieces of apple pie, Shannon ate 2 pieces of cherry pie, and Brandon ate 2 pieces of peach pie.

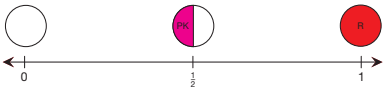


- Use your fraction circle pieces to show how much of each pie is eaten.
- What fraction of the apple pie did John eat?
- What fraction of the cherry pie did Shannon eat?
- What fraction of the peach pie did Brandon eat?
- Who ate the most pie? Tell how you know.
- Who ate the least pie? Tell how you know.

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- Use your fraction circle pieces to find two fractions greater than  $\frac{1}{2}$ .
  - How do you know that these two fractions are greater than  $\frac{1}{2}$ ?
  - Draw a number line like the one below. Use the benchmarks  $0$ ,  $\frac{1}{2}$ , and  $1$  to place your two fractions on the number line. Draw and label a picture of the fraction.



- Use your fraction circle pieces to find two fractions less than  $\frac{1}{2}$ .
  - How do you know that your fractions are less than  $\frac{1}{2}$ ?
  - Put your two fractions on the number line you created in Question 3. Draw and label a picture of the fraction.

Explore

- The red circle is the unit whole. Use your circle pieces to decide if  $\frac{2}{3}$  is greater than, less than, or equal to  $\frac{1}{2}$ . Show how you decided.
- Use the circle pieces to decide if each fraction is greater than, less than, or equal to  $\frac{1}{2}$ .
 

A. $\frac{2}{3}$	B. $\frac{1}{4}$	C. $\frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12}$
D. $\frac{1}{10} \times 8$	E. $\frac{1}{4} + \frac{1}{4} + \frac{1}{4}$	F. $\frac{1}{5}$
G. $\frac{2}{8}$	H. $\frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6}$	I. $7 \times \frac{1}{12}$
J. $\frac{9}{15}$	K. $\frac{1}{6} \times 5$	L. $\frac{19}{20}$
- Look at the fractions in Question 6.
  - Choose a fraction close to  $\frac{1}{2}$ .
  - Choose a fraction close to 1 whole.
  - Choose a fraction close to zero.
  - Draw a number line. Put the three fractions from Questions 7A–C on the number line. Draw and label a picture for each fraction.

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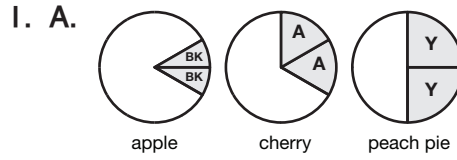
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\*Answers and/or discussion are included in the lesson.

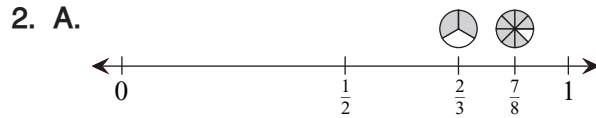
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Comparing Fractions Using  $\frac{1}{2}$  (SG pp. 342–347)

Questions 1–26

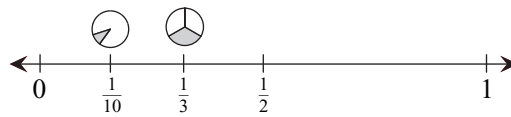


- $\frac{1}{3}$  of a pizza
- $\frac{1}{4}$  of a pizza
- \* Each student at Table A, because they have to share with fewer people.
- \*  $\frac{1}{3}$ . Explanations will vary.

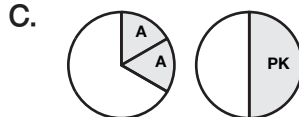


- $\frac{2}{12}$  of an apple pie
- $\frac{2}{6}$  of a cherry pie
- $\frac{2}{4}$  of a peach pie
- \* Brandon ate the most pie, because his pie was divided into fewer pieces, so each piece was larger.
- \* John ate the least pie because his pie was divided into the most pieces, so each piece was smaller.

- Responses will vary. Possible response:  $\frac{7}{8}$ ,  $\frac{2}{3}$
  - The pink piece does not entirely cover either of the fractions. So, they are both larger than  $\frac{1}{2}$ .
  - Responses will vary. Possible response:

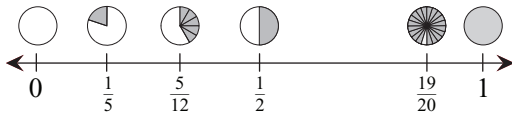


- Responses will vary. Possible responses:  $\frac{1}{3}$ ,  $\frac{1}{10}$
  - The pink piece covers the fraction.



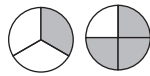
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5.\*  $\frac{2}{5} < \frac{1}{2}$



6. A.  $>$ ;  $\frac{2}{3} > \frac{1}{2}$   
 B.  $<$ ;  $\frac{1}{4} < \frac{1}{2}$   
 C.  $<$ ;  $\frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} < \frac{1}{2}$ ,  $\frac{5}{12} < \frac{1}{2}$   
 D.  $>$ ;  $\frac{8}{10} > \frac{1}{2}$ ,  $\frac{1}{10} \times 8 > \frac{1}{2}$   
 E.  $>$ ;  $\frac{3}{4} > \frac{1}{2}$ ,  $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} > \frac{1}{2}$   
 F.  $<$ ;  $\frac{1}{5} < \frac{1}{2}$   
 G.  $<$ ;  $\frac{2}{8} < \frac{1}{2}$   
 H.  $>$ ;  $\frac{4}{6} > \frac{1}{2}$ ,  $\frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} > \frac{1}{2}$   
 I.  $>$ ;  $\frac{7}{12} > \frac{1}{2}$ ,  $7 \times \frac{1}{12} > \frac{1}{2}$   
 J.  $>$ ;  $\frac{9}{15} > \frac{1}{2}$   
 K.  $>$ ;  $\frac{5}{6} > \frac{1}{2}$ ,  $\frac{1}{6} \times 5 > \frac{1}{2}$   
 L.  $>$ ;  $\frac{19}{20} > \frac{1}{2}$

7. A. Possible responses:  $\frac{7}{12}$ ,  $\frac{5}{12}$ ,  $\frac{4}{6}$   
 B. Possible responses:  $\frac{8}{10}$ ,  $\frac{19}{20}$   
 C. Possible responses:  $\frac{1}{4}$ ,  $\frac{1}{5}$ ,  $\frac{2}{8}$   
 D. Responses will vary. Possible response:



8. A.  $\frac{2}{3} = \frac{8}{12}$       B.  $\frac{1}{4} < \frac{2}{3}$ ,  $\frac{1}{4} < \frac{1}{3} \times 2$   
 C.  $\frac{5}{12} < \frac{2}{4}$       D.  $\frac{8}{10} > \frac{2}{6}$   
 E.  $\frac{3}{4} = \frac{6}{8}$ ,  $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{6}{8}$   
 F.  $\frac{1}{5} > \frac{1}{12}$       G.  $\frac{2}{8} < \frac{5}{8}$   
 H.  $\frac{4}{6} > \frac{2}{12}$       I.  $\frac{7}{12} < \frac{5}{6}$ ,  $\frac{7}{12} < 5 \times \frac{1}{6}$   
 J.  $\frac{3}{9} < \frac{7}{8}$ ,  $\frac{1}{9} + \frac{1}{9} + \frac{1}{9} < \frac{7}{8}$   
 K. I know that  $\frac{2}{4} = \frac{1}{2}$ .  $\frac{6}{12}$  is the same as  $\frac{1}{2}$ , so  $\frac{5}{12}$  is less than  $\frac{1}{2}$ .

9. No,  $\frac{1}{3}$  is not larger than  $\frac{3}{4}$ .  
 He is right that thirds are larger than fourths, but 3 yellow pieces together are larger than 1 orange piece.

- 10.\* John should put  $\frac{5}{12}$  between  $\frac{1}{8}$  and  $\frac{5}{10}$ . Reasons will vary. Possible response: 5 black pieces is less than 5 purple pieces; I have 5 of each but the  $\frac{1}{12}$  pieces are smaller than 5 of the  $\frac{1}{10}$  pieces, so  $\frac{5}{12} < \frac{1}{10}$ .

8. Use fraction circle pieces to decide which fraction is larger or if the fractions are equal. Use  $<$ ,  $>$ , or  $=$  to write a true number sentence.

- A.  $\frac{2}{3} > \frac{8}{12}$       B.  $\frac{1}{4} < \frac{1}{3} \times 2$   
 C.  $\frac{5}{12} < \frac{2}{4}$       D.  $\frac{8}{10} > \frac{2}{6}$   
 E.  $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{6}{8}$       F.  $\frac{1}{5} > \frac{1}{12}$   
 G.  $\frac{2}{8} < \frac{5}{8}$       H.  $\frac{4}{6} > \frac{2}{12}$   
 I.  $\frac{7}{12} < \frac{5}{6}$       J.  $\frac{1}{9} + \frac{1}{9} + \frac{1}{9} < \frac{7}{8}$

K. Show and tell how you decided which fraction was larger in Question 8C.

9. Frank decided that  $\frac{1}{3}$  was larger than  $\frac{3}{4}$ .



$\frac{1}{3}$  is the larger fraction since thirds are larger than fourths.

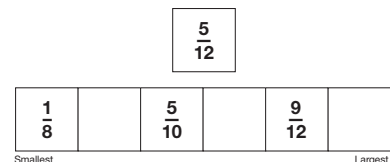
Do you agree with Frank's decision? Why or why not?

Play *Fraction Order* in the Student Activity Book to practice ordering fractions.

**A Closer Look at Fraction Order**

Answer these questions after you have played *Fraction Order*. Use your circle pieces or the Fraction Chart.

10. John is playing *Fraction Order*. This is his game board. Where should he put  $\frac{5}{12}$ ? Explain how you decided.



11. Luis is playing Fraction Order. He filled his game board first.

$\frac{1}{3}$	$\frac{1}{5}$	$\frac{2}{8}$	$\frac{2}{12}$	$\frac{10}{12}$	$1$
Smallest			Largest		

- A. Did he put the fractions in the correct order?  
 B. How do you think Luis decided which fractions were larger?  
 C. Put Luis's fractions in order from smallest to largest.
12. A. Use your circle pieces to decide if  $\frac{1}{4}$  is greater or less than  $\frac{1}{2}$ .  
 B. Find a fraction with a denominator of 4 that is greater than  $\frac{1}{2}$ .
13. A. Use your circle pieces to decide if  $\frac{4}{6}$  is greater or less than  $\frac{1}{2}$ .  
 B. Find a fraction with a denominator of 6 that is less than  $\frac{1}{2}$ .

Answer Questions 14–18 on the *Fraction Sort* page from the *Student Activity Book*.

Less than $\frac{1}{2}$	Equal to $\frac{1}{2}$	More than $\frac{1}{2}$

14. Sort the fractions into the table.

- |                                    |                                 |   |                                 |
|------------------------------------|---------------------------------|---|---------------------------------|
| A. $\frac{3}{10}$                  | $\frac{5}{12}$                  | $\frac{1}{8}$                             | $\frac{4}{6}$                   |
| B. $\frac{2}{8}$                   | $\frac{9}{10}$                  | $\frac{10}{20}$                           | $\frac{15}{18}$                 |
| C. $\frac{1}{6} + \frac{1}{6}$     | $\frac{1}{4} \times 3$          | $\frac{1}{3} + \frac{1}{3} + \frac{1}{3}$ | $\frac{1}{5} \times 2$          |
| D. $\frac{1 \times 2}{4 \times 2}$ | $\frac{3 \times 4}{8 \times 4}$ | $\frac{3 \times 5}{6 \times 5}$           | $\frac{3 \times 3}{5 \times 3}$ |

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11. A. No.  
 B. He looked only at the denominator. He also thinks the smaller the denominator the smaller the fraction. This thinking is incorrect.

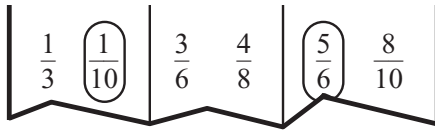
C.  $\frac{2}{12}, \frac{1}{5}, \frac{2}{8}, \frac{1}{3}, \frac{10}{12}, 1$

12. A.  $\frac{1}{4} < \frac{1}{2}$   
 B. Possible answer:  $\frac{3}{4} > \frac{1}{2}$

13. A.  $\frac{4}{6} > \frac{1}{2}$   
 B. Possible answer:  $\frac{1}{6} < \frac{1}{2}$

	Less than $\frac{1}{2}$	Equal to $\frac{1}{2}$	More than $\frac{1}{2}$
14. A.	$\frac{3}{10}$ $\frac{1}{8}$ $\frac{5}{12}$		$\frac{4}{6}$
B.	$\frac{2}{8}$	$\frac{10}{20}$	$\frac{9}{10}$ $\frac{15}{18}$
C.	$\frac{1}{6} + \frac{1}{6}$ $\frac{1}{5} \times 2$		$\frac{1}{4} \times 3$ $\frac{1}{3} + \frac{1}{3} + \frac{1}{3}$
D.	$\frac{1 \times 2}{4 \times 2}$ $\frac{3 \times 4}{8 \times 4}$	$\frac{3 \times 5}{6 \times 5}$	$\frac{3 \times 3}{5 \times 3}$

15–17. Answers will vary. Possible responses:



18. A–B. Answers will vary. Possible response shown above.

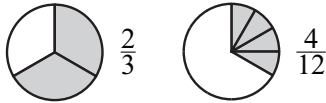
19.  $\frac{20}{46} < \frac{1}{2}$ ; Half of 46 is 23; so  $\frac{23}{46} = \frac{1}{2}$  so  $\frac{20}{46}$  is less than  $\frac{1}{2}$ .

20. Responses will vary. Possible response: I agree with Lee Yah because 23 is  $\frac{1}{2}$  of 46. That means that 20 is less than  $\frac{1}{2}$  of 46 so  $\frac{20}{46}$  is less than  $\frac{1}{2}$ .

21.  $\frac{30}{58} > \frac{1}{2}$ ;  $58 \div 2 = 29$ .  $\frac{29}{58} = \frac{1}{2}$ .  $\frac{30}{58}$  is greater than  $\frac{1}{2}$ .

22. A.  $\frac{1}{3} < \frac{3}{4}$ ,  $\frac{1}{3} < \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$  B.  $\frac{1}{4} < \frac{1}{3}$   
 C.  $\frac{6}{7} > \frac{3}{7}$  D.  $\frac{4}{100} < \frac{4}{70}$   
 E.  $\frac{6}{8} > \frac{4}{6}$ ,  $\frac{3 \times 2}{4 \times 2} > \frac{4}{6}$   
 F.  $\frac{4}{12} < \frac{2}{4}$ ,  $\frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} < \frac{2}{4}$   
 G.  $\frac{4}{6} = \frac{2}{3}$  H.  $\frac{3}{9} < \frac{7}{8}$ ,  $\frac{3}{9} < \frac{1}{8} \times 7$

23. Chris's brother;  $\frac{2}{3} > \frac{4}{12}$



24. A.  $\frac{7}{8} > \frac{1}{2}$   
 B.  $\frac{7}{8}$  is closer to one whole. Possible explanation: I know because most of the red circle is covered.
25. A.  $\frac{5}{20} < \frac{1}{2}$   
 B.  $\frac{5}{20}$  is halfway between  $\frac{1}{2}$  and zero. Possible explanation:  $\frac{10}{20} = \frac{1}{2}$  and  $\frac{5}{20} < \frac{1}{2}$ .

15. Name two more fractions that are less than  $\frac{1}{2}$ . Add them to the table.  
 16. Name two more fractions that are equal to  $\frac{1}{2}$ . Add them to the table.  
 17. Name two more fractions that are greater than  $\frac{1}{2}$ . Add them to the table.  
 18. Look at the fractions you have written in the table.  
 A. Circle the smallest fraction.  
 B. Circle the largest fraction.  
 19. Is  $\frac{20}{46}$  less than, greater than, or equal to  $\frac{1}{2}$ ? Explain how you decided.  
 20. Lee Yah showed how she decided that  $\frac{20}{46} < \frac{1}{2}$ .  
 Do you agree with Lee Yah's explanation? Why or why not?



I don't know what half of 46 is in my head. So I used my calculator.

$46 \div 2 = 23$   
 $\frac{23}{46} = \frac{1}{2}$  So  $\frac{20}{46}$  is less than  $\frac{1}{2}$ .

21. Is  $\frac{30}{58}$  less than, greater than, or equal to  $\frac{1}{2}$ ? Explain how you decided.

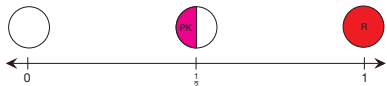
✓ Check-In: Questions 22–26

22. For each pair of fractions, decide which fraction is larger or if the fractions are equal. Use  $<$ ,  $>$ , or  $=$  to write a true number sentence.  
 A.  $\frac{1}{3}$ ,  $\frac{1}{4} + \frac{1}{4} + \frac{1}{4}$  B.  $\frac{1}{4}$ ,  $\frac{1}{3}$   
 C.  $\frac{6}{7}$ ,  $\frac{3}{7}$  D.  $\frac{4}{100}$ ,  $\frac{4}{70}$   
 E.  $\frac{3 \times 2}{4 \times 2}$ ,  $\frac{4}{6}$  F.  $\frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12}$ ,  $\frac{2}{4}$   
 G.  $\frac{4}{6}$ ,  $\frac{2}{3}$  H.  $\frac{3}{9}$ ,  $\frac{1}{8} \times 7$
23. Chris shared a candy bar with his brother. Chris ate  $\frac{2}{3}$  of the candy bar and his brother ate  $\frac{4}{12}$  of the candy bar. Who ate more? Explain how you know.
24. A. Is  $\frac{7}{8}$  greater than or less than  $\frac{1}{2}$ ?  
 B. Is  $\frac{7}{8}$  closer to  $\frac{1}{2}$  or 1 whole? How do you know?
25. A. Is  $\frac{5}{20}$  greater than or less than  $\frac{1}{2}$ ?  
 B. Is  $\frac{5}{20}$  closer to 0 or  $\frac{1}{2}$ ? How do you know?

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26. Draw and label a number line with 0,  $\frac{1}{2}$ , and 1 benchmarks. Put the following list of fractions in order on the number line. Draw and label a picture for each fraction.

$$\frac{2}{5}, \frac{1}{10}, \frac{1}{4}, \frac{3}{4}$$



- Margo and Jose shared a couple of large pizzas. Margo ate  $\frac{1}{3}$  of a pizza. Jose ate  $\frac{2}{5}$  of a pizza. Who ate more? Explain how you know.
- Imagine that you shared your bag of mini donuts with your sister. You ate  $\frac{3}{5}$  of the bag while your sister ate  $\frac{4}{10}$  of the bag. Who ate more? Explain how you know.
- Ming ran  $2\frac{2}{5}$  miles. His sister ran  $2\frac{3}{10}$  miles. Who ran the shorter distance? Explain how you know.
- Copy and compare each pair of fractions. Use  $<$ ,  $>$ , or  $=$  to write a true number sentence.
 

A. $\frac{2}{5} > \frac{1}{5}$	B. $\frac{9}{12} > \frac{6}{10}$
C. $\frac{1 \times 3}{2 \times 3} > \frac{2}{9}$	D. $\frac{5}{9} > \frac{1}{7} + \frac{1}{7} + \frac{1}{7}$
E. $\frac{3}{5} > \frac{4}{9}$	F. $\frac{10}{22} < \frac{4}{5}$
- Put each list of fractions in order from smallest to largest.
 

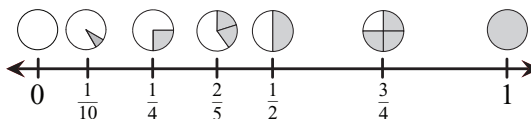
A. $\frac{2}{3}, \frac{3}{8}, \frac{9}{10}, \frac{2}{12}$	B. $\frac{4}{7}, \frac{6}{12}, \frac{2}{6}, \frac{7}{8}$
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Comparing Fractions Using  $\frac{1}{2}$

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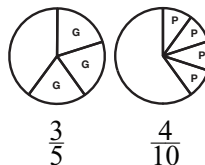
26.



Homework (SG p. 347)

Questions 1–5

- Margo; Possible response: Jose ate  $\frac{6}{12}$  or  $\frac{1}{2}$  of a pizza. Half of Margo's pizza is  $\frac{4}{8}$ . She ate  $\frac{5}{8}$ , so  $\frac{5}{8} > \frac{6}{12}$ .
- You ate more;  $\frac{3}{5} > \frac{4}{10}$ . Possible explanation:



- Ming's sister;  $\frac{3}{10} < \frac{7}{8}$ . Possible explanation:  $\frac{3}{10}$  is less than  $\frac{1}{2}$  and  $\frac{7}{8}$  is more than  $\frac{1}{2}$ .
- |   |   |
|---|---|
| A. $\frac{2}{5} > \frac{1}{5}$  | B. $\frac{9}{12} > \frac{6}{10}$  |
| C. $\frac{3}{6} > \frac{2}{9}, \frac{1 \times 3}{2 \times 3} > \frac{2}{9}$ | D. $\frac{5}{9} > \frac{3}{7}, \frac{5}{9} > \frac{1}{7} + \frac{1}{7} + \frac{1}{7}$ |
| E. $\frac{3}{5} > \frac{4}{9}$  | F. $\frac{10}{22} < \frac{4}{5}$  |
- |   |  |
|---|--|
| A. $\frac{2}{12}, \frac{3}{8}, \frac{2}{3}, \frac{9}{10}$ | B. $\frac{2}{6}, \frac{6}{12}, \frac{4}{7}, \frac{7}{8}$ |
|---|--|

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