

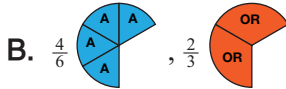
Student Guide

Workshop: Using Equivalent Fractions and Ratios (SG pp. 238–239)

Questions 1–3

1. A.  $\frac{4}{6}$  mile  
 B. Possible response: When I look at the fraction  $\frac{4}{6}$  on the number line it lines up with  $\frac{2}{3}$  and  $\frac{8}{12}$ . Since the numerator and denominator for  $\frac{2}{3}$  are smaller than the numerator and denominator for  $\frac{4}{6}$ , the simplest form is  $\frac{2}{3}$ .

2. A.  $\frac{8}{12}$  mile



- B.  $\frac{4}{6}$  ,  $\frac{2}{3}$

- C. Solutions will vary: Two possible responses are included:

$\frac{8}{12} = \frac{16}{24}$ . I multiplied both the numerator and denominator by 2.

$\frac{8}{12} = \frac{10}{15} = \frac{2}{3}$ . Since I know  $\frac{8}{12}$  is equal to  $\frac{2}{3}$ , I can multiply the numerator and denominator for  $\frac{2}{3}$  by 5 to find another equivalent fraction.

3. A. Pink to Black Fraction Circle Pieces

Number of Pink Pieces	1	2	3	4
Number of Black Pieces	6	12	18	24
Ratio of Pink Pieces to Black Pieces	$\frac{1 \text{ pink}}{6 \text{ black}}$	$\frac{2 \text{ pink}}{12 \text{ black}}$	$\frac{3 \text{ pink}}{18 \text{ black}}$	$\frac{4 \text{ pink}}{24 \text{ black}}$

- B. Answers may vary. Possible responses:

$$\frac{18 \text{ orange}}{6 \text{ red}}, \frac{27 \text{ orange}}{9 \text{ red}}$$

$$\frac{3 \text{ orange}}{1 \text{ red}}, \frac{6 \text{ orange}}{2 \text{ red}}, \frac{12 \text{ orange}}{4 \text{ red}}$$

$$\frac{3 \text{ orange}}{1 \text{ red}} \text{ is in simplest form.}$$

### Workshop: Using Equivalent Fractions and Ratios

✓ Self-Check: Questions 1-3

Use the map to solve each problem.

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- A. Write a fraction to show how many sixths of a mile Roberto lives from the park.

B. Show how you can use the *Fractions on Number Lines Chart* in the Reference section to decide if this fraction is in simplest form. If it is not, write the fraction in simplest form.
- A. Write a fraction to show how many twelfths of a mile Shannon lives from the park.

B. Use fraction circle pieces to show as many other equivalent fractions as you can to show how far Shannon lives from the park. The red circle represents 1 mile. Draw the circle pieces and name each fraction.

C. Write 2 fractions that cannot be shown with circle pieces that show how far Shannon lives from the park. Show or tell how you found each fraction.

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3. A. Sketch this table. Use the pink and black fraction circle pieces to fill in the missing information.

Pink to Black Fraction Circle Pieces

Number of Pink Pieces	1		3	
Number of Black Pieces				24
Ratio of Pink Pieces to Black Pieces		$\frac{2 \text{ pink}}{12 \text{ black}}$		

B. Keenya wrote this ratio to show the relationship between the orange circle pieces and the red circle pieces:

$$\frac{9 \text{ orange}}{3 \text{ red}}$$

Write three more equivalent ratios that show the relationship between orange and red circle pieces. Make sure one of your ratios is in simplest form.

Use these Self-Check questions and the Workshop Menu on the *Finding Equivalent Fractions and Ratios* pages in the *Student Activity Book* to choose practice with fractions and ratios.

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Use fraction circle pieces, the *Fractions on Number Lines Chart* in the *Student Guide Reference* section, and other strategies to solve each problem.

1. ★A. Use fraction circle pieces to show as many other fractions as you can that show  $\frac{2}{4}$ . The red circle represents 1 whole. Draw the circle pieces and write the name of each fraction.

★B. Name a fraction that is equivalent to  $\frac{2}{4}$  that you cannot show with circle pieces. Explain how you found your answer.

2. ★A. It takes  black pieces to cover 1 aqua piece.

★B. Complete each ratio to show the relationship between the black circle pieces and aqua circle pieces.

<input type="text"/> black	4 black	<input type="text"/> black
4 aqua	<input type="text"/> aqua	3 aqua

★C. Write the simplest ratio of black pieces to aqua pieces.

<input type="text"/> black
<input type="text"/> aqua

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Name \_\_\_\_\_ Date \_\_\_\_\_

★3. John writes the ratio  $\frac{3}{2}$  to show the relationship between the orange pieces and pink pieces.

A. Ming is confused by John's ratio. What does John need to add to his work to help Ming understand his thinking?

$\frac{3}{2}$  is the ratio that shows the relationship between the orange and pink pieces.

**John**

B. Write John's ratio so others can understand his thinking.

4. ★A. Grace was thinking of fractions that are equivalent to  $\frac{6}{8}$ . She wrote:

$$\frac{6}{8} = \frac{3}{4} = \frac{8}{12}$$

Use the *Fractions on Number Lines Chart* to check Grace's work. Are all the fractions Grace wrote equal? If not, write a number sentence to correct her work.

★B. Which fraction shows the simplest form of  $\frac{6}{8}$ ? How do you know?

★C. Write two fractions that are equivalent to  $\frac{6}{8}$  that you cannot find using the *Fractions on Number Lines Chart*. Choose one of your fractions and explain how you found your answer.

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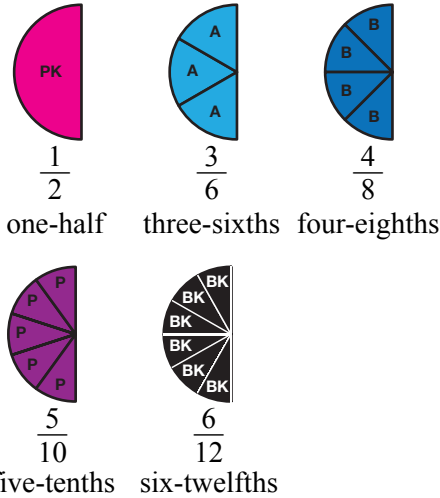
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**Student Activity Book**

**Finding Equivalent Fractions and Ratios (SAB pp. 220–226)**

**Questions 1–11**

1. A.



B.  $\frac{10}{20}$ ; Possible response: For all fractions that are equal to  $\frac{2}{4}$  the denominator will always be twice the numerator. Since  $2 \times 10 = 20$ , the fraction  $\frac{10}{20}$  is equal to  $\frac{2}{4}$ .

2. A. 2 blacks

B. 8 black, 2 aqua, 6 black

C.  $\frac{2 \text{ black}}{1 \text{ aqua}}$

3. A. John is missing the labels to show what numbers mean.

B.  $\frac{3 \text{ orange}}{2 \text{ pink}}$

4. A. Possible response: They are not all equal because when you try to line up the fractions  $\frac{6}{8}$  and  $\frac{3}{4}$  line up, but the  $\frac{8}{12}$  does not line up.  
 $\frac{3}{4} = \frac{6}{8} = \frac{9}{12}$

B.  $\frac{3}{4}$ ; Possible response: It is the simplest form because it has the smallest numerator and denominator possible.

C. Solutions will vary. Possible responses include  $\frac{15}{20}$  and  $\frac{12}{16}$ . Possible response: To find  $\frac{12}{16}$ , I multiplied  $\frac{3 \times 4}{4 \times 4} = \frac{12}{16}$ .

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5.  $\frac{2 \text{ drops red}}{3 \text{ drops blue}}$

6. A. **Mixing Paint**

Red Paint	Blue Paint
2 drops	3 drops
4 drops	6 drops
12 drops	18 drops
16 drops	24 drops
24 drops	36 drops

B. Possible response: It will not be the same purple. The simplest form of the ratio is

$$\frac{15 \text{ drops red}}{30 \text{ drops blue}} = \frac{1 \text{ drop red}}{2 \text{ drops blue}}$$

That is not the same relationship of red to blue as the original ratio of 2 drops of red paint to 3 drops of blue paint.

C. Roberto will need 2 cups of red paint. The ratio of 2 parts red to 3 parts blue stays the same no matter what units you use.

7. A.  $\frac{11}{25}$ ; Possible response: I divided both the numerator and denominator by 2.

$$\frac{22 \div 2}{50 \div 2} = \frac{11}{25}$$

B. Wednesday;  $\frac{1}{2}$  of 50 = 25

C. Friday; Possible response: I thought  $\frac{7}{10} = \frac{\square}{50}$ , I know  $10 \times 5 = 50$ , so to find the numerator I multiplied  $7 \times 5 = 35$ . Jerome did 35 sit-ups on Friday.

Name \_\_\_\_\_ Date \_\_\_\_\_

★●5. Mr. Moreno's class is planning a fitness day. Jessie and Roberto are painting signs for each of the stations. They mix red and blue paint to make a purple color that they like. To make it, they use a ratio of 2 drops of red to 3 drops of blue. Write a ratio of red paint to blue paint as a fraction.

6. Jessie and Roberto decide to mix a larger batch of paint so they can use it to paint all of the signs.

★●A. Fill in the table to show how much of each color they will need.

**Mixing Paint**

Red Paint	Blue Paint
2 drops	3 drops
4 drops	
12 drops	
	24 drops
	36 drops

●B. Jessie mixed a batch of paint using 15 drops of red and 30 drops of blue. Will Jessie's paint be the same color of purple? Show or tell how you know.

●C. If Roberto starts with 3 cups of blue paint, how many cups of red will he need to add to make the same purple color they began with? Explain your thinking.

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7. Students will do sit-ups at one of the fitness day stations. The goal is to complete 50 sit-ups. Jerome decided to practice his sit-ups the week before fitness day. He made a table to record his progress.

**Jerome's Sit-Ups**

Day	Number of Sit-Ups Completed out of 50
Sunday	18
Monday	22
Tuesday	20
Wednesday	25
Thursday	30
Friday	35
Saturday	42

★●A. On Monday, Jerome completed  $\frac{22}{50}$  sit-ups. Express this fraction in simplest form. Show or tell how you found your answer.

●B. The goal for each day is 50 sit-ups. On which day was Jerome able to complete  $\frac{1}{2}$  of the 50 sit-ups?

●C. Jerome told Jacob that on one of the days he completed  $\frac{7}{10}$  of his goal. On which day did Jerome complete  $\frac{7}{10}$  of his goal? Show or tell how you found your answer.

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8. One of the events on fitness day was a 5-kilometer fun run. Jackie completed the run in 30 minutes.

★●●A. Write a ratio to show the relationship between the distance Jackie ran and the time it took her to complete the fun run.

●●B. If Jackie ran at the same pace for each kilometer of the race, how many minutes did it take her to complete 1 kilometer?

■9. Irma finished the first two kilometers of the fun run in 8 minutes. If Irma keeps a constant pace for the rest of the run, how long will it take her to finish? Explain how you found your answer using equivalent ratios.

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Name \_\_\_\_\_ Date \_\_\_\_\_

●●10. Six of Mr. Moreno's students finished the jump rope station. Their goal was to jump 100 times without missing. They filled in their completed jumps on a table but forgot to list their names. Use the clues below to complete the table.

**Jump Rope**

Student Name	Completed Jumps out of 100
	60
	45
	95
	75
	90
	80

- Linda completed the fewest jumps.
- Nila completed .9 of the goal for 100 jumps.
- Nicholas accomplished  $\frac{3}{5}$  of his goal.
- Keenya completed  $\frac{6}{8}$  of her goal.
- Romesh completed  $\frac{8}{10}$  of the goal.
- Ana completed the most jumps.

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8. A.  $\frac{5 \text{ kilometers}}{30 \text{ minutes}}$
- B. 6 minutes; Possible response: I divided  $30 \div 5 = 6$  to find how many minutes for each kilometer.
9. 20 minutes; Possible response: First I wrote a number sentence:
- $$\frac{8 \text{ minutes}}{2 \text{ kilometers}} = \frac{\square \text{ minutes}}{5 \text{ kilometers}}$$
- I can see that if it took 8 minutes to run 2 kilometers it would take 4 minutes to run 1 kilometer. I multiplied 5 kilometers  $\times$  4 minutes = 20 minutes to find the time it would take to run 5 kilometers.

10. **Jump Rope**

Student Name	Completed Jumps out of 100
Nicholas	60
Linda	45
Ana	95
Keenya	75
Nila	90
Romesh	80

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11. A.  $\frac{45}{100} = \frac{9}{20}$
- B. Possible response: I used the *Fraction on Number Lines Chart* and found the simplest form of  $\frac{6}{8}$  is  $\frac{3}{4}$ . I know that 75 is  $\frac{3}{4}$  of 100 because I know that 100 can be divided into 4 groups of 25 and  $3 \times 25 = 75$ .
- C. Answers will vary but must include  $\frac{4}{5}$ : possible responses include:  $\frac{8}{10} = \frac{4}{5} = \frac{12}{15} = \frac{16}{20}$
- D.  $\frac{19}{20}$ ; Possible response: I wrote the fraction  $\frac{95}{100}$ . Both the numerator and denominator can be divided by 5.  $\frac{95}{100} \div \frac{5}{5} = \frac{19}{20}$

Name \_\_\_\_\_ Date \_\_\_\_\_

11. Use the completed table in Question 10 to solve the following problems.

- A. Write a fraction in simplest form to show what part of the goal Linda met.
- B. Show or tell how you found your solution for Kenya.
- C. Write 3 fractions that are equal to  $\frac{8}{10}$ . Make sure one of the fractions is in simplest form.
- D. Write a fraction in simplest form to show what part of the goal Ana met. Explain how you found your answer.

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**Teacher Guide**

**Crossing the Gym (TG)  
Questions A–C**

- A.  $\frac{6 \text{ steps}}{2 \text{ hops}}, \frac{36 \text{ steps}}{12 \text{ hops}}, \frac{180 \text{ steps}}{60 \text{ hops}}$
- B. 3 steps before they can take 1 hop.
- C. No it is not equivalent.  $\frac{30}{10}$  is equivalent to  $\frac{18}{6}$  but not  $\frac{30}{20}$ .

**Crossing the Gym**

As part of fitness day, Mr. Smith, the gym teacher decided to plan a special activity for Mr. Moreno's fifth-grade class. He showed students a card with the following ratio:

**18 steps**  
**6 hops**

He told students to find an equivalent ratio and use it to move from one side of the gym to the other.

- A. Name three equivalent ratios to show how students can move across the gym.
- B. What is the fewest number of steps students can take before they have to hop?
- C. Maya decided to use this ratio to plan her moves:  $\frac{30 \text{ steps}}{20 \text{ hops}}$ . Is her ratio equal to Mr. Smith's ratio?

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