

Equivalent Fractions and Comparing: practice solutions, Grade 4 – download the PDF

Written solutions to the chapter problems. Check each step, then correct yourself.

1 Name the fraction



a. The bar has 8 equal parts, so each part is $\frac{1}{8}$ of the bar.

b. 5 parts are shaded: $\frac{5}{8}$.

c. The other $8 - 5 = 3$ parts are not shaded: $\frac{3}{8}$. Check: $\frac{5}{8} + \frac{3}{8} = \frac{8}{8} = 1$ whole bar.

2 Pizza slices



a. One slice is $\frac{1}{6}$ of the pizza.

b. Maya ate $1 + 2 = 3$ slices, which is $\frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{3}{6}$.

c. $6 - 3 = 3$ slices are left, which is $\frac{3}{6}$. Dividing the top and bottom by 3 gives $\frac{3}{6} = \frac{1}{2}$, so half the pizza is left.

3 Fill in the missing number



a. $2 \times 3 = 6$, so multiply the top by 3: $\frac{1 \times 3}{2 \times 3} = \frac{3}{6}$.

b. $3 \times 4 = 12$, so $\frac{2 \times 4}{3 \times 4} = \frac{8}{12}$.

c. $5 \times 2 = 10$, so $\frac{3 \times 2}{5 \times 2} = \frac{6}{10}$.

d. $4 \times 25 = 100$, so $\frac{3 \times 25}{4 \times 25} = \frac{75}{100}$.

4 Name the points



a. The line is cut into 6 equal lengths. A is 1 jump from 0: $\frac{1}{6}$. B is 3 jumps: $\frac{3}{6}$. C is 5 jumps: $\frac{5}{6}$.

b. Divide 3 and 6 by 3: $\frac{3}{6} = \frac{1}{2}$. Point B is halfway between 0 and 1.

5 True or false?



a. True. Divide the top and bottom of $\frac{2}{4}$ by 2 to get $\frac{1}{2}$.

b. False. $\frac{3}{6} = \frac{1}{2}$, not $\frac{1}{3}$. Three sixths is half of the whole.

c. True. $\frac{4 \div 2}{10 \div 2} = \frac{2}{5}$.

d. False. $\frac{2}{3} = \frac{8}{12}$ and $\frac{3}{4} = \frac{9}{12}$, and $8 \neq 9$.

6 Same denominator or same numerator



- a. Same denominator, and $2 < 4$: $\frac{2}{5} < \frac{4}{5}$.
- b. Six sixths make one whole: $\frac{6}{6} = 1$.
- c. Same numerator. Thirds are bigger pieces than eighths, so $\frac{1}{3} > \frac{1}{8}$.
- d. Same denominator, and $5 > 3$: $\frac{5}{8} > \frac{3}{8}$.

7 Above or below one half



Compare each numerator with half of its denominator.

- $\frac{3}{8}$: half of 8 is 4 and $3 < 4$, so less than one half.
- $\frac{5}{6}$: half of 6 is 3 and $5 > 3$, so greater.
- $\frac{4}{8}$: half of 8 is 4, so equal to one half.
- $\frac{2}{5}$: half of 5 is 2.5 and $2 < 2.5$, so less.
- $\frac{7}{12}$: half of 12 is 6 and $7 > 6$, so greater.
- $\frac{1}{10}$: half of 10 is 5 and $1 < 5$, so less.

Less: $\frac{3}{8}$, $\frac{2}{5}$, $\frac{1}{10}$. Equal: $\frac{4}{8}$. Greater: $\frac{5}{6}$, $\frac{7}{12}$.

8 Two equivalent fractions



- a. $\frac{3 \times 2}{4 \times 2} = \frac{6}{8}$ and $\frac{3 \times 3}{4 \times 3} = \frac{9}{12}$.
- b. $\frac{2 \times 2}{5 \times 2} = \frac{4}{10}$ and $\frac{2 \times 20}{5 \times 20} = \frac{40}{100}$.

9 Simplify



- a. Divide by 2: $\frac{3}{4}$.
- b. Divide by 2: $\frac{5}{6}$. Only 1 divides both 5 and 6.
- c. Divide by 4: $\frac{2}{3}$ (or divide by 2 twice).
- d. Divide by 25: $\frac{1}{4}$.

10 Oatmeal scoops



Write $\frac{2}{3}$ in sixths: $\frac{2}{3} = \frac{2 \times 2}{3 \times 2} = \frac{4}{6}$. That is 4 copies of $\frac{1}{6}$, so Lena needs **4 scoops**.

For $\frac{1}{3} = \frac{2}{6}$ she needs **2 scoops**.

11 Fractions with unlike denominators



- a. Twelfths: $\frac{8}{12}$ and $\frac{9}{12}$. Since $8 < 9$: $\frac{2}{3} < \frac{3}{4}$.
- b. Tenths: $\frac{6}{10}$ and $\frac{7}{10}$. Since $6 < 7$: $\frac{3}{5} < \frac{7}{10}$.
- c. Twelfths: $\frac{10}{12}$ and $\frac{9}{12}$. Since $10 > 9$: $\frac{5}{6} > \frac{3}{4}$.
- d. Eighths: $\frac{3}{8}$ and $\frac{2}{8}$. Since $3 > 2$: $\frac{3}{8} > \frac{1}{4}$.

12 Two number lines



- a. A is $\frac{1}{4}$, B is $\frac{3}{4}$, C is $\frac{2}{8}$, D is $\frac{5}{8}$.
- b. A and C are at the same place: $\frac{1}{4} = \frac{2}{8}$.
- c. B is at $\frac{3}{4} = \frac{6}{8}$. D at $\frac{5}{8}$ is to the left of B, so $\frac{5}{8} < \frac{3}{4}$.

13 Who ran farther?



Use eighths: $\frac{3}{4} = \frac{6}{8}$. Compare $\frac{6}{8}$ and $\frac{5}{8}$: $6 > 5$.

Leo ran farther, by $\frac{6}{8} - \frac{5}{8} = \frac{1}{8}$ of a mile.

14 Least to greatest



Use sixths: $\frac{1}{2} = \frac{3}{6}$, $\frac{1}{3} = \frac{2}{6}$, $\frac{1}{6}$, $\frac{5}{6}$.

The numerators in order are 1, 2, 3, 5, so $\frac{1}{6} < \frac{1}{3} < \frac{1}{2} < \frac{5}{6}$.

15 Find the unknown number



a. $5 \times 20 = 100$, so $4 \times 20 = 80$: $\frac{80}{100}$.

b. $12 \div 3 = 4$, so $9 \div 3 = 3$: $\frac{3}{4}$.

c. $3 \times 3 = 9$, so $8 \times 3 = 24$: $\frac{9}{24}$.

d. $7 \times 3 = 21$, so $10 \times 3 = 30$: $\frac{21}{30}$.

16 Find the mistake



Ben is wrong. Adding the same number to the top and bottom does not keep the amount. The rule needs **multiplying or dividing**.

A correct fraction: $\frac{2 \times 2}{3 \times 2} = \frac{4}{6}$.

To compare, use fifteenths: $\frac{2}{3} = \frac{10}{15}$ and $\frac{4}{5} = \frac{12}{15}$. Since $12 > 10$, $\frac{4}{5} > \frac{2}{3}$, so they are not equal.

17 Which equal one half?



A fraction equals $\frac{1}{2}$ when the denominator is twice the numerator.

- $\frac{5}{10}$: $2 \times 5 = 10$, equal.
- $\frac{6}{12}$: $2 \times 6 = 12$, equal.
- $\frac{50}{100}$: $2 \times 50 = 100$, equal.
- $\frac{4}{9}$: $2 \times 4 = 8 < 9$, so $\frac{4}{9} < \frac{1}{2}$.
- $\frac{3}{5}$: $2 \times 3 = 6 > 5$, so $\frac{3}{5} > \frac{1}{2}$.

18 Ribbons for a craft



a. Use twelfths: red = $\frac{10}{12}$, blue = $\frac{9}{12}$, green = $\frac{7}{12}$. Since $7 < 9 < 10$: green, then blue, then red. That is $\frac{7}{12} < \frac{9}{12} < \frac{10}{12}$.

b. $\frac{2}{3} = \frac{8}{12}$. Red (10) and blue (9) are greater than 8, but green (7) is not. The red and blue ribbons are longer than $\frac{2}{3}$ yard.

19 Same numerator



Both fractions count 3 pieces. Fifths are bigger pieces than eighths because the whole is cut into fewer parts. Three big pieces are more than three small ones, so $\frac{3}{5} > \frac{3}{8}$.

The numerator is always 7. The bigger the denominator, the smaller the pieces, so the order is $\frac{7}{12} < \frac{7}{10} < \frac{7}{8}$.

20 Phone batteries



Use tenths: A is $\frac{4}{10}$; B is $\frac{3 \times 2}{5 \times 2} = \frac{6}{10}$; C is $\frac{1 \times 5}{2 \times 5} = \frac{5}{10}$.

Since $4 < 5 < 6$, the order is A, then C, then B. Phone B has the most charge.

21 Vegetable garden



a. Peppers: $\frac{1}{2} = \frac{5}{10}$, the greatest of 4, 5 and 1 tenths.

b. $\frac{4}{10} < \frac{1}{2}$, because $\frac{4}{10} < \frac{5}{10}$.

c. $1 - \frac{5}{10} = \frac{5}{10} = \frac{1}{2}$.

d. $\frac{4}{10} + \frac{5}{10} + \frac{1}{10} = \frac{10}{10} = 1$, so the whole garden is used.

22 Fractions in between



a. $\frac{1}{2} = \frac{4}{8}$ and $1 = \frac{8}{8}$. The numerators between 4 and 8 are 5, 6 and 7: $\frac{5}{8}, \frac{6}{8}, \frac{7}{8}$.

b. $\frac{1}{3} = \frac{4}{12}$ and $\frac{2}{3} = \frac{8}{12}$. The numerators between 4 and 8 are 5, 6 and 7: $\frac{5}{12}, \frac{6}{12}, \frac{7}{12}$.



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