

Dividing Fractions: practice solutions, Grade 6 – download the PDF

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

1 Counting pieces



Each whole contains as many pieces as the denominator says.

a. $6 \times 2 = 12$

b. $3 \times 5 = 15$

c. $8 \times 4 = 32$

Check (a): $12 \times \frac{1}{2} = 6$.

2 Reciprocals



a. Swap: $\frac{5}{3}$.

b. $7 = \frac{7}{1}$, so the reciprocal is $\frac{1}{7}$.

c. 9, because $\frac{1}{9} \times 9 = 1$.

d. $2\frac{1}{2} = \frac{5}{2}$, so the reciprocal is $\frac{2}{5}$.

3 Sharing a fraction



a. $\frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$

b. $\frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$

c. $\frac{6}{7} \div 3 = \frac{2}{7}$ (6 sevenths in 3 groups gives 2 sevenths).

4 Loaves of bread



$$2 \div \frac{1}{4} = 2 \times 4 = 8.$$

She can make **8 loaves**. Check: $8 \times \frac{1}{4} = 2$ pounds.

5 True or false?



a. True: $3 \times 6 = 18$.

b. False: $\frac{1}{3} \div 2 = \frac{1}{3} \times \frac{1}{2} = \frac{1}{6}$. The quotient must be smaller than $\frac{1}{3}$, but $\frac{2}{3}$ is larger.

c. True: $\frac{4}{9} \times \frac{9}{4} = 1$.

6 Using the bar model



The 4 colored parts are each $\frac{1}{6}$, so $\frac{2}{3} \div \frac{1}{6} = 4$.

Check by the rule: $\frac{2}{3} \times 6 = 4$. Four pieces fit.

7 Garden hose breaks



$$9 \div \frac{3}{4} = 9 \times \frac{4}{3} = \frac{36}{3} = 12.$$

Maya gets **12 pieces**. Check: $12 \times \frac{3}{4} = 9$ feet.

8 Fraction divided by a fraction



$$\frac{3}{5} \times \frac{10}{3} = \frac{30}{15} = 2.$$

Check: $2 \times \frac{3}{10} = \frac{6}{10} = \frac{3}{5}$. The answer is 2.

9 Three quotients



a. $\frac{5}{6} \times \frac{3}{2} = \frac{15}{12} = \frac{5}{4}$

b. $\frac{7}{8} \times 4 = \frac{28}{8} = \frac{7}{2}$

c. $\frac{4}{9} \times \frac{3}{8} = \frac{12}{72} = \frac{1}{6}$

10 Find the mistake



Mia multiplied by 3 instead of by the reciprocal $\frac{1}{3}$. Sharing $\frac{2}{5}$ into 3 parts must give less than $\frac{2}{5}$, but $\frac{6}{5}$ is more than 1.

Correct: $\frac{2}{5} \div 3 = \frac{2}{5} \times \frac{1}{3} = \frac{2}{15}$.

11 Ribbon for gift bows



$$\frac{9}{10} \div \frac{3}{20} = \frac{9}{10} \times \frac{20}{3} = \frac{180}{30} = 6.$$

Six bows can be made. Each bow uses $\frac{3}{20}$ m = 0.15 m = 15 cm.

12 Jumps on a number line



The jumps land on $\frac{2}{3}$, $\frac{4}{3}$ and 2, so there are 3 jumps.

Check: $2 \times \frac{3}{2} = 3$, and $3 \times \frac{2}{3} = 2$. So $2 \div \frac{2}{3} = 3$.

13 Mixed numbers

a. $\frac{3}{2} \times \frac{4}{3} = \frac{12}{6} = 2$

b. $\frac{9}{4} \times \frac{2}{3} = \frac{18}{12} = \frac{3}{2}$

c. $3 \times \frac{2}{3} = 2$

14 Missing factor

a. $\square = 6 \div \frac{2}{5} = 6 \times \frac{5}{2} = 15.$

b. $\square = \frac{9}{10} \div \frac{3}{4} = \frac{9}{10} \times \frac{4}{3} = \frac{36}{30} = \frac{6}{5}.$

15 Pizza night

$$\frac{5}{6} \div 5 = \frac{5}{6} \times \frac{1}{5} = \frac{1}{6}.$$

Each friend eats $\frac{1}{6}$ of the pizza.

16 Hiking speed

$$\text{Speed} = \text{distance} \div \text{time} = \frac{3}{4} \div \frac{1}{6} = \frac{3}{4} \times 6 = \frac{18}{4} = \frac{9}{2}.$$

Her speed is $4\frac{1}{2}$ mph (4.5 mph, about 7.2 km/h). That is a brisk but realistic pace.

17 Predict, then compute

- a. The divisor is less than 1, so the quotient is greater than 5: $5 \times \frac{4}{3} = \frac{20}{3} = 6\frac{2}{3}$.
- b. The divisor $\frac{5}{4}$ is greater than 1, so the quotient is less than $\frac{2}{3}$: $\frac{2}{3} \times \frac{4}{5} = \frac{8}{15}$.
- c. The divisor is 1, so the quotient is equal: $\frac{7}{8}$.

18 Height of a fish tank

$$\text{Height} = \text{volume} \div \text{base area} = \frac{9}{8} \div \frac{3}{4} = \frac{9}{8} \times \frac{4}{3} = \frac{36}{24} = \frac{3}{2}.$$

$$\text{The water is } \frac{3}{2} \text{ ft} = 1.5 \text{ ft} = 18 \text{ inches high. Check: } \frac{3}{4} \times \frac{3}{2} = \frac{9}{8}.$$

19 Friendship bracelets

- a. $\frac{15}{2} \div \frac{3}{4} = \frac{15}{2} \times \frac{4}{3} = \frac{60}{6} = 10$. She can make 10 bracelets.
- b. Total cord: $\frac{15}{2} + \frac{9}{4} = \frac{30}{4} + \frac{9}{4} = \frac{39}{4}$ m. Then $\frac{39}{4} \div \frac{3}{4} = 13$. She can make 13 bracelets.

20 Write your own problem

Sample problem: a bottle holds $\frac{4}{5}$ liter of paint, and each craft project uses $\frac{1}{10}$ liter. How many projects can be painted?

$$\frac{4}{5} \div \frac{1}{10} = \frac{4}{5} \times 10 = 8. \text{ Check: } 8 \times \frac{1}{10} = \frac{8}{10} = \frac{4}{5}. \text{ The answer is 8 projects. Any context works as long as the question asks how many pieces of size } \frac{1}{10} \text{ fit in } \frac{4}{5}.$$

21 Find the unknown number



a. $x \div \frac{2}{3} = \frac{9}{4}$, so $x = \frac{9}{4} \times \frac{2}{3} = \frac{18}{12} = \frac{3}{2}$. Check: $\frac{3}{2} \times \frac{2}{3} = \frac{9}{4}$.

b. $\frac{5}{6} \div n = \frac{5}{3}$, so $n = \frac{5}{6} \div \frac{5}{3} = \frac{5}{6} \times \frac{3}{5} = \frac{1}{2}$. Check: $\frac{5}{6} \div \frac{1}{2} = \frac{5}{3}$.



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