

Multiplying and Dividing Rational Numbers: practice solutions, Grade 7 – download the PDF

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

1 Sign rules



a) different signs: -30 . b) same signs: 24 . c) different signs: -63 . d) three negative factors, odd, so -1 .

2 Dividing integers



a) -8 . b) 8 . c) -5 . d) 0 , since zero divided by a nonzero number is zero.

3 Missing numbers



a) $35 \div (-5) = -7$. b) $9 \cdot (-4) = -36$. c) $72 \div (-8) = -9$. Each answer can be checked by multiplying back.

4 Multiplying fractions



a) $\frac{6}{35}$. b) $\frac{24}{60} = \frac{2}{5}$. c) different signs: $-\frac{6}{14} = -\frac{3}{7}$.

5 Reciprocals



a) $\frac{8}{3}$. b) $-\frac{1}{5}$. c) $2\frac{1}{2} = \frac{5}{2}$, so the reciprocal is $\frac{2}{5}$.

6 Fractions to decimals



a) $3 \div 8 = 0.375$. b) $7 \div 20 = 0.35$. c) $5 \div 6 = 0.8\bar{3}$. d) $2 \div 9 = 0.\bar{2}$.

7 True or false?



a) False: same signs give a positive product, for example $(-2)(-3) = 6$. b) True: same signs give a positive quotient, 4. c) False: the reciprocal keeps the sign, so it is $-\frac{3}{2}$.

8 Milk for pancakes



$\frac{3}{4} \cdot 2\frac{2}{3} = \frac{3}{4} \cdot \frac{8}{3} = \frac{24}{12} = 2$. The batches need 2 liters of milk.

9 Mixed number division



a) $\frac{7}{2} \cdot \frac{4}{7} = \frac{28}{14} = 2$. b) $-\frac{12}{5} \cdot \frac{10}{3} = -\frac{120}{15} = -8$.

10 Integer order of operations



a) Parentheses: $-5 + 2 = -3$. Exponent: $(-3)^2 = 9$. Then $4 \cdot 9 = 36$ and $-3 + 36 = 33$.
b) Left to right: $18 \div (-3) = -6$, $-6 \cdot 2 = -12$, then $-12 - (-4) = -8$.

11 Terminate or repeat?



Each fraction is in lowest terms. $8 = 2^3$ and $25 = 5^2$, so $\frac{7}{8}$ and $\frac{11}{25}$ terminate. $12 = 2^2 \cdot 3$ and $21 = 3 \cdot 7$ contain other primes, so $\frac{5}{12}$ and $\frac{4}{21}$ repeat.

12 Repeating blocks



a) $0.\overline{26}$. b) $0.\overline{714285}$, a block of 6 digits. c) $0.58\overline{3}$. d) $0.\overline{36}$.

13 Distributive shortcuts



a) $15 \cdot \left(-\frac{2}{5}\right) + 15 \cdot \frac{1}{3} = -6 + 5 = -1$. b) $24 \cdot \frac{5}{6} - 24 \cdot \frac{3}{8} = 20 - 9 = 11$.

14 Freezer



Total change: $6 \cdot (-2.5) = -15$. Final: $14 + (-15) = -1$. The freezer ends at -1°F .

15 Find the error



The student multiplied instead of using the reciprocal of the divisor. Correct:

$$-\frac{2}{3} \cdot \frac{9}{4} = -\frac{18}{12} = -\frac{3}{2}.$$

16 Name the property



a) commutative. b) associative. c) identity. d) multiplicative inverse (reciprocals). e) distributive.

17 Bank balance

Change: $7 \cdot (-18.50) = -129.50$. Balance: $60 - 129.50 = -69.50$. The account is overdrawn by 69.50 dollars.

18 Rain barrel

Water in the barrel: $60 \cdot \frac{5}{6} = 50$ gallons. Poured out: $50 \cdot \frac{3}{10} = 15$ gallons. Buckets: $15 \div 2\frac{1}{2} = 15 \cdot \frac{2}{5} = 6$. Six buckets are filled.

19 Mean of changes

Sum: $-3.5 + 2 - 1.25 + 0.75 - 4 = -6$. Mean: $-6 \div 5 = -1.2$. The mean is -1.2°F .

20 A big expression

a) Top: $-\frac{9}{12} + \frac{10}{12} = \frac{1}{12}$. Then $\frac{1}{12} \div \left(-\frac{1}{3}\right) = \frac{1}{12} \cdot (-3) = -\frac{1}{4}$. b) $\frac{5}{2} \cdot \left(-\frac{4}{5}\right) = -2$; $(-3)^2 = 9$ and $9 \div (-6) = -1.5$. So $-2 - (-1.5) = -0.5$.

21 Odd and even

a) 15 is odd so $(-1)^{15} = -1$; 20 is even so $(-1)^{20} = 1$; $(-2)^5 = -32$. b) There are 7 negative factors, an odd count, so the product is negative. The absolute values multiply to $2 \cdot 3 \cdot 1 \cdot 5 \cdot 1 \cdot 2 \cdot 4 = 240$. The product is -240 .

22 Ordering mixed forms



0.7 ; $\frac{5}{7} = 0.714285\dots$; $\frac{8}{11} = 0.7272\dots$; $0.\overline{7} = 0.7777\dots$. Order: $0.7 < \frac{5}{7} < \frac{8}{11} < 0.\overline{7}$

23 Reading rate



a) $3\frac{1}{2} \div \frac{1}{4} = \frac{7}{2} \cdot 4 = 14$ pages per hour. b) $49 \div 14 = \frac{7}{2} = 3\frac{1}{2}$. The chapter takes 3.5 hours, or 3 hours 30 minutes.



Test yourself: quick challenge for Grade 7

[Change level](#)

Level : **Grade 7**

6 random questions, instant feedback.



Start the challenge



Keep exploring with Zyro

 Math practice

Multiplying and Dividing Rational Numbers: math practice, Grade 7

 Math quizzes

Multiplying and Dividing Rational Numbers: math quiz, Grade 7

 Math tests

Multiplying and Dividing Rational Numbers: math test, Grade 7

 Math practice

Equivalent Algebraic Expressions: math practice, Grade 7

 Math practice

Solving Two-Step Equations: math practice, Grade 7

 Math quizzes

Equivalent Algebraic Expressions: math quiz, Grade 7

Zyro takes you to our partner sites

Blast off to other planets of knowledge and their apps.

Lift off