Solving Real-World Problems with Rational Numbers

Name: _____	Date: _____	Score: _____ / 17

This is where math meets real life! Real-world problems with rational numbers usually need more than one step and more than one operation, so the first job is to read carefully, choose the right operations, and keep track of what positive and negative values mean in the story. A smart habit: estimate *before* you solve so you can tell right away if your exact answer makes sense. Show each step clearly, interpret your final answer in context, and you will see how powerful these skills really are.

Key Concepts & Quick Review

Order of operations (PEMDAS): Parentheses → Exponents → Multiplication/Division (left to right) → Addition/Subtraction (left to right)

Problem-solving steps: 1. Read and identify the quantities and operations. **2.** Write an expression. **3.** Evaluate using PEMDAS. **4.** Check the sign and units; estimate to verify reasonableness.

Examples

① Evaluate $\frac{3}{4} \times (-8) + 1\frac{1}{2} \div \frac{3}{4}$.

Think It Through: Follow the order of operations. Do the multiplication and division first, moving from left to right. First, $\frac{3}{4} \times (-8) = -6$. Next, $1\frac{1}{2} \div \frac{3}{4} = \frac{3}{2} \times \frac{4}{3} = 2$. Now add the two results: $-6 + 2 = -4$. Writing the intermediate answers separately keeps the problem organized and prevents sign mistakes.

Answer: -4

② Kenji has $\$45.60$ in his account. He spends $\frac{3}{8}$ of it on Monday and earns $\$12.75$ on Tuesday. Write a multi-step expression and find his balance after Tuesday.

Think It Through: Start with the amount Kenji spends on Monday: $45.60 \times \frac{3}{8} = 17.10$. Subtract that from his original balance to get $45.60 - 17.10 = 28.50$. Then add the money he earns on Tuesday: $28.50 + 12.75 = 41.25$. So his balance after Tuesday is $41.25. The full expression is $45.60 - 45.60 \times \frac{3}{8} + 12.75$. This is a good example of why multiplication must be done before subtraction.

Answer: $\$41.25$

Practice Problems

Evaluate each multi-step expression using the correct order of operations.

1. $\frac{3}{4} \times (-8) + \frac{1}{2} =$ _____

2. $\left(-\frac{5}{6}\right) \div \frac{1}{3} - \frac{1}{2} =$ _____

3. $2.5 + (-0.75) \times 4 =$ _____

4. $(-3) \times \frac{2}{9} + 1\frac{1}{3} =$ _____

5. $\frac{5}{6} - \frac{1}{3} \div \frac{2}{3} =$ _____

6. $(-1.5)^2 \div 0.75 =$ _____

7. $-\frac{3}{4} \times \left(-\frac{8}{9}\right) \div \frac{2}{3} =$ _____

8. $(-2.5) \times \left(-\frac{4}{5}\right) + (-1.5) =$ _____

9. $\frac{7}{8} - \frac{3}{4} \div \left(-\frac{3}{2}\right) =$ _____

10. $(-4) \times 0.25 + (-3) \div \frac{3}{4} =$ _____

11. $\frac{3}{5} \div \frac{9}{10} - \frac{1}{3} =$ _____

12. $-2\frac{3}{4} + 1\frac{1}{2} \times \left(-\frac{2}{3}\right) =$ _____

13. $3.6 \div (-0.9) + (-2) \times 1.5 =$ _____

14. $\left(-\frac{1}{2}\right)^2 \times 8 - \frac{3}{4} =$ _____

15. $-1\frac{2}{3} \div \frac{5}{9} + (-0.2) =$ _____

Study Tips

- Underline key words: “per” signals division or multiplication; “change” often signals subtraction; “total” or “combined” often signals addition.
- Work one operation at a time and write down each intermediate result — never try to hold two computations in your head at once.
- After solving, read the answer back into the problem to check that the size and sign make real-world sense.

Word Problems

16. A small business tracks weekly profit and loss. In week 1 the business earns $\$420.50$. In week 2 it loses $\frac{2}{5}$ of week 1’s earnings. In week 3 it earns $1\frac{1}{2}$ times what it made in week 1. Write a single expression for the total profit over the three weeks, evaluate it step by step, and state whether the overall result is a profit or loss.

_____

17. A scientist monitors a chemical reaction. The temperature starts at $-3.5°$C. Every $\frac{1}{4}\ min$ it changes by $-\frac{3}{8}°$C. After $2\ min$, how many quarter-minute intervals have passed? Write a multiplication expression for the total temperature change and evaluate it. What is the final temperature? If the reaction must stay above $-8°$C, is the reaction still within bounds?

_____

Answer Keys

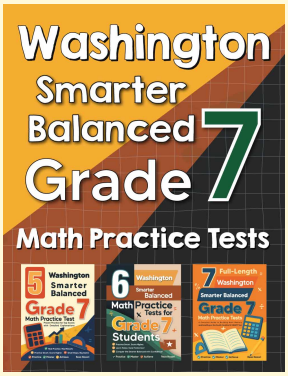
1) $-\frac{11}{2}$
2) -3
3) $-\frac{1}{2}$
4) $\frac{2}{3}$
5) $\frac{1}{3}$
6) 3
7) 1
8) $\frac{1}{2}$
9) $\frac{11}{8}$
10) -5
11) $\frac{1}{3}$
12) $-\frac{15}{4}$
13) -7
14) $\frac{5}{4}$
15) $-\frac{16}{5}$
16) Week 2 loss: $-\$168.20$; week 3: $\$630.75$; total: $\$883.05$; overall profit.
17) Final temperature $-6.5°$C; yes, still above $-8°$C

Step-by-Step Explanations

Tutoring notes not found for this topic.

Want Even More Practice?

Check Out Our Other Washington Smarter Balanced Test Books!



Washington Smarter Balanced Grade 7 Math Preparation Bundle

18 full-length practice tests across three books (5 + 6 + 7)

No repeated questions—maximum practice value!

18 Tests!
3 Books
One Bundle

Important: All our test books contain **unique, completely different tests** from each other! Each book offers fresh practice questions—no repeats!

5 Practice Tests

- ✓ 5 complete practice tests with detailed explanations
- ✓ Perfect foundation for Smarter Balanced test preparation
- ✓ Builds confidence and test-taking skills
- ✓ High-quality questions aligned with state standards

Start your practice journey!

6 Practice Tests

- ✓ 6 complete practice tests with detailed explanations
- ✓ **Unique tests**—different from the 5 tests book
- ✓ Perfect for more practice after mastering 5 tests
- ✓ Builds even more confidence and test-taking skills
- ✓ Same high-quality questions aligned with standards

Take your practice to the next level!

7 Practice Tests

- ✓ 7 complete practice tests for maximum preparation
- ✓ **Unique tests**—different from 5 and 6 tests books
- ✓ The most comprehensive practice for Grade 7
- ✓ Ideal for students aiming for top scores
- ✓ Extensive practice builds mastery and confidence

Go all the way with comprehensive practice!