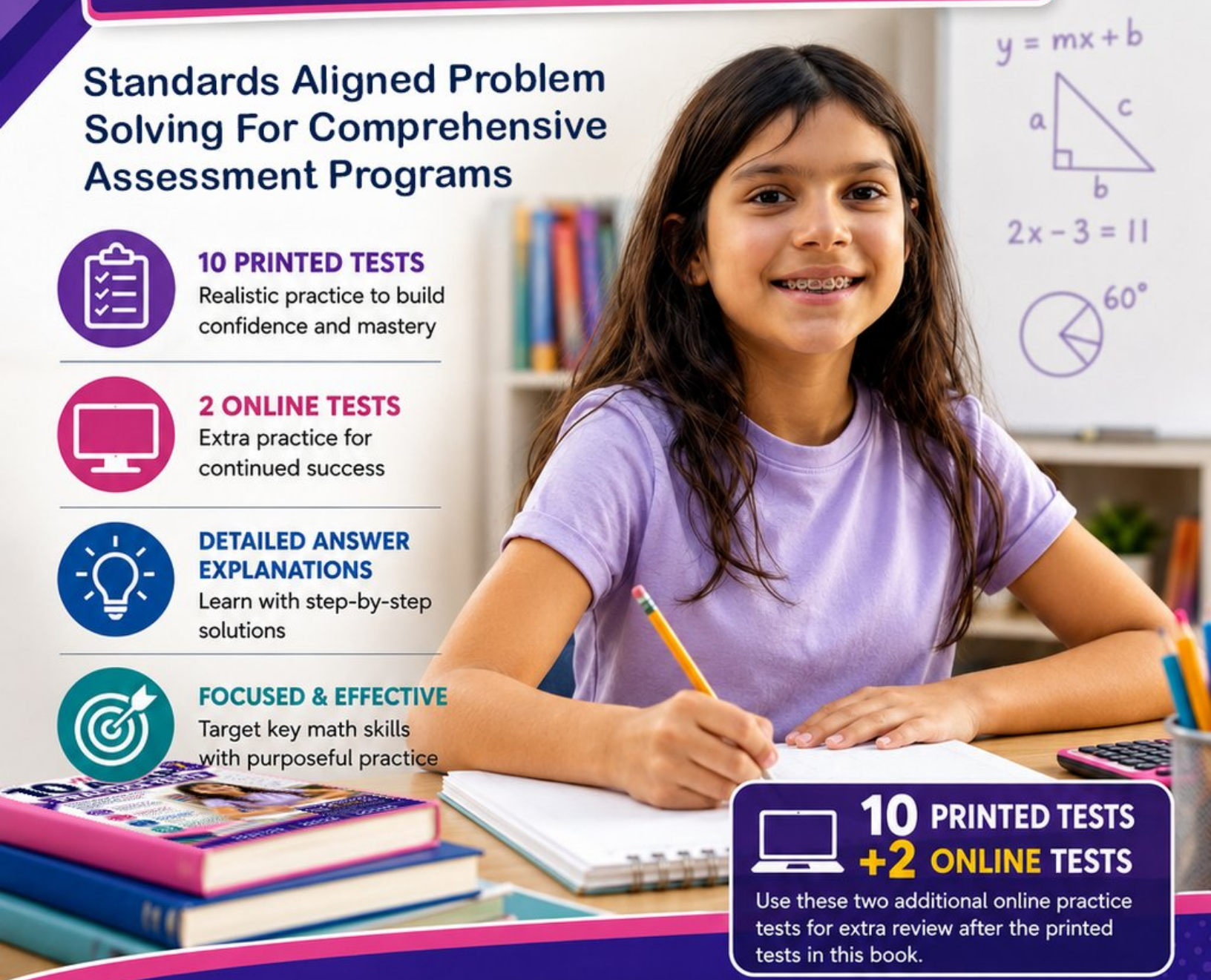
# 10 Alaska AK STAR

GRADE 7 MATH

# PRACTICE TESTS

## Standards Aligned Problem Solving For Comprehensive Assessment Programs




**10 PRINTED TESTS**
Realistic practice to build confidence and mastery

**2 ONLINE TESTS**
Extra practice for continued success

**DETAILED ANSWER EXPLANATIONS**
Learn with step-by-step solutions

**FOCUSED & EFFECTIVE**
Target key math skills with purposeful practice

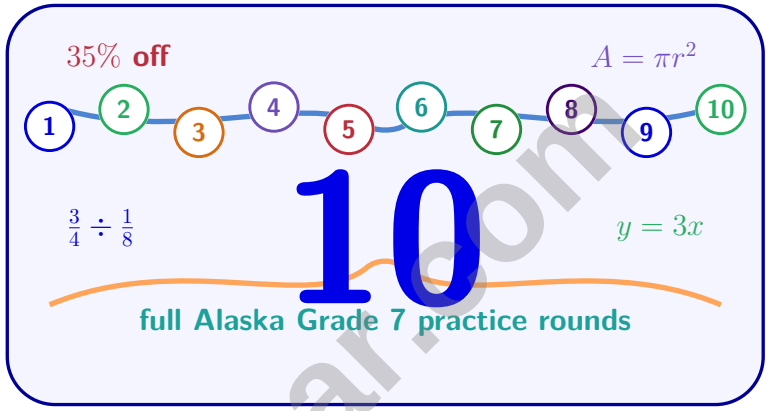
**10 PRINTED TESTS +2 ONLINE TESTS**

Use these two additional online practice tests for extra review after the printed tests in this book.

**PRACTICE ★ REVIEW ★ SUCCEED**

# 10 Alaska AK STAR Grade 7 Math Practice Tests

*Alaska Grade 7 AK STAR Practice for clear problem-solving across long-range ratios, percent models, geometry, data, and probability*






**Ten complete 40-question Grade 7 AK STAR practice rounds with proportional relationships, percents, rational numbers, expressions, equations, geometry, statistics, probability, answer keys, and clear explanations for every item.**

**Jay Daie and Reza Nazari**

# Copyright ©

## Testinar Inc

Published by Testinar Inc

Testinar.com

# Welcome, Alaska Grade 7 Problem Solver!

Ten focused rounds for sharper Alaska AK STAR math thinking

This book gives you ten full Grade 7 AK STAR math practice tests. Each round is built to help you notice structure, compare quantities, use proportional reasoning, handle rational numbers, and explain your thinking with care.

**Your Alaska Practice Promise**

I will read every question carefully, choose a strategy that fits, write enough work to prove my answer, and use corrections as training for the next test.

# How to Use This Book

A ten-session plan for confident Grade 7 review

1. **Warm up with the review pages.** Notice the big ideas before starting the tests.
2. **Complete one test at a time.** Treat each 40-question round like a real practice session.
3. **Show your reasoning.** Jot a proportion, equation, diagram, number line, or quick estimate when it helps.
4. **Correct actively.** Rework missed items before reading the explanation.
5. **Choose the next target.** After each test, name one skill and one habit to improve.

**Alaska review rhythm:** Work a test, score it, study your misses, then come back ready for the next round with one clear goal.

# What Is Inside?

Ten Alaska AK STAR tests, 400 questions, and a complete review path

| Part | What You Will Practice |
|---|---|
| Tests 1–3 | Proportional relationships, unit rates, percents, rational-number operations, and careful reading. |
| Tests 4–6 | Expressions, equations, inequalities, scale drawings, geometry, and multi-step problem solving. |
| Tests 7–9 | Statistics, probability, mixed review, stamina, and choosing efficient strategies. |
| Test 10 | A final Alaska round to show growth across the whole book. |
| Answer Pages | Compact keys and explanations that show why each answer works. |



The tests are mixed on purpose. Grade 7 success means recognizing which idea is being tested even when the next question changes format.

# Table of Contents


★ Practice Test 1 ____ 11
★ Practice Test 2 ____ 24
★ Practice Test 3 ____ 38
★ Practice Test 4 ____ 53
★ Practice Test 5 ____ 67
★ Practice Test 6 ____ 82
★ Practice Test 7 ____ 96
★ Practice Test 8 ____ 111
★ Practice Test 9 ____ 125
★ Practice Test 10 ____ 139
**Practice Test Answer Keys** ____ 154
**Practice Test Answers and Explanations** ____ 160

1) Two datasets both have median 100 and IQR 20. Dataset P has mean 105. Dataset Q has mean 95. Without seeing the actual data, what can you infer?

☐ A. Both datasets are symmetric
☐ B. Dataset P has high outliers pulling the mean above the median; Dataset Q has low outliers
☐ C. The two datasets are identical
☐ D. Cannot infer anything about skewness

2) Simplify: $p^6 \cdot p^2 \cdot p^0$

☐ A. $p^8$
☐ B. $p^{12}$
☐ C. $p^7$
☐ D. 1

3) Solve: $6x - \frac{1}{2} = \frac{11}{2}$

☐ A. $x = 1$
☐ B. $x = \frac{3}{2}$
☐ C. $x = 2$
☐ D. $x = \frac{5}{2}$

4) A rectangular prism has a volume of 480 $m^3$ and a base area of 60 $m^2$. What is the height in meters?

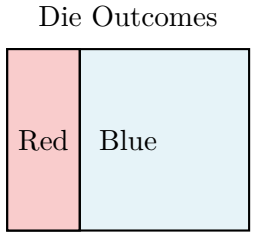
5) A shirt costs \$60. With a 15% discount, which expression represents the final price?

☐ A. $0.15 \times 60$
☐ B. $0.85 \times 60$
☐ C. $1.15 \times 60$
☐ D. $60 - 15$

6) A line graph shows the cost of a movie ticket over 10 years (2014–2024): \$8, \$8.50, \$9, \$9.50, \$10, \$10.25, \$10.50, \$11, \$11.50, \$12. Which year shows the smallest increase from the previous year?

☐ A. 2015 (increase of \$0.50)
☐ B. 2018 (increase of \$0.50)
☐ C. 2019 (increase of \$0.25)
☐ D. 2020 (increase of \$0.50)

7)




A biased die has 2 red faces and 4 blue faces. What is the probability of rolling blue on a single roll?

☐ A. $\frac{2}{6}$
☐ B. $\frac{5}{6}$
☐ C. $\frac{4}{6}$
☐ D. $\frac{1}{2}$

8) A cylindrical pipe has a volume of 565.2 cubic feet, a radius of 3 feet, and an unknown height. What is the height of the pipe? Use $\pi \approx 3.14$.

9) A person selects a main color (Red, Blue) and a secondary color (Yellow, Green, Purple). How many color combinations are possible?

☐ A. 5
☐ B. 6
☐ C. 7
☐ D. 8

10) Two events A and B are independent. $P(A) = \frac{1}{2}$ and $P(B) = \frac{1}{3}$. What is $P(\text{A or B})$?

☐ A. $\frac{2}{5}$
☐ B. $\frac{2}{3}$
☐ C. $\frac{5}{6}$
☐ D. $\frac{1}{6}$

11) A coin is flipped and a die is rolled together in a compound experiment. Out of 240 trials, heads AND rolling a 5 occurred 18 times. What is the experimental probability of both events?

☐ A. $\frac{1}{12}$
☐ B. $\frac{18}{240}$
☐ C. 0.10
☐ D. $\frac{1}{8}$

12) **Four Estimation Attempts**

| Attempt | Estimate | Actual | % Error |
|---|---|---|---|
| P | 84 | 100 | ? |
| Q | 28 | 32 | ? |
| R | 66 | 75 | ? |
| S | 54 | 60 | ? |

Which attempt has the largest percent error?

☐ A. P (16%)
☐ B. Q (12.5%)
☐ C. R (12%)
☐ D. S (10%)

13) Which expression is equivalent to $2(3x + 4)$? The diagram shows the split:

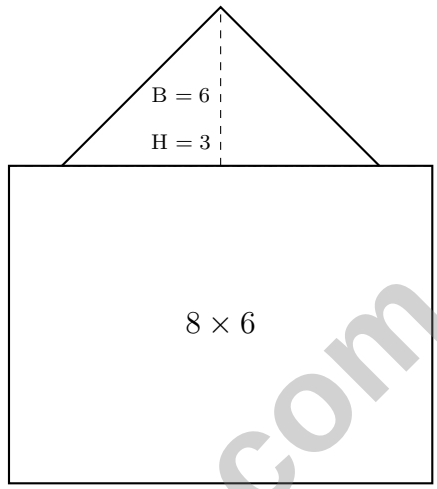
| | $3x$ | $4$ |
|---|---|---|
| $2$ | $6x$ | $8$ |

☐ A. $6x + 4$
☐ B. $6x + 8$
☐ C. $5x + 6$
☐ D. $3x + 8$

1) What is $\sqrt{169}$?

☐ A. 12
☐ B. 13
☐ C. 14
☐ D. 15

2)




A roof cross-section shape consists of a rectangle (8 cm × 6 cm) and a triangle (6 cm base, 3 cm height). A contractor estimated the triangle height as 4 cm instead. How much area did the contractor overestimate?

☐ A. 1.5 $cm^2$
☐ B. 3 $cm^2$
☐ C. 6 $cm^2$
☐ D. 12 $cm^2$

3) A retailer buys items for $80 and marks them up by 55%. What is the selling price?

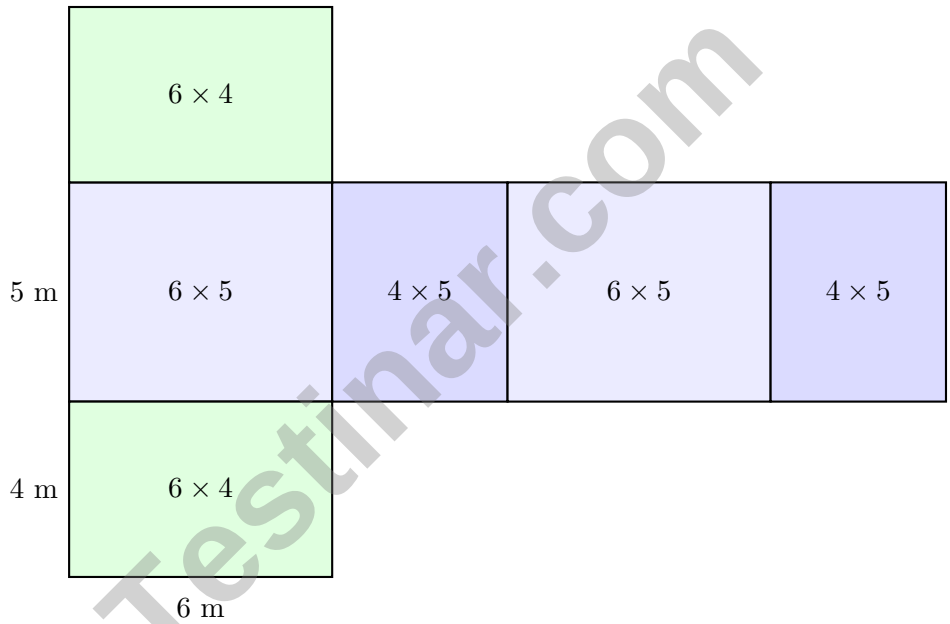
4) A rectangular prism has volume 240 $cm^3$ and base area 30 $cm^2$. What is the height of the prism?

☐ A. 8 cm
☐ B. 10 cm
☐ C. 15 cm
☐ D. 210 cm

5) Which expression is equivalent to $3(2y + 7)$?

☐ A. $6y + 21$
☐ B. $6y + 7$
☐ C. $3y + 10$
☐ D. $2y + 21$

6)



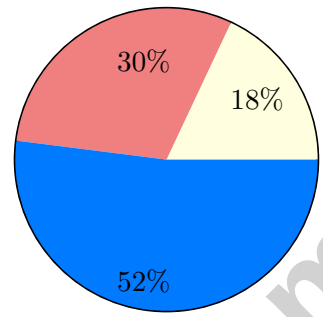

A net shows the unfolded faces of a rectangular prism. Based on the labeled dimensions, what is the surface area?

☐ A. 148 $m^2$
☐ B. 160 $m^2$
☐ C. 200 $m^2$
☐ D. 240 $m^2$

1) A runner tracks distance and heartbeats. For every $\frac{1}{5}$ mile run, the runner's heart beats 25 times. What is the constant of proportionality relating heartbeats to miles?

☐ A. $k = \frac{1}{5}$ beats per mile
☐ B. $k = 5$ beats per mile
☐ C. $k = 0.2$ beats per mile
☐ D. $k = 125$ beats per mile

2)




The circle graph shows a fitness center's member activity levels. Yellow is inactive (18%), red is casual (30%), and blue is active (52%). If the fitness center has 1100 members, how many are inactive?

☐ A. 99
☐ B. 198
☐ C. 330
☐ D. 572

3) A news outlet posts a poll on its website asking readers: "Do you support better funding for schools?" What type of bias is most clearly present?

☐ A. Response bias from leading language in the question
☐ B. Voluntary response bias—only interested readers choose to answer
☐ C. Measurement error from survey design
☐ D. Systematic bias from website timing

4) Simplify: $(-8d + 3) - (4d - 7)$

☐ A. $-12d + 10$
☐ B. $-4d - 4$
☐ C. $-12d - 4$
☐ D. $-4d + 10$

5) Simplify: $(b^3)^4$

☐ A. $b^7$
☐ B. $b^{12}$
☐ C. $b^{81}$
☐ D. $b^{64}$

6) A personal trainer charges a one-time consultation fee of \$50 and \$60 per session. The total for several sessions is \$290. Which equation finds $s$, the number of sessions?

☐ A. $60s + 50 = 290$
☐ B. $50s + 60 = 290$
☐ C. $60 + 50s = 290$
☐ D. $50(s + 60) = 290$

7) Solve for $x$: $2x + 7 = 19$

☐ A. $x = 4$
☐ B. $x = 5$
☐ C. $x = 6$
☐ D. $x = 13$

8) In a spinning experiment, a spinner was spun 120 times. One section appeared 36 times. If the spinner is spun 360 more times (total 480 spins), and that same section appears 108 more times (total 144 appearances), what is the new experimental probability? Express as a fraction in simplest form.

# Alaska AK STAR Grade 7 Practice Test Answer Keys

**How to use this section with a Grade 7 student:**

1. check the answer first and circle any item that needs another look
2. retry the problem with fresh work before reading the explanation
3. write one short lesson learned from each missed or guessed item

**A strong review routine turns every correction into a sharper plan for the next Alaska AK STAR practice test.**

# Practice Test Answers and Explanations

## Practice Test 1 Answers and Explanations

1) **Choice B is correct.** 7.SP.1-7.SP.4 Same median (100) and IQR, but different means. Mean > Median indicates high outliers (right skew). Mean < Median indicates low outliers (left skew). Dataset P is right-skewed; Dataset Q is left-skewed.
2) **Choice A is correct.** 7.EE.1-7.EE.2 Since $p^0 = 1$, we have $p^6 \cdot p^2 \cdot p^0 = p^6 \cdot p^2 \cdot 1 = p^{6+2} = p^8$.
3) **Choice A is correct.** 7.EE.3-7.EE.4 Add $\frac{1}{2}$ to both sides: $6x = \frac{11}{2} + \frac{1}{2} = \frac{12}{2} = 6$. Divide by 6: $x = 1$.
4) **The correct answer is** 8 **.** 7.G.4-7.G.6 $h = \frac{V}{B} = \frac{480}{60} = 8$ m.
5) **Choice B is correct.** 7.EE.1-7.EE.2 A 15% discount removes 15% from the original price. You pay the remaining $100\% - 15\% = 85\%$. The multiplier 0.85 scales the price by this remaining percent: $0.85 \times 60 = 51$.
6) **Choice C is correct.** 7.SP.1-7.SP.4 Comparing year-to-year increases: 2015 (+$0.50), 2016 (+$0.50), 2017 (+$0.50), 2018 (+$0.50), 2019 (+$0.25), 2020 (+$0.25), 2021 (+$0.50), 2022 (+$0.50), 2023 (+$0.50), 2024 (+$0.50). The year 2019 shows the smallest single increase at $0.25.
7) **Choice C is correct.** 7.SP.5-7.SP.8 Blue faces: 4 out of 6. $P(\text{blue}) = \frac{4}{6} = \frac{2}{3}$.
8) **The correct answer is** 20 **.** 7.G.4-7.G.6 $V = \pi r^2 h \Rightarrow 565.2 = 3.14 \times 9 \times h \Rightarrow 565.2 = 28.26h \Rightarrow h = 20$ feet.
9) **Choice B is correct.** 7.SP.5-7.SP.8 Main colors: 2; secondary colors: 3. Total: $2 \times 3 = 6$ combinations.
10) **Choice C is correct.** 7.SP.5-7.SP.8 For independent events: $P(A \text{ or } B) = P(A) + P(B) - P(A) \cdot P(B) = \frac{1}{2} + \frac{1}{3} - \frac{1}{6} = \frac{5}{6}$.
11) **Choice B is correct.** 7.SP.6 Experimental probability of both heads and rolling a 5: $\frac{18}{240} = \frac{3}{40} = 0.075$. The theoretical probability would be $\frac{1}{2} \times \frac{1}{6} = \frac{1}{12} \approx 0.083$, close to but not exactly the experimental result.
12) **Choice A is correct.** 7.RP.3 P: $\frac{|84-100|}{100} \times 100\% = 16\%$. Q: $\frac{|28-32|}{32} \times 100\% = 12.5\%$. R: $\frac{|66-75|}{75} \times 100\% = 12\%$. S: $\frac{|54-60|}{60} \times 100\% = 10\%$. Attempt P has the largest error.
13) **Choice B is correct.** 7.EE.1-7.EE.2 Distribute 2: $2(3x) + 2(4) = 6x + 8$. The area model shows the two parts: $6x$ and 8.
14) **Choice D is correct.** 7.RP.3 STEP 1: Convert months to years: $t = 18 \div 12 = 1.5$ years. STEP 2: $I = 8500 \times 0.085 \times 1.5 = \$1087.50$. STEP 3: $A = 8500 + 1087.50 = \$9587.50$.
15) **Choice B is correct.** 7.NS.1-7.NS.3 $7 - (-2) - 5 = 7 + 2 - 5 = 9 - 5 = 4$. Convert the subtraction of a negative first.
16) **Choice D is correct.** 7.RP.1-7.RP.3 Scale is 2 : 5, so 1 : 2.5. Actual length: $10 \times 2.5 = 25$ feet.
17) **Choice C is correct.** 7.RP.3 If $45 = 0.50 \times n$, then $n = \frac{45}{0.50} = 90$.
18) **Choice D is correct.** 7.RP.3 Markup amount $= 0.50 \times 60 = \$30$. Selling price $= 60 + 30 = \$90$.
19) **Choice C is correct.** 7.NS.1b Starting at floor $-2$ and moving up 9 floors: $-2 + 9 = 7$. The elevator reaches floor 7.
20) **Choice A is correct.** 7.EE.1-7.EE.2 The GCF of 9 and 12 is 3. So $9m + 12 = 3(3m + 4)$. (Option B confuses the constant. Option C factors only the variable. Option D uses a decimal.)
21) **Choice B is correct.** 7.SP.1-7.SP.4 $54° \div 360° \times 100 = 15\%$.
22) **The correct answer is A,B.** 7.G.4-7.G.6 Choice A: Diameter $= 2r = 2 \times 6 = 12$ m is correct. Choice B: Area $= 3.14 \times 6^2 = 113.04$ m$^2$ is correct. C confuses circumference with area (37.68 m vs m$^2$). D fails because square area is 36 m$^2$, much less than circle's 113.04 m$^2$.
23) **Choice C is correct.** 7.SP.5-7.SP.8 First spin: 2 outcomes (A or B). Second spin: 2 outcomes. Total: $2 \times 2 = 4$ outcomes (AA, AB, BA, BB).
24) **Choice A is correct.** 7.EE.1 Combine: $(-3 + 5 - 1 + 2)x = 3x$.
25) **Choice C is correct.** 7.RP.1-7.RP.3 Unit rate is $\$120 \div 10 = \$12$ per book. For 15 books: $15 \times \$12 = \$180$.
26) **Choice A is correct.** 7.NS.1-7.NS.3 Moving left 3.2 units from 9.8: $9.8 - 3.2 = 6.6$.
27) **Choice C is correct.** 7.NS.2d Only C has a denominator factor other than 2 and 5: $30 = 2 \times 3 \times 5$ (contains 3). The others: $32 = 2^5$, $64 = 2^6$, $80 = 2^4 \times 5$ (only 2's and 5's).
28) **Choice A is correct.** 7.NS.1-7.NS.3 $2.5 \times \frac{3}{5} = \frac{2.5 \times 3}{5} = \frac{7.5}{5} = 1.5$ cups.
29) **Choice A is correct.** 7.NS.1-7.NS.3 Final elevation $= 1,450 + 325 - 180 = 1,595$ feet.

# Author's Note

## A Math Hero Moment

## Hi, Math Hero!

◇ This full-length book gave you ten complete Grade 7 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. You showed up for Grade 7 practice again and again. That is what real growth looks like: steady effort, honest review, and a willingness to try. ◇

⋆ **Remember this:** A math hero is not someone who never misses a question. A math hero learns from the miss and comes back stronger. ⋆

**Hero Habits**

- **Courage:** You try problems that are not automatic.
- **Honesty:** You review what needs work.
- **Patience:** You let skills grow over time.
- **Pride:** You recognize the effort you gave.

**Grade 7 test-day tip:** Save one solved problem you are proud of. Looking back at progress helps motivation stay strong.

If you want to share something or ask a question, please email me at jay@testinar.com.

**Jay Daie**

Your Math Hero Guide

# PRACTICE TODAY.
# SUCCEED TOMORROW!

This book includes 10 full-length Math practice tests and 2 extra online tests to help Grade 7 students build confidence, strengthen skills, and excel on standardized assessments.

Each practice test is carefully crafted to reflect the latest standards and includes a variety of question types, realistic test conditions, and detailed answer explanations.

Perfect for classroom use, homework, test preparation, and extra practice at home.

## THIS BOOK INCLUDES:

- **10** Full-Length Printed Tests
- **2** Online Practice Tests
- Detailed Answer Explanations

## MORE PRACTICE. GREATER RESULTS.

Give your child the tools to build strong math skills, confidence, and a positive attitude toward learning.

## WHAT YOU'LL GAIN

**Stronger Math Skills**
Build a solid foundation through targeted practice and review.

**Better Problem Solving**
Develop logical thinking and effective solution strategies.

**Deeper Understanding**
Reinforce key concepts with clear explanations and meaningful practice.

**Test Confidence**
Familiarize with test formats and improve accuracy and speed.

**Achieve Success**
Build confidence and perform your best on test day.

## TOPICS COVERED

- Ratios & Proportions
- The Number System
- Expressions & Equations
- Geometry
- Fractions & Decimals
- Percents
- Statistics & Probability
- Data Analysis
- Measurement & Conversions
- And More!

## 2 EXTRA ONLINE TESTS

Use these two additional online practice tests for extra review after the printed tests in this book.

## 2 EXTRA ONLINE TEST ACCESS CODE IS INSIDE THE BOOK!

Don't lose it—your extra practice and success start here!

## VISIT TESTINAR.COM/MATH7

FOR MORE PRACTICE TESTS AND LEARNING RESOURCES.

PRACTICE REGULARLY | STAY FOCUSED | SOLVE CONFIDENTLY | SUCCEED BRIGHTLY

**PRACTICE ★ REVIEW ★ SUCCEED**