

8

Vermont VTCAP

GRADE 7

MATH

PRACTICE TESTS



**Standards Aligned
Problem Solving**

For Comprehensive
Assessment Programs



**8 PRINTED
TESTS**



**2 ONLINE
TESTS**



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



BUILD CONFIDENCE



STRENGTHEN SKILLS



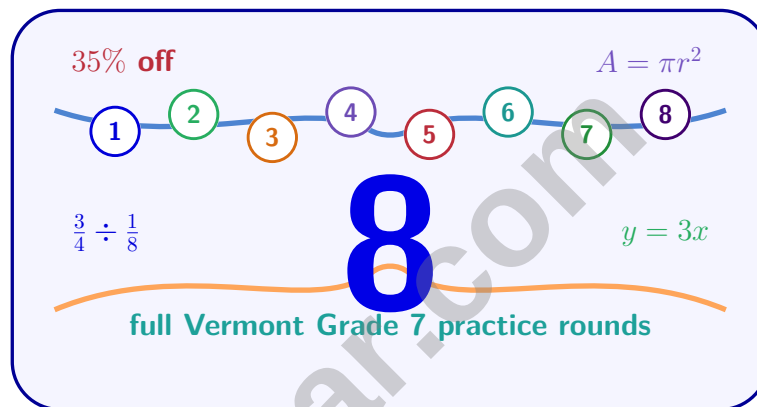
THINK SMARTER



BE TEST-READY

8 Vermont VTCAP Grade 7 Math Practice Tests

A practical drill set for Vermont Grade 7 percents, expressions, equations, angle relationships, samples, and probability models



Eight complete 40-question Grade 7 VTCAP 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



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Welcome, Vermont Grade 7 Problem Solver!

Eight focused rounds for sharper VTCAP math thinking

This book gives you eight full Grade 7 VTCAP 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 Vermont 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.

Read

Model

Verify

How to Use This Book

An eight-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.

Vermont 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?

Eight VTCAP tests, 320 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 7–8	Statistics, probability, mixed review, stamina, and choosing efficient strategies.
Answer Pages	Compact keys and explanations that show why each answer works.

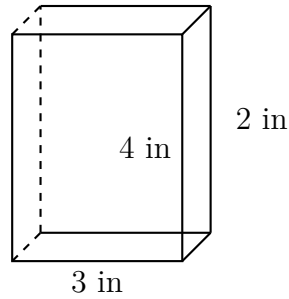
The tests are mixed on purpose. Grade 7 success means recognizing which idea is being tested even when the next question changes format.



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1)

The rectangular prism shown has dimensions 3 in $\times$ 2 in $\times$ 4 in. What is its surface area?

☐ A. 32 in^2

☐ C. 64 in^2

☐ B. 52 in^2

☐ D. 96 in^2

2) Expand and simplify: $4(x + 3) - 2(x - 5)$

☐ A. $2x + 22$

☐ C. $2x + 2$

☐ B. $6x + 2$

☐ D. $6x + 22$

3) Factor completely: $15x + 35$

☐ A. $5(3x + 7)$

☐ C. $15(x + 2.33)$

☐ B. $7(2x + 5)$

☐ D. $3(5x + 11.67)$

4) A recipe calls for $\frac{9}{10}$ cup of flour. What is this as a decimal?

☐ A. 0.09 cup

☐ C. 0.19 cup

☐ B. 0.9 cup

☐ D. 1.9 cups



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5) The temperature dropped 2.5°F each hour for 4 hours. What was the total change in temperature?

☐ A. -10°F

☐ B. -6.5°F

☐ C. 6.5°F

☐ D. 10°F

6) A manufacturing plant's baseline productivity is 200 items/hour. It increases by 15 items, decreases by 8 items, then increases by 12 items. What is the new rate?

☐ A. 225 items/hour

☐ B. 219 items/hour

☐ C. 207 items/hour

☐ D. 235 items/hour

7) The wavelength of red light is 7×10^{-7} meters. What is this in standard form?

☐ A. 0.0000007 m

☐ B. 0.00000007 m

☐ C. 700,000 m

☐ D. 7,000,000 m

8) A baker measures flour in 1-cup scoops. She needs 3 times the number of scoops of flour for dough, plus 2 additional cups for dusting. If she uses 11 cups of flour total, how many scoops s did she use for dough?

☐ A. $3s + 2 = 11$

☐ B. $3s = 11$

☐ C. $2s + 3 = 11$

☐ D. $s + 3 + 2 = 11$

9) Solve for x : $9(x + 2) = 63$

☐ A. $x = 3$

☐ B. $x = 5$

☐ C. $x = 7$

☐ D. $x = 9$



10) A runner completes 4 miles in 3 hours at a constant speed. What is the unit rate in miles per hour?

☐ A. 0.75 miles per hour

☐ C. 1.33 miles per hour

☐ B. 1 mile per hour

☐ D. 3 miles per hour

11) Subtract: $\frac{7}{8} - \frac{1}{4}$

☐ A. $\frac{3}{4}$

☐ C. $\frac{1}{2}$

☐ B. $\frac{6}{8}$

☐ D. $\frac{5}{8}$

12) Simplify: $\frac{q^{10}}{q^6}$

☐ A. q^4

☐ C. q^{60}

☐ B. q^{16}

☐ D. q^{-4}

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

☐ A. $x = 4$

☐ C. $x = 6$

☐ B. $x = 5$

☐ D. $x = 13$

14) A budget allocates 40% to housing and 20% to food from a monthly income of \$2 200. How much is allocated to housing and food combined?



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1) Which solution strategy is correct for $4x + 6 = 30$?

☐ A. Subtract 6, then divide by 4

☐ C. Multiply by 4, then add 6

☐ B. Divide by 4, then subtract 6

☐ D. Add 6, then divide by 4

2) Solve for x : $-3(x - 2) = 15$

☐ A. $x = -3$

☐ C. $x = 3$

☐ B. $x = -1$

☐ D. $x = 7$

3) A student solves $4x - 6 = 10$ and writes: "Step 1: $4x = 16$. Step 2: $x = 4$." Which best describes the work?

☐ A. All steps are correct

☐ C. Step 2 is wrong; should be $x = 16$

☐ B. Step 1 is wrong; should be $4x = 4$

☐ D. Both steps have errors

4) Evaluate: $-3.6 + (-2.4)$

☐ A. -6.0

☐ C. 1.2

☐ B. -1.2

☐ D. 6.0

5) Simplify: $(d^2)^5$

☐ A. d^{10}

☐ C. d^{32}

☐ B. d^7

☐ D. $2d^{10}$

6) A spinner with 5 equal sections is used to simulate an event. After 100 spins, the results show that one section appears 12 times, another appears 18 times, another appears 22 times, another appears 26 times, and the last appears 22 times. Which section's result deviates most from its theoretical probability?

☐ A. The section appearing 12 times

☐ C. The section appearing 22 times

☐ B. The section appearing 18 times

☐ D. The section appearing 26 times



- 7) A photograph is enlarged from 4 inches wide by 6 inches tall to 10 inches wide. How tall is the enlarged photograph?



- 8) A back-to-back stem-and-leaf plot compares the heights of two basketball teams. The stem represents tens of inches. For Team A, stem 7 has leaves 0, 2, 4, 6 (on the left). For Team B, stem 7 has leaves 1, 3, 5, 8 (on the right). How many players are in the 70–79 inch range in total?

- ☐ A. 4 players ☐ C. 12 players
☐ B. 8 players ☐ D. 16 players

- 9) Two letters are selected from {P, Q, R, S} with replacement. How many outcomes are in the sample space?

- ☐ A. 4 ☐ C. 12
☐ B. 8 ☐ D. 16

- 10) A dataset has a mean of 60 and a median of 65. Where are the outliers likely located?

- ☐ A. On the high end ☐ C. No outliers are present
☐ B. On the low end ☐ D. Evenly distributed

- 11) A box of cereal contains 24 collectible cards: 6 are baseball players, 9 are basketball players, and 9 are soccer players. If you draw one card at random, what is the probability of drawing a basketball or soccer player card?

- ☐ A. $\frac{1}{4}$ ☐ C. $\frac{3}{4}$
☐ B. $\frac{1}{2}$ ☐ D. $\frac{9}{24}$



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1) An angle and its supplement are in the ratio 2 : 7. What is the measure of the supplement?

☐ A. 140°

☐ C. 40°

☐ B. 80°

☐ D. 160°

2) Which pair of statistics best compares the centers of two distributions?

☐ A. Range and IQR

☐ C. MAD and range

☐ B. Mean and median

☐ D. Minimum and maximum

3) Emma spent \$18 and this was 20% of her total budget. What was her total budget?

4) A stem-and-leaf plot of student heights (in cm) shows:

Stem	Leaves
14	8, 9
15	0, 2, 4, 6, 8
16	1, 3, 5, 7, 9
17	0, 2, 4

What is the mean of the data? (Rounded to nearest whole number)

☐ A. 158

☐ C. 160

☐ B. 159

☐ D. 161

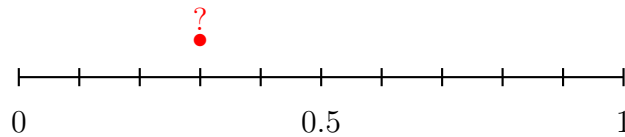


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- 5) A composite figure is made of a right isosceles triangle (legs 8 cm each) attached to a square (8 cm $\times$ 8 cm). What is the total area?

- ☐ A. 64 cm² ☐ C. 100 cm²
☐ B. 96 cm² ☐ D. 128 cm²

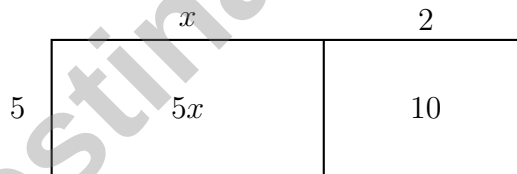
- 6) A probability number line is shown below.



Which probability is marked on the number line?

- ☐ A. 0.1 ☐ C. 0.3
☐ B. 0.2 ☐ D. 0.4

- 7) The rectangle below is divided into two regions to model $5(x + 2)$. What is the total area?



- ☐ A. $5x + 10$ ☐ C. $7x$
☐ B. $5x + 2$ ☐ D. $x + 7$

- 8) If you double the principal but keep the rate and time the same, by how much does the simple interest increase?

- ☐ A. The interest stays the same ☐ C. The interest is cut in half
☐ B. The interest triples ☐ D. The interest doubles



Vermont VTCAP 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 Vermont VTCAP practice test.

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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice B is correct.** (7.G.4-7.G.6) $SA = 2(3 \cdot 2 + 3 \cdot 4 + 2 \cdot 4) = 2(6 + 12 + 8) = 2(26) = 52 \text{ in}^2$.
- 2) **Choice A is correct.** (7.EE.1-7.EE.2) Expand: $4x + 12 - 2x + 10 = 2x + 22$. Combine like terms.
- 3) **Choice A is correct.** (7.EE.1-7.EE.2) GCF of 15 and 35 is 5. Factor: $15x + 35 = 5(3x + 7)$.
- 4) **Choice B is correct.** (7.NS.2d) $9 \div 10 = 0.9$. Powers of 10 produce terminating decimals with the numerator shifted by decimal places.
- 5) **Choice A is correct.** (7.NS.1-7.NS.3) A drop of 2.5°F is -2.5 . Over 4 hours: $4 \times (-2.5) = -10^\circ\text{F}$.
- 6) **Choice B is correct.** (7.NS.1-7.NS.3) New rate = $200 + 15 - 8 + 12 = 219$ items/hour.
- 7) **Choice A is correct.** (7.NS.1-7.NS.3) $7 \times 10^{-7} = 0.0000007$. Move decimal 7 places left.
- 8) **Choice A is correct.** (7.EE.4a) Three scoops per dough batch plus 2 cups for dusting equals 11 total: $3s + 2 = 11$. So $s = 3$.
- 9) **Choice B is correct.** (7.EE.4a) Distribute: $9x + 18 = 63$. Subtract 18: $9x = 45$. Divide by 9: $x = 5$.
- 10) **Choice C is correct.** (7.RP.1-7.RP.3) Unit rate = $4 \div 3 \approx 1.33$ miles per hour (or exactly $\frac{4}{3}$ miles per hour).
- 11) **Choice D is correct.** (7.NS.1-7.NS.3) Common denominator is 8: $\frac{7}{8} - \frac{2}{8} = \frac{5}{8}$.
- 12) **Choice A is correct.** (7.EE.1-7.EE.2) Quotient rule: $\frac{q^{10}}{q^6} = q^{10-6} = q^4$.
- 13) **Choice C is correct.** (7.EE.3-7.EE.4) Subtract 7: $2x = 12$. Divide by 2: $x = 6$.
- 14) **The correct answer is \$1320.** (7.RP.3) Housing: $0.40 \times 2200 = \$880$. Food: $0.20 \times 2200 = \$440$. Combined: $\$880 + \$440 = \$1320$.
- 15) **Choice A is correct.** (7.SP.5-7.SP.8) Since all probabilities sum to 1: $P(Z) = 1 - 0.45 - 0.35 = 0.2$.
- 16) **Choice D is correct.** (7.RP.3) Origination fee = $0.01 \times 300000 = \$3,000$.
- 17) **Choice A is correct.** (7.NS.2) The diagram shows 4 groups of 1 chip each, totaling 4 chips. This represents $4 \times 1 = 4$.
- 18) **Choice A is correct.** (7.SP.3) While both groups sent messages, Group P's clustering at 7 messages shows a consistent pattern during study. Group Q's extreme values (1–2, then 9–12) suggest interruptions, making Group P appear more consistently focused.
- 19) **The correct answer is A,D.** (7.NS.1-7.NS.3) Statement A is true: the opposite of -5 is 5 (positive). Statement D is true: -5 and 5 are each 5 units from zero. Statement B is false because opposites have the same absolute value. Statement C is false: $5 + (-5) = 0$, not 10.
- 20) **Choice A is correct.** (7.G.4-7.G.6) True triangle area: $\frac{1}{2} \times 10 \times 2 = 10 \text{ in}^2$. Student's error: $20 - 10 = 10 \text{ in}^2$ overestimate.
- 21) **Choice D is correct.** (7.RP.1-7.RP.3) Distance = speed $\times$ time = $15 \times 2.5 = 37.5$ miles.
- 22) **Choice C is correct.** (7.G.4-7.G.6) Base area = $\frac{1}{2} \times 7 \times 4 = 14 \text{ cm}^2$. Volume = $14 \times 9 = 126 \text{ cm}^3$.
- 23) **Choice C is correct.** (7.G.1-7.G.5) A quadrilateral's angles sum to 360° . The known angles add to $39^\circ + 141^\circ = 180^\circ$, so the two missing angles must add to 180° .
- 24) **Choice B is correct.** (7.G.1-7.G.5) Three specific side lengths define exactly one unique triangle (up to congruence) by the SSS condition, provided the Triangle Inequality is satisfied. Check: $6.3 + 8.4 = 14.7 > 10.5$ ✓; all conditions hold, so exactly one triangle exists.
- 25) **Choice A is correct.** (7.G.4-7.G.6) The radius is any segment from the center to the circle. OP is labeled and is a radius.
- 26) **Choice C is correct.** (7.SP.5-7.SP.8) $\frac{1}{4} = 0.25 = 25\%$.
- 27) **The correct answer is (6, 7).** (7.NS.1-7.NS.3) $6^2 = 36$ and $7^2 = 49$. Since $36 < 40 < 49$, the answer is between 6 and 7.
- 28) **The correct answer is 9.** (7.EE.1-7.EE.2) The expression simplifies to $6q - 9$. With $q = 3$, the value is $18 - 9 = 9$.
- 29) **Choice C is correct.** (7.SP.1-7.SP.4) $\frac{84}{200} = \frac{x}{50000}$. Reduce: $\frac{21}{50} = \frac{x}{50000} \Rightarrow x = 21000$.
- 30) **Choice D is correct.** (7.RP.1-7.RP.3) Unit rate: $\frac{5/8}{1/12} = \frac{5}{8} \times 12 = \frac{60}{8} = \frac{15}{2} = 7.5$ tons/day. In 2 days: $\frac{15}{2} \times 2 = 15$ tons.



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You Are Building Test Stamina

Hi, Stamina Builder!

◇ This wide-ranging book gave you eight serious Grade 7 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. Completing practice tests builds more than math knowledge. It builds the focus needed to think clearly for a long stretch. ◇

★ **Remember this:** That stamina matters. On real test day, calm pacing can be just as important as remembering a formula. ★

Stamina Skills

- **Breathe:** Reset before a difficult page.
- **Pace:** Do not spend too long in one place.
- **Return:** Come back to skipped questions with fresh eyes.
- **Finish Strong:** Use the last minutes to check.

Grade 7 test-day tip: Practice a simple reset: pause, breathe, reread, then choose your next step.

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

Jay Daie

Your Test-Stamina Coach

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **8** full-length Math practice tests and **2** 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:

8 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
- ✓ Percents & Decimals
- ✓ Statistics & Probability
- ✓ Data Analysis
- ✓ Measurement & Conversions
- ✓ Algebraic Thinking
- ✓ And More!



2 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!



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