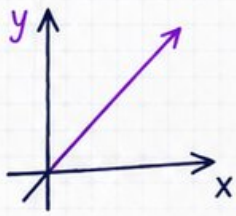
3 Vermont VTCAP

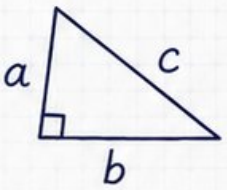
GRADE 7 MATH

PRACTICE TESTS

- Standards Aligned
- Problem Solving
- For Comprehensive Assessment Programs



$y = mx + b$



$\frac{2}{3}x - \frac{4}{5} = \frac{1}{2}$

$3(x-2) = 2x+5$

3 PRINTED TESTS

2 ONLINE TESTS

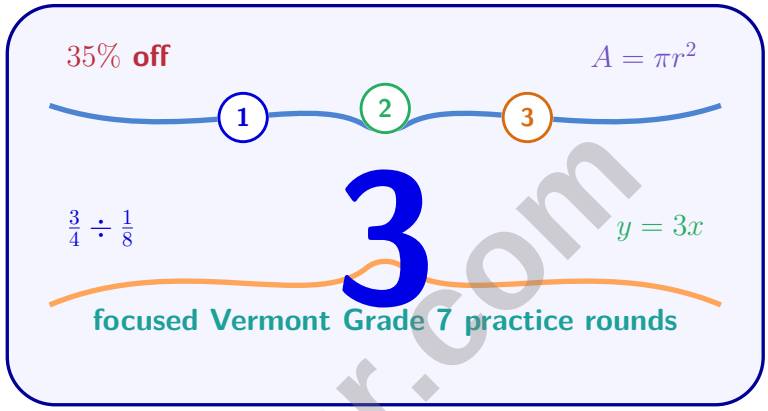
USE THESE TWO ADDITIONAL ONLINE PRACTICE TESTS

FOR EXTRA REVIEW AFTER THE PRINTED TESTS IN THIS BOOK.

- Build Confidence
- Strengthen Math Skills
- Detailed Answers & Explanations
- Improve Test Performance

3 Vermont VTCAP Grade 7 Math Practice Tests

Vermont Standards Practice for Grade 7 Math Readiness



Three 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!

Three focused rounds for sharper VTCAP math thinking

This book gives you three 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.

How to Use This Book

A three-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?

Three VTCAP tests, 120 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Proportional relationships, unit rates, percents, rational-number operations, and careful reading.
Test 3	Expressions, equations, inequalities, scale drawings, geometry, data, probability, and multi-step problem solving.
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

1) A spinner with 4 equal sections (1, 2, 3, 4) is spun, and a coin is flipped. How many favorable outcomes result in spinning a number greater than 2 and flipping Heads?

☐ A. 1
☐ B. 2
☐ C. 4
☐ D. 8

2) A mechanic estimated a car repair would take 3 hours but it took 4.5 hours. What is the percent error?

☐ A. 33.3%
☐ B. 50%
☐ C. 40%
☐ D. 66.7%

3) Expand: $3(x + 5)$

☐ A. $3x + 5$
☐ B. $3x + 8$
☐ C. $3x + 15$
☐ D. $x + 15$

4) Which number line represents the solution to $\frac{x}{2} > -5$?

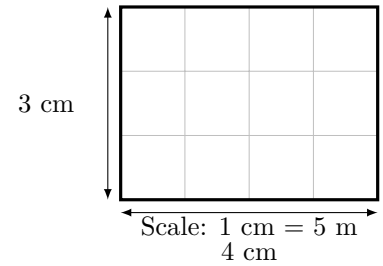
☐ A. Open circle at -10 pointing right
☐ B. Closed circle at -10 pointing right
☐ C. Open circle at -10 pointing left
☐ D. Open circle at -5 pointing right

5) An account balance grows from \$4000 to \$4900 over 5 years using simple interest. What was the annual interest rate?

☐ A. 3%
☐ B. 5%
☐ C. 4.5%
☐ D. 4%

6)

Room Floor Plan (scale model)



According to the scale, what are the actual dimensions of this rectangular room?

☐ A. 10 m × 20 m
☐ B. 4 m × 3 m
☐ C. 12 m × 15 m
☐ D. 20 m × 15 m

7) What percent of 120 is 30?

☐ A. 15%
☐ B. 20%
☐ C. 25%
☐ D. 30%

8) A furniture store applies a 12% sales tax to all items. If a table costs $250 before tax, what is the total cost?

☐ A. $238
☐ B. $262
☐ C. $280
☐ D. $262.50

9) The temperature was −7°C in the morning. It rose by 15°C during the day. What was the temperature after the rise?

☐ A. −22°C
☐ B. −8°C
☐ C. 8°C
☐ D. 22°C

10) Which expression represents "the product of a and b, increased by 10"?

☐ A. $a + b + 10$
☐ B. $ab + 10$
☐ C. $(a + b)(10)$
☐ D. $10ab$

11) Simplify: $5p + 2q + 3p - q + 4q$

☐ A. $8p + 5q$
☐ B. $8p + 6q$
☐ C. $5p + 2q$
☐ D. $12pq$

12) Which expression is NOT equivalent to $8(x + 2)$?

☐ A. $8x + 16$
☐ B. $4(2x + 4)$
☐ C. $8x + 2$
☐ D. $2(4x + 8)$

13) A square pyramid has a base with side 4 in and slant height 5 in. What is the surface area?

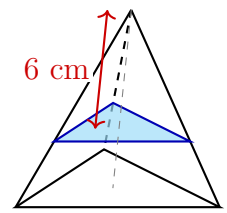
☐ A. 16 in^2
☐ B. 40 in^2
☐ C. 56 in^2
☐ D. 96 in^2

14) A diver begins at sea level (0 meters) and descends 25 meters. Then she ascends 8 meters. What is her final depth below sea level? Write your answer as an integer.

1) A printing company charges \$25 for the first 100 copies and \$0.10 for each additional copy. Which equation represents the total cost C for x copies beyond 100?

☐ A. $C = 0.10x + 25$
☐ B. $C = 25x + 0.10$
☐ C. $C = 0.10 + 25x$
☐ D. $C = 25(x + 0.10)$

2)



parallel triangular slice

A triangular pyramid is sliced by a plane parallel to the base, creating a triangular cross-section. If the original pyramid has height 9 cm and the plane is 6 cm below the apex, what is the linear scale factor of the cross-section to the base?

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

3) If two angles are complementary and one angle is 19°, what is the other angle?

☐ A. 19°
☐ B. 61°
☐ C. 161°
☐ D. 71°

4) A video game costs \$35. After a 20% price increase, what is the new cost?

5) Two similar triangles have corresponding sides of 6 cm and 9 cm. The smaller triangle has a perimeter of 18 cm. What is the perimeter of the larger triangle?

☐ A. 24 cm
☐ B. 27 cm
☐ C. 30 cm
☐ D. 36 cm

6) A bike tire has diameter 24 inches. If the tire rotates 20 times, how far does the bike travel? Use $\pi \approx \frac{22}{7}$.

☐ A. About 1507 inches
☐ B. About 3014 inches
☐ C. About 753 inches
☐ D. About 6029 inches

7) Which circle has the largest area?

☐ A. Circle with radius 3 inches
☐ B. Circle with radius 4 inches
☐ C. Circle with diameter 8 inches
☐ D. Circle with diameter 9 inches

8) Which cylinder has the largest volume?

☐ A. $r = 2$ cm, $h = 8$ cm
☐ B. $r = 3$ cm, $h = 6$ cm
☐ C. $r = 1$ cm, $h = 15$ cm
☐ D. $r = 2.5$ cm, $h = 4$ cm

9) A class splits into two study groups. Group X: median = 82, IQR = 8. Group Y: median = 82, IQR = 14. Which group has more consistent performance?

☐ A. Group X (smaller IQR)
☐ B. Group Y (larger IQR means more diversity)
☐ C. Both are equally consistent
☐ D. Cannot determine without range

1) Solve: $2(x - 3) \leq 10$

☐ A. $x \leq 3$
☐ B. $x \leq 8$
☐ C. $x \leq 13$
☐ D. $x < 8$

2) A spinner has 10 equal sections. Find P(not landing on section 1).

☐ A. $\frac{1}{10}$
☐ B. $\frac{1}{9}$
☐ C. $\frac{9}{10}$
☐ D. $\frac{1}{2}$

3) A pizza delivery service adds a \$2.50 delivery fee to orders under \$25 and a \$4.00 fee to orders \$25 or more. What is the total cost of a \$32 order with the delivery fee?

☐ A. \$32.00
☐ B. \$34.50
☐ C. \$36.00
☐ D. \$36.40

4) A budget app tracks your spending and alerts you when you exceed a limit. If your food budget is \$500 per month and you have spent \$420, what percent of your food budget remains?

☐ A. 12%
☐ B. 14%
☐ C. 16%
☐ D. 20%

5) A student earns simple interest at 6% annually on \$500. After 3 years, the total interest is:

☐ A. \$30
☐ B. \$120
☐ C. \$91.46
☐ D. \$90

6) A car travels at a constant speed passing through the origin and the point $(2, 140)$ on a distance-time graph (where x = hours and y = miles). What is the unit rate in miles per hour?

7) A store advertises *"If your item costs more than* \$50*, get* 30% *off; if it costs* \$50 *or less, get* 20% *off."* A customer buys a shirt for \$55 before discount. After the discount, how much does she pay?

☐ A. \$11
☐ B. \$44
☐ C. \$25
☐ D. \$38.50

8) A hat is priced at \$28. After a $\frac{1}{4}$ discount, what is the sale price?

☐ A. \$35
☐ B. \$14
☐ C. \$7
☐ D. \$21

9) A blueprint for a kitchen has dimensions of 3.2 inches by 2.8 inches with a scale of 1 inch = 3 feet. What is the actual area of the kitchen in square feet?

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.

Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

1) **Choice B is correct.** 7.SP.5-7.SP.8 Numbers greater than 2: {3, 4} = 2 outcomes. Heads: 1 outcome. Favorable: 3H, 4H = 2 outcomes.
2) **Choice A is correct.** 7.RP.3 Percent error = $\frac{|3-4.5|}{4.5} \times 100\% = \frac{1.5}{4.5} \times 100\% \approx 33.3\%$.
3) **Choice C is correct.** 7.EE.1-7.EE.2 Distribute 3 to both terms: $3(x) + 3(5) = 3x + 15$.
4) **Choice A is correct.** 7.EE.4b Solving: $\frac{x}{2} > -5 \Rightarrow x > -10$. An open circle at -10 with a right arrow shows all values strictly greater than -10.
5) **Choice D is correct.** 7.RP.3 Interest: $4900 - 4000 = \$900$. $900 = 4000 \times r \times 5 \Rightarrow 900 = 20000r \Rightarrow r = 0.04 = 4\%$.
6) **Choice D is correct.** 7.RP.1-7.RP.3 Using the scale 1 cm = 5 m: width is $4 \times 5 = 20$ m; height is $3 \times 5 = 15$ m.
7) **Choice C is correct.** 7.RP.3 $\frac{30}{120} = \frac{1}{4} = 0.25 = 25\%$.
8) **Choice C is correct.** 7.RP.3 Tax $= 0.12 \times 250 = \$30$. Total $= 250 + 30 = \$280$.
9) **Choice C is correct.** 7.NS.1b The temperature change is modeled by $-7 + 15 = 8$. A rise of 15° means we add 15 to the initial temperature of −7°.
10) **Choice B is correct.** 7.EE.1-7.EE.2 Product of a and b is ab. Increased by 10 means add 10: $ab + 10$.
11) **Choice A is correct.** 7.EE.1 Combine p terms and q terms: $(5 + 3)p + (2 - 1 + 4)q = 8p + 5q$.
12) **Choice C is correct.** 7.EE.1-7.EE.2 Expand $8(x + 2) = 8x + 16$. Check others: A) $8x + 16$ ✓, B) $4(2x + 4) = 8x + 16$ ✓, D) $2(4x + 8) = 8x + 16$ ✓. Only C) $8x + 2 \neq 8x + 16$ is not equivalent.
13) **Choice C is correct.** 7.G.4-7.G.6 Base: $4^2 = 16$ in^2. Four triangles: $4 \times \frac{1}{2}(4)(5) = 4 \times 10 = 40$ in^2. Total: $16 + 40 = 56$ in^2.
14) **The correct answer is −17 .** 7.NS.1-7.NS.3 After descending: $0 - 25 = -25$. After ascending 8 meters: $-25 - (-8) = -25 + 8 = -17$. She is 17 meters below sea level.
15) **The correct answer is $3 .** 7.RP.1-7.RP.3 Store A costs $2 \div \frac{2}{5} = 5$ dollars per pound. Store B costs $2.25 \div \frac{3}{4} = 3$ dollars per pound, so the lower price is $3.
16) **Choice D is correct.** 7.SP.1-7.SP.4 Only 3% of customers responded. Those who chose to respond likely have strong opinions, creating bias. This is not representative of all 10,000 customers.
17) **Choice B is correct.** 7.SP.5-7.SP.8 Sample space: $3 \times 3 = 9$ equally likely outcomes. Successful outcomes (first ≠ second): exclude $1-1, 2-2, 3-3$ (three outcomes where they match). Remaining: $9 - 3 = 6$ outcomes where they differ. Probability $= \frac{6}{9} = \frac{2}{3}$.
18) **Choice D is correct.** 7.RP.3 Deficit $= \$2{,}100 - \$1{,}800 = \$300$.
19) **The correct answer is A,B.** 7.SP.1-7.SP.4 Smartphones (45%) is the largest, so A is correct. Tablets (20%) plus smart watches (5%) make 25%, so B is correct. Laptops (30%) is not more than 50%, and smart watches (5%) are not more than 10%.
20) **The correct answer is 1.5 .** 7.RP.1-7.RP.3 The unit price is $1.50 per apple, so the constant of proportionality is 1.5.
21) **Choice A is correct.** 7.NS.1-7.NS.3 Amount needed: $\frac{5}{6} - \frac{2}{3} = \frac{5}{6} - \frac{4}{6} = \frac{1}{6}$ cup.
22) **Choice A is correct.** 7.NS.1-7.NS.3 Depth $= -2.25 \times 8 = -18$ m (18 meters below sea level).
23) **Choice B is correct.** 7.NS.1-7.NS.3 The negative exponent −31 indicates a decimal far to the right, meaning an extremely tiny value.
24) **Choice A is correct.** 7.EE.1-7.EE.2 Perimeter $= 2[(8x + 3) + (5x - 2)] = 2(13x + 1) = 26x + 2$.
25) **Choice A is correct.** 7.EE.4b "A number decreased by 7" is $n - 7$; "is less than or equal to 12" is ≤ 12. (Note: D is the simplified solution but A is the direct translation.)
26) **Choice C is correct.** 7.G.1-7.G.5 Halving the real scale (10 m to 5 m) doubles the drawing dimensions. Original area: $5 \times 7 = 35$ cm^2. New area: $(10) \times (14) = 140$ cm^2. Ratio: $140 : 35 = 4 : 1$.
27) **Choice A is correct.** 7.G.1-7.G.5 The translation is: $(3, 2) + (-3, -2) = (0, 0)$.
28) **Choice D is correct.** 7.RP.1-7.RP.3 The scale creates a proportional relationship: map distance times 50 equals actual distance. For $\frac{1}{2}$ inch on the map, the actual distance is $50 \times \frac{1}{2} = 25$ miles.

Hi, Persistent Problem Solver!

◇ Some Grade 7 questions ask you to hold several ideas in your mind at once. That can feel hard, and that is exactly why practice matters. ◇

⋆ **Remember this:** You showed persistence by continuing through the set. That habit is powerful because difficult problems often open after one more good attempt. You practiced across 3 full Grade 7 practice tests, and that repeated effort matters. ⋆

Persistence Tools

- **Try a Smaller Case:** Use an easier number to see the pattern.
- **Draw It:** Make the situation visible.
- **Restate It:** Say the question in your own words.
- **Check One Step:** Fix the first unclear place.

Grade 7 test-day tip: When stuck, do not restart everything. Find the first step you trust, then rebuild from there.

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

Jay Daie

Your Persistence Coach

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **3** 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:

- **3** Full-Length Printed Tests
- **2** Online Practice Tests
- Detailed Answers & 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

Build Confidence
Practice regularly to feel prepared and test-ready.

Strengthen Math Skills
Develop key math concepts and problem solving abilities.

Detailed Answers & Explanations
Learn from clear explanations and step-by-step solutions.

Improve Test Performance
Apply your knowledge and achieve your best score!

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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FOR MORE PRACTICE TESTS AND LEARNING RESOURCES.

PRACTICE REGULARLY | STAY FOCUSED | SOLVE CONFIDENTLY | SUCCEED BRIGHTLY