

7 Vermont VTCAP

Grade 7 Math Practice Tests



7 PRINTED TESTS + 2 ONLINE TESTS

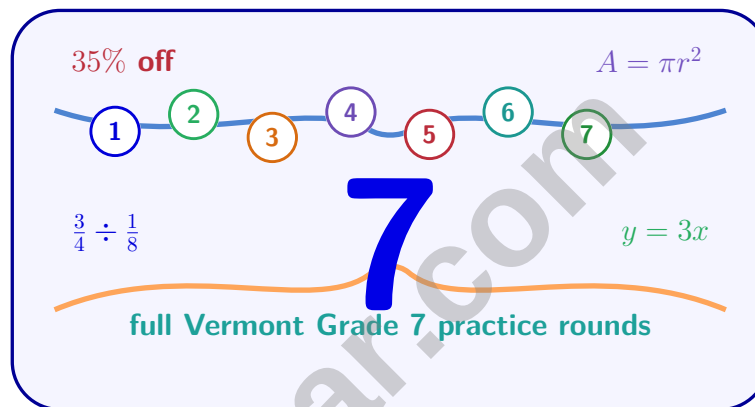


**Standards Aligned Problem Solving
For Comprehensive Assessment Programs**



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.

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Welcome, Vermont Grade 7 Problem Solver!

Eight focused rounds for sharper VTCAP math thinking

This book gives you seven 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, 280 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) An elevator descends 336 meters in 12 seconds. What is its descent rate?
- ☐ A. 28 m/s ☐ C. 348 m/s
- ☐ B. -28 m/s (descent) ☐ D. 336 m/s
- 2) A real estate agent earns a 2.5% commission on home sales. She sells a house for \$400,000. How much is her commission?
- ☐ A. \$6,000 ☐ C. \$12,500
- ☐ B. \$40,000 ☐ D. \$10,000
- 3) What is $-7 \times (-3)$?
- ☐ A. -21 ☐ C. 10
- ☐ B. -10 ☐ D. 21
- 4) A bank account has a balance of -45 dollars (overdrawn). After a deposit and withdrawal, the balance becomes -20 dollars. What was the net change in the account (deposit minus withdrawal)? Write your answer as an integer with the appropriate sign.
-
- 5) Two triangles have sides (3, 4, 5) and (3, 4, 5), respectively. Can we conclude they are congruent?
- ☐ A. No, they are only similar ☐ C. Yes, by SAS
- ☐ B. Yes, by SSS ☐ D. No, we need angle measures



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6) If the opposite of a number equals the number itself, what is that number?

☐ A. Any positive number

☐ C. Zero only

☐ B. Any negative number

☐ D. All integers work

7) Factor the expression: $6x + 18$

☐ A. $6(x + 3)$

☐ C. $2(3x + 9)$

☐ B. $3(2x + 6)$

☐ D. $6(x + 18)$

8) The additive inverse (opposite) of -14 is which value?

☐ A. 14

☐ C. 0

☐ B. -14

☐ D. $\frac{1}{14}$

9) Evaluate $x^2 - 4x$ when $x = 5$.

☐ A. 5

☐ C. 20

☐ B. 10

☐ D. 45

10) Simplify: $\frac{3}{5}x + \frac{2}{5}x$

☐ A. x

☐ C. $\frac{6}{5}x$

☐ B. $\frac{5}{10}x$

☐ D. $\frac{1}{5}x$

11) A baker makes 18 loaves of bread in 3 hours. At this constant rate, how many loaves are made per hour?



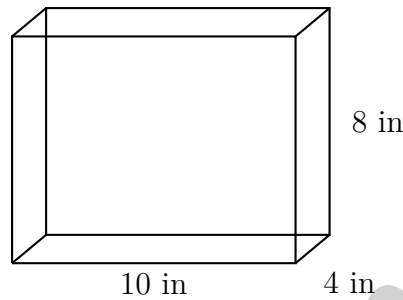
12) Solve: $4x < 20$

☐ A. $x > 5$

☐ B. $x < 5$

☐ C. $x \geq 5$

☐ D. $x < 80$



13)

The rectangular prism shown has dimensions $10 \text{ in} \times 8 \text{ in} \times 4 \text{ in}$. Calculate the surface area.

☐ A. 320 in^2

☐ B. 304 in^2

☐ C. 240 in^2

☐ D. 160 in^2

14) A large university has 12,000 students. A researcher wants to estimate the proportion of students who exercise regularly. She decides to survey a random sample. Which sample size is most likely to give a reliable estimate?

☐ A. 20 students

☐ B. 50 students

☐ C. 300 students

☐ D. 2000 students

15) Which simulation tool best models the probability of selecting a red marble or a blue marble from a bag with equal numbers of red and blue marbles?

☐ A. Rolling a standard die once

☐ B. Flipping a coin

☐ C. Spinning a spinner with 10 equal sections

☐ D. Drawing two cards from a deck without replacing the first



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1)

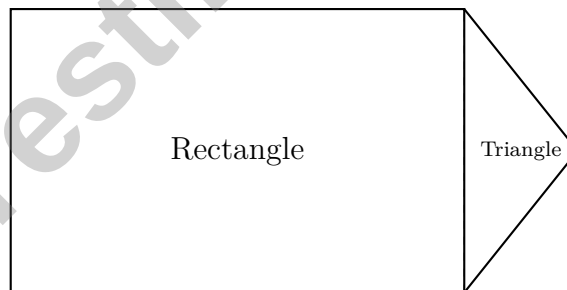
Outcome	1	2	3	4
Probability	0.1	0.3	0.4	0.2

Find $P(1 \text{ or } 2)$.☐ A. 0.4☐ C. 0.1☐ B. 0.3☐ D. 0.7

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

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

3) A dot plot shows the weights (in pounds) of two dog breeds. Breed A: 40, 42, 42, 45, 45, 45, 48, 50 pounds; Breed B: 30, 35, 45, 50, 55, 60 pounds. Which breed has more predictable weight?

☐ A. Breed A (most dogs weigh 42–48 pounds)☐ C. Both breeds have identical weights☐ B. Breed B (lighter dogs overall)☐ D. Breed B (wider range for variety)

4)

A composite figure consists of a rectangle (8 units $\times$ 5 units) joined with a triangle (base 2 units, height 5 units). What is the total area?☐ A. 40 sq units☐ C. 50 sq units☐ B. 45 sq units☐ D. 55 sq units

- 5) Two rectangular prisms have the same base area of 25 cm^2 . The first has a height of 4 cm and the second has a height of 8 cm. By how much is the volume of the second greater than the first?
- ☐ A. 100 cm^3 ☐ C. 50 cm^3
☐ B. 75 cm^3 ☐ D. 25 cm^3
- 6) A circle has a diameter of 24 cm. What is half the radius?
- ☐ A. 3 cm ☐ C. 12 cm
☐ B. 6 cm ☐ D. 24 cm
- 7) An account earning 3% annual compound interest starts with \$1,000. Approximately how many years until the balance reaches \$1,100?
- ☐ A. 2 years ☐ C. 3.5 years
☐ B. 5 years ☐ D. 3 years
- 8) Evaluate $5 - 3(x - 2)$ when $x = 4$.
- ☐ A. -1 ☐ C. 5
☐ B. -5 ☐ D. 11
- 9) Simplify: $4m^2 + 7m + 2m^2 - 3m$
- ☐ A. $6m^2 + 4m$ ☐ C. $11m^2 + 4m$
☐ B. $6m^3 + 4m$ ☐ D. $6m^2 - m$
- 10) Subtract: $6\frac{1}{3} - 2\frac{5}{6}$. Express your answer as a mixed number.



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1) A stem-and-leaf plot shows:

Stem	Leaves
30	2, 5, 8
31	1, 4, 7
32	0, 3, 6, 9

How many three-digit values are between 305 and 315 (inclusive)?

- ☐ A. 1 ☐ C. 3
☐ B. 2 ☐ D. 4

2) A student's test score improved from 72 to 90. What is the percent increase in the score?

- ☐ A. 18% ☐ C. 25%
☐ B. 20% ☐ D. 80%

3) Which number line represents the inequality $x \leq 3$?



- ☐ A. Open circle at 3 pointing left ☐ C. Open circle at 3 pointing right
☐ B. Closed circle at 3 pointing left ☐ D. Closed circle at 0 pointing left

4) Which inequality represents “a number is more than twice itself minus 5”?

- ☐ A. $n > 2n - 5$ ☐ C. $2n > n - 5$
☐ B. $n > 2n + 5$ ☐ D. $n + 5 > 2n$



5) A cube has edge length 4 cm. What is the total surface area?

☐ A. 16 cm^2

☐ C. 96 cm^2

☐ B. 64 cm^2

☐ D. 128 cm^2

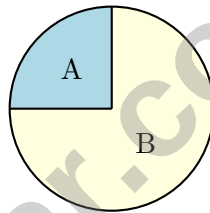
6) A school district collects data on student absences. Researchers survey 100 students randomly selected from each grade level. Why is this stratified approach appropriate?

☐ A. It reduces the total sample size needed

☐ C. It eliminates the need for random selection

☐ B. It ensures each grade is represented proportionally in the sample

☐ D. It automatically produces a larger sample



7)

A spinner with sections A and B is spun twice. What is the total number of outcomes in the sample space?

☐ A. 2

☐ C. 4

☐ B. 3

☐ D. 8

8) A map has a scale of 2 cm : 3 km. If two towns are 10 cm apart on the map, how far apart are they in reality?

☐ A. 12 km

☐ C. 18 km

☐ B. 15 km

☐ D. 20 km



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Vermont Comprehensive Assessment Program 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 Comprehensive Assessment Program practice test.



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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice B is correct.** (7.NS.1-7.NS.3) Descent of 336 m is -336 . Rate: $(-336) \div 12 = -28$ m/s. Negative indicates downward motion.
- 2) **Choice D is correct.** (7.RP.3) Commission = commission rate $\times$ sales = $0.025 \times 400000 = \$10,000$.
- 3) **Choice D is correct.** (7.NS.2) Negative times negative equals positive. $-7 \times (-3) = 21$.
- 4) **The correct answer is 25.** (7.NS.1-7.NS.3) Net change = final balance $-$ initial balance = $-20 - (-45) = -20 + 45 = 25$ dollars. The account increased by 25 dollars (a net deposit of 25).
- 5) **Choice B is correct.** (7.G.1-7.G.5) Both triangles have identical side lengths: 3, 4, and 5. The SSS (Side-Side-Side) condition guarantees congruence.
- 6) **Choice C is correct.** (7.NS.1-7.NS.3) Only zero is its own opposite. For any other number n , its opposite $-n$ is different. We verify: $-0 = 0$.
- 7) **Choice A is correct.** (7.EE.1-7.EE.2) The GCF of 6 and 18 is 6. $6x + 18 = 6(x + 3)$.
- 8) **Choice A is correct.** (7.NS.1b) The additive inverse of -14 is the number that, when added to -14 , gives 0. That number is 14, since $-14 + 14 = 0$.
- 9) **Choice A is correct.** (7.EE.1-7.EE.2) Substitute: $(5)^2 - 4(5) = 25 - 20 = 5$.
- 10) **Choice A is correct.** (7.EE.1) Combine: $\frac{3}{5}x + \frac{2}{5}x = \frac{5}{5}x = x$.
- 11) **The correct answer is 6.** (7.RP.1-7.RP.3) Unit rate = $18 \div 3 = 6$ loaves per hour.
- 12) **Choice B is correct.** (7.EE.4b) Divide both sides by 4: $x < \frac{20}{4} = 5$.
- 13) **Choice B is correct.** (7.G.4-7.G.6) $SA = 2(10 \cdot 8 + 10 \cdot 4 + 8 \cdot 4) = 2(80 + 40 + 32) = 2(152) = 304 \text{ in}^2$.
- 14) **Choice C is correct.** (7.SP.1-7.SP.4) A sample of 300 from 12,000 is approximately 2.5% of the population and is large enough to provide reliable results. Samples of 20 and 50 are too small and may not represent the full diversity of students. A sample of 2000 would give similar reliability but is unnecessary.
- 15) **Choice B is correct.** (7.SP.5-7.SP.8) Two equally likely outcomes (red or blue, heads or tails) match perfectly.
- 16) **Choice A is correct.** (7.NS.2d) Both $0.8 = \frac{8}{10} = \frac{4}{5}$ (in simplest form). The answer is A, the fully simplified fraction.
- 17) **Choice B is correct.** (7.NS.1-7.NS.3) $-8 + 3.5 = -4.5^\circ\text{C}$.
- 18) **The correct answer is \$960.** (7.RP.3) Discount: $\frac{20}{100} \times 1200 = 240$. New price: $1200 - 240 = \$960$.
- 19) **Choice A is correct.** (7.NS.1-7.NS.3) Temperature change = $-0.3 \times 5 = -1.5^\circ\text{C}$. New temperature = $12 + (-1.5) = 10.5^\circ\text{C}$.
- 20) **Choice D is correct.** (7.NS.1-7.NS.3) Scientific notation requires the coefficient a to satisfy $1 \leq a < 10$. The value 10.1 exceeds the upper bound.
- 21) **Choice A is correct.** (7.EE.4a) Setup fee is \$19.99 plus \$12.99 per month, so $C = 19.99 + 12.99n$.
- 22) **The correct answer is A,B.** (7.RP.3) Choice A: 20% of 500 = $0.20 \times 500 = 100$. ✓ Choice B: 50% of 500 = $0.50 \times 500 = 250$. ✓ Choice C: 10% of 500 = 50, not 40. ✗ Choice D: 15% of 500 = 75, not 80. ✗
- 23) **Choice D is correct.** (7.G.1-7.G.5) Actual dimensions: 60 m $\times$ 40 m. Perimeter: $2(60 + 40) = 200$ m.
- 24) **Choice B is correct.** (7.G.1-7.G.5) Original scale 1:12 means 1 in = 12 ft. New scale 1:6 means 1 in = 6 ft. Real-world distance per inch halved (12 to 6), so drawing expands. Scale factor ratio: $6 \div 12 = 0.5$, so drawing expands by $1 \div 0.5 = 2$. New dimensions: $3.5 \times 2 = 7$ in and $4.5 \times 2 = 9$ in.
- 25) **Choice B is correct.** (7.G.1-7.G.5) The center of Rectangle A is (2.5, 3). Under a 180° rotation, it maps to $(-2.5, -3)$, which is the center of Rectangle B.
- 26) **Choice C is correct.** (7.G.1-7.G.5) The scale factor is $\frac{20}{8} = 2.5$. The shorter side is $6 \times 2.5 = 15$ inches.
- 27) **Choice C is correct.** (7.G.4-7.G.6) Circle 1: $A = 3.14 \times 25 = 78.5 \text{ ft}^2$. Circle 2: $A = 3.14 \times 100 = 314 \text{ ft}^2$. Ratio: $\frac{314}{78.5} = 4$.
- 28) **Choice A is correct.** (7.SP.1-7.SP.4) In a stem-and-leaf plot, stem 8 with leaves 0, 2, 5, 7, 9 represents 80, 82, 85, 87, 89.
- 29) **Choice D is correct.** (7.SP.5-7.SP.8) First roll has 6 outcomes; second roll has 6 outcomes. Total: $6 \times 6 = 36$ outcomes.



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 7 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 **7** 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:

7 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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