

9 Vermont VTCAP

GRADE 7

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

Program



9 PRINTED
TESTS



2 ONLINE
TESTS



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



BUILT FOR ACAP
Standards-Aligned



**STRENGTHEN
SKILLS**



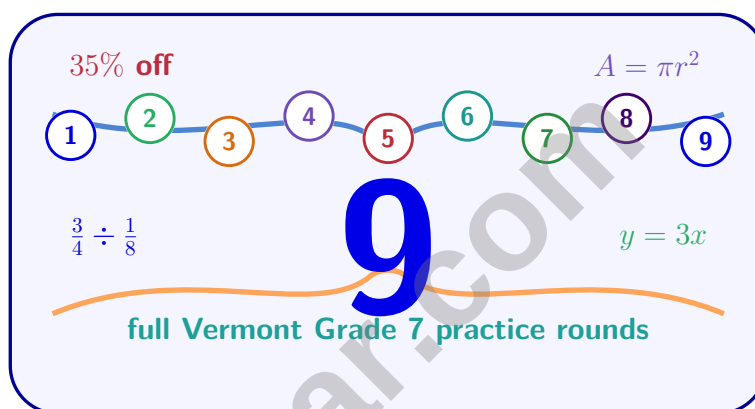
**SHARPEN
THINKING**



BE TEST-READY
Improve Performance

9 Vermont VTCAP Grade 7 Math Practice Tests

Standards-Aligned Vermont Practice for Proportional Reasoning, Expressions, Geometry, Statistics, and Probability



Nine 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!

Nine focused rounds for sharper VTCAP math thinking

This book gives you nine 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

A nine-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?

Nine VTCAP tests, 360 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.
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.

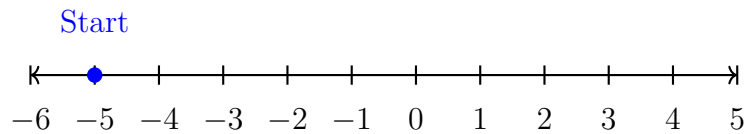


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& answers

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- 1) Use the number line. Start at -5 , add 8, then subtract 3. Where do you end?



- ☐ A. -16 ☐ C. 6
- ☐ B. 0 ☐ D. 10
- 2) A vendor receives \$2,400 after paying a 20% commission to a platform. What was the original sale amount before the commission was deducted?
- ☐ A. \$2,880 ☐ C. \$3,200
- ☐ B. \$4,200 ☐ D. \$3,000
- 3) Looking at the garden plant histograms again, which range of plant counts is shared by both neighborhoods (overlap region)?
- ☐ A. 20–25 plants (overlap of both distributions) ☐ C. No overlap; neighborhoods are completely separate
- ☐ B. 15–35 plants (entire combined range) ☐ D. Only exactly 25 plants
- 4) A survey of 150 students asked which sport they play. The results:

Sport	Soccer	Basketball	Tennis
Students	48	57	45

Based on this data, what is the experimental probability that a randomly selected student plays basketball?

- ☐ A. $\frac{57}{105}$
- ☐ B. $\frac{48}{150}$
- ☐ C. $\frac{57}{150}$
- ☐ D. $\frac{45}{150}$



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- 5) A simulation estimates the probability of an event using a spinner with 5 equal sections. After 500 spins, one section appears 96 times. What is the estimated probability for that section? (Express as a decimal rounded to the nearest hundredth.)

- 6) If $\frac{7}{x} = \frac{35}{100}$, what is x ?

- 7) A sector of a circle is best described as:

- ☐ A. A line through the circle ☐ C. A chord and an arc
☐ B. A pie-shaped region bounded by two radii and an arc ☐ D. Half of a circle

- 8) A dollhouse is built to a scale of 1 : 12 (model to real). If an actual bedroom is 12 feet long, 10 feet wide, and 8 feet tall, what is the volume of the dollhouse bedroom in cubic feet?

- ☐ A. 960×12 cubic feet ☐ C. 960 cubic feet
☐ B. $\frac{960}{12}$ cubic feet ☐ D. $\frac{960}{1728}$ cubic feet



- 9) A phone case costs \$15 and is discounted by \$3. What is the percent discount?
- ☐ A. 10% ☐ C. 15%
- ☐ B. 25% ☐ D. 20%
- 10) A restaurant surveyed 450 customers about their favorite dish. The circle graph shows pasta is 32%, chicken is 28%, fish is 22%, and vegetarian is 18%. How many customers prefer pasta?
- ☐ A. 32 ☐ C. 144
- ☐ B. 99 ☐ D. 288
- 11) A student had \$50 and spent \$15 on lunch. What percent of the money was spent?
- ☐ A. 20% ☐ C. 30%
- ☐ B. 25% ☐ D. 40%
- 12) Four vendors sell apples at different rates. Which vendor charges the least per pound?

Vendor	Amount (lb)	Cost (\$)
W	$\frac{3}{8}$	0.60
X	$\frac{1}{2}$	1.00
Y	$\frac{2}{5}$	0.80
Z	$\frac{5}{6}$	1.25

- ☐ A. Vendor Z at \$1.50/lb ☐ C. Vendor Y at \$2/lb
- ☐ B. Vendor X at \$2/lb ☐ D. Vendor W at \$1.60/lb



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1) If the radius of a circle is 12 units, how many times larger is the diameter than the radius?

☐ A. 1 time

☐ B. 2 times

☐ C. 3 times

☐ D. 4 times

2) An object travels $\frac{5}{2}$ meters in $\frac{1}{3}$ second. What is the speed in meters per second?

☐ A. $\frac{6}{5}$ m/s

☐ B. $\frac{2}{15}$ m/s

☐ C. $\frac{5}{6}$ m/s

☐ D. $\frac{15}{2}$ m/s

3) Water flows from a faucet at a rate of 6 liters per minute. Which equation gives the total volume V (liters) after t minutes?

☐ A. $V = \frac{6}{t}$

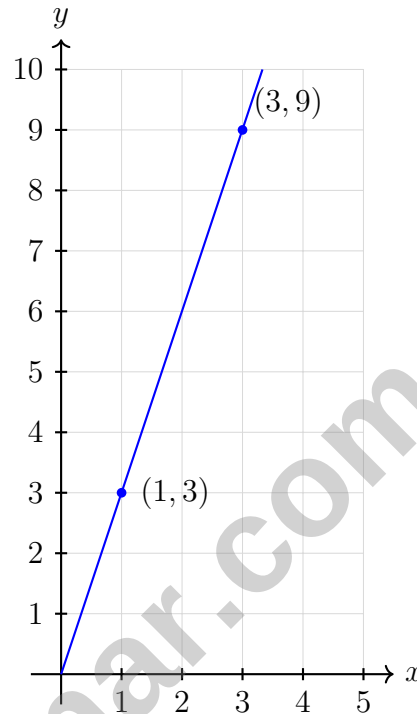
☐ B. $V = t + 6$

☐ C. $t = 6V$

☐ D. $V = 6t$



- 4) A coordinate plane shows a line passing through $(1, 3)$ and $(3, 9)$. Does this line represent a proportional relationship?



- ☐ A. Cannot tell without more points ☐ C. Yes; constant slope is 3
- ☐ B. No; points are not at origin ☐ D. Yes; line passes through origin
- 5) A student made an error. They said: “In the table, $x = 2$ gives $y = 10$, and $x = 4$ gives $y = 20$, so $k = 2$.” What mistake did they make?
- ☐ A. There is no mistake. ☐ C. They forgot to check the second point.
- ☐ B. They computed $10/2 = 5$, not $k = 2$. ☐ D. They used $y - x$ instead of y/x .



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- 1) A teacher recorded the number of minutes students spent on homework:

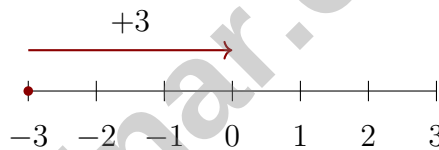
Class	Median	Range
Period 1	35 min	20 min
Period 2	35 min	60 min

Which class has more variable homework times?

- ☐ A. Period 1 ☐ D. The data does not support comparison
☐ B. Period 2
☐ C. Both are equally variable

- 2) Solve for x : $9(x - 1) = 45$

- ☐ A. $x = 4$ ☐ C. $x = 6$
☐ B. $x = 5$ ☐ D. $x = 7$



- 3)

The number line shows a number increased by 3 equals 0. What is the original number?

- ☐ A. -3 ☐ C. 0
☐ B. -2 ☐ D. 3
- 4) A scale drawing uses a scale of 1 cm : 4 m. In the drawing, a wall is 7 cm long. What is the actual length of the wall?

- ☐ A. 3 m ☐ C. 28 m
☐ B. 11 m ☐ D. 32 m



- 5) A rectangular park boundary on a city map is 11 cm by 13 cm. The scale is 1 cm : 200 m. What is the perimeter of the actual park in meters?

☐ A. 4,800 m ☐ C. 2,400 m
☐ B. 9,600 m ☐ D. 4,400 m

- 6) Expand $\frac{1}{2}(6y - 8)$, then evaluate when $y = 4$.

- 7) A square pyramid with base side 10 cm and slant height 13 cm is cut by a plane parallel to the base at the midpoint of the height. What is the side length of the square cross-section?

☐ A. 5 cm ☐ C. 7.5 cm
☐ B. 6.5 cm ☐ D. 10 cm

- 8) Angle M is complementary to angle N . If $N = 36^\circ$, what is the measure of angle M ?

☐ A. 36° ☐ C. 54°
☐ B. 44° ☐ D. 144°

- 9) A parallelogram is reflected over the x -axis. If one vertex moves from $(-4, 3)$ to $(-4, -3)$, which transformation property is demonstrated?

☐ A. The x -coordinate stays the same; the y -coordinate is negated ☐ C. Both coordinates are negated
☐ B. The y -coordinate stays the same; the x -coordinate is negated ☐ D. The distance from the origin is doubled



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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.NS.1-7.NS.3) $-5 + 8 = 3$; then $3 - 3 = 0$.
- 2) **Choice D is correct.** (7.RP.3) If vendor keeps 80% of sales, then $0.80 \times \text{sales} = 2400$. $\text{Sales} = 2400 \div 0.80 = \$3,000$.
- 3) **Choice A is correct.** (7.SP.3) North Side concentrates at 15–25; South Side at 25–35. The overlap region where both neighborhoods appear is 20–25 plants. Some gardens in both neighborhoods fall in this shared range.
- 4) **Choice C is correct.** (7.SP.6) Basketball was chosen by 57 out of 150 students. Experimental probability = $\frac{57}{150}$.
- 5) **The correct answer is 0.19.** (7.SP.5-7.SP.8) Relative frequency: $\frac{96}{500} = 0.192 \approx 0.19$.
- 6) **The correct answer is 20.** (7.RP.1-7.RP.3) Cross multiply: $7 \times 100 = 35 \times x$. So $700 = 35x$, giving $x = 20$.
- 7) **Choice B is correct.** (7.G.4-7.G.6) A sector resembles a slice of pie, formed by two radii and the arc connecting them.
- 8) **Choice D is correct.** (7.RP.1-7.RP.3) Linear scale is 1 : 12. Model dimensions: 1 ft, $\frac{10}{12}$ ft, $\frac{8}{12}$ ft. Volume scales by $(1/12)^3 = 1/1728$. Real volume is $12 \times 10 \times 8 = 960$ cu ft. Model volume = $960 \div 1728 = \frac{960}{1728}$ cu ft.
- 9) **Choice D is correct.** (7.RP.3) Discount percent = $\frac{3}{15} \times 100 = 20\%$.
- 10) **Choice C is correct.** (7.SP.1-7.SP.4) 32% of 450 = $0.32 \times 450 = 144$ customers.
- 11) **Choice C is correct.** (7.RP.3) $\frac{15}{50} = \frac{3}{10} = 0.30 = 30\%$.
- 12) **Choice D is correct.** (7.RP.1-7.RP.3) W: $\frac{0.60}{3/8} = 0.60 \times \frac{8}{3} = 1.60$ \$/lb. X: $\frac{1.00}{1/2} = 2$ \$/lb. Y: $\frac{0.80}{2/5} = 0.80 \times \frac{5}{2} = 2$ \$/lb. Z: $\frac{1.25}{5/6} = 1.25 \times \frac{6}{5} = 1.50$ \$/lb. W is least.
- 13) **Choice D is correct.** (7.RP.1-7.RP.3) The constant is $k = \frac{12}{3} = 4$. So $y = 4x$. When $x = 7$, $y = 4(7) = 28$.
- 14) **Choice C is correct.** (7.RP.3) Wants = $30\% \times \$2,400 = 0.30 \times 2400 = \720 .
- 15) **Choice A is correct.** (7.EE.1-7.EE.2) Distribute the negative: $16d - 9 - 7d + 4 = (16d - 7d) + (-9 + 4) = 9d - 5$.
- 16) **Choice B is correct.** (7.EE.4a) Using the distributive property: $11 \cdot x + 11 \cdot 5 = 11x + 55$.
- 17) **Choice C is correct.** (7.EE.3-7.EE.4) Add 3 to both sides: $\frac{1}{2}x = 8$. Multiply by 2: $x = 16$. Check: $\frac{1}{2}(16) - 3 = 8 - 3 = 5$ ✓. Reasonableness: Half of 16 is 8; minus 3 gives 5. ✓
- 18) **Choice B is correct.** (7.G.1-7.G.5) Depending on the angle and position of the cutting plane, a cube's cross-section may have 3, 4, 5, or 6 sides. A triangle results from a corner cut; rectangles from parallel cuts; hexagons from diagonal cuts at certain angles.
- 19) **Choice D is correct.** (7.RP.1-7.RP.3) Ratio: $\frac{\text{flour}}{\text{sugar}} = \frac{2/3}{1/3} = \frac{2}{3} \times \frac{3}{1} = 2$.
- 20) **Choice B is correct.** (7.NS.1-7.NS.3) $6^2 = 36$ and $7^2 = 49$. Since $36 < 45 < 49$, we have $6 < \sqrt{45} < 7$.
- 21) **Choice A is correct.** (7.EE.1-7.EE.2) Quotient rule: $v^{12} \div v^8 = v^{12-8} = v^4$.
- 22) **The correct answer is A,B.** (7.G.4-7.G.6) A is correct: volume $V = B \times h$ for any prism. B is correct: $V = 4^3 = 64$ cm³. C is false: doubling height doubles volume, not triples it. D is false: a triangular prism can have larger volume than a rectangular prism depending on dimensions.
- 23) **Choice C is correct.** (7.SP.1-7.SP.4) Mean < Median indicates low outliers pulling the mean down. Mean > Median indicates high outliers pulling the mean up. Rep A: $1200 < 1400$ (low outliers). Rep B: $1200 > 1000$ (high outliers).
- 24) **Choice C is correct.** (7.EE.1-7.EE.2) $0.75x = 60$, so $x = 60 \div 0.75 = 80$. Check: $80 - 0.25(80) = 60$. ✓
- 25) **Choice A is correct.** (7.NS.2) $\frac{3}{4} \times 8 = \frac{3 \times 8}{4} = \frac{24}{4} = 6$.
- 26) **Choice A is correct.** (7.SP.1-7.SP.4) January: leaves $1 \sim 8$ span $8 - 1 = 7$. July: leaves $3 \sim 9$ span $9 - 3 = 6$. January has a greater range of leaves, indicating greater variation within stem 7.
- 27) **Choice B is correct.** (7.G.4-7.G.6) Rectangle: $5 \times 4 = 20$ in². Trapezoid: $\frac{1}{2}(5 + 3) \times 2 = 8$ in². Total: $20 + 8 = 28$ in².
- 28) **Choice C is correct.** (7.RP.3) Simple: $1000 \times 0.06 \times 3 = 180$. Compound: $1000(1.06)^3 = 1191.02$; interest = 191.02. Difference: $191.02 - 180 = 11.02$.
- 29) **The correct answer is 900.** (7.SP.1-7.SP.4) $\frac{45}{180} = \frac{x}{3600}$. Reduce: $\frac{1}{4} = \frac{x}{3600} \Rightarrow x = 900$.
- 30) **Choice D is correct.** (7.RP.3) Interest = $0.02 \times 500 = \$10$ in one year.



Hi, Confident Learner!

◇ This high-stamina book gave you nine substantial Grade 7 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. Grade 7 math can feel big because it brings together rational numbers, expressions, equations, geometry, probability, and data. ◇

★ **Remember this:** But big topics become manageable when you practice one skill at a time. That is what you have been doing with every test in this book. ★

Confidence Builders

- **Know the Goal:** Identify what the question asks.
- **Use Vocabulary:** Math words point to math actions.
- **Show Work:** Give yourself something to check.
- **Celebrate Effort:** Practice is proof that you are moving.

Grade 7 test-day tip: When reviewing, do not only mark wrong answers. Write one sentence about what you learned from each one.

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

Jay Daie

Your Confidence Coach

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **9** 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:

9 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.



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