

6 VERMONT VTCAP

GRADE

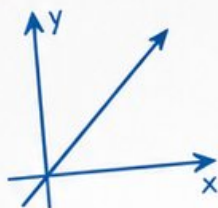
7

MATH

PRACTICE TESTS

Standards Aligned
Problem Solving For
Comprehensive
Assessment Programs

$$y = mx + b$$



$$2(x - 3) = 4x + 6$$



6 PRINTED
TESTS



2 ONLINE
TESTS



USE THESE TWO
ADDITIONAL ONLINE
PRACTICE TESTS
FOR EXTRA REVIEW AFTER
THE PRINTED TESTS
IN THIS BOOK.



Build
Confidence



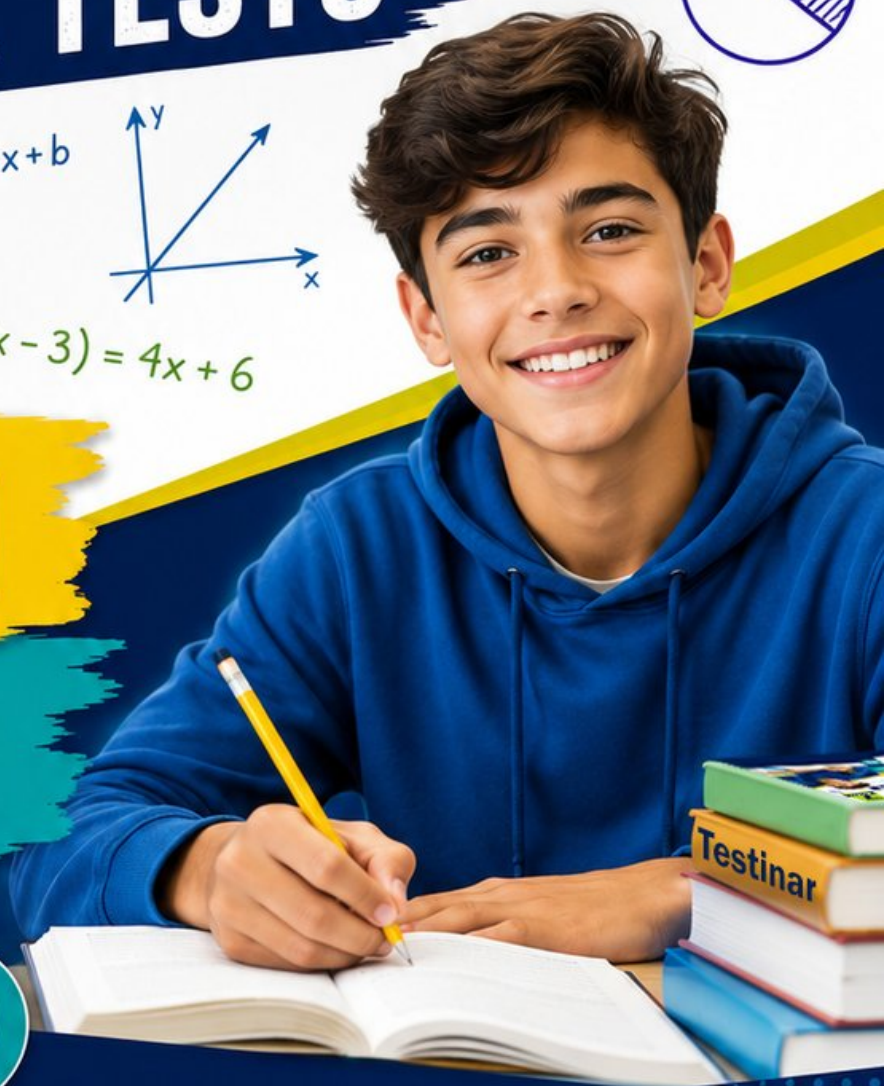
Strengthen
Math Skills



Detailed Answers
& Explanations

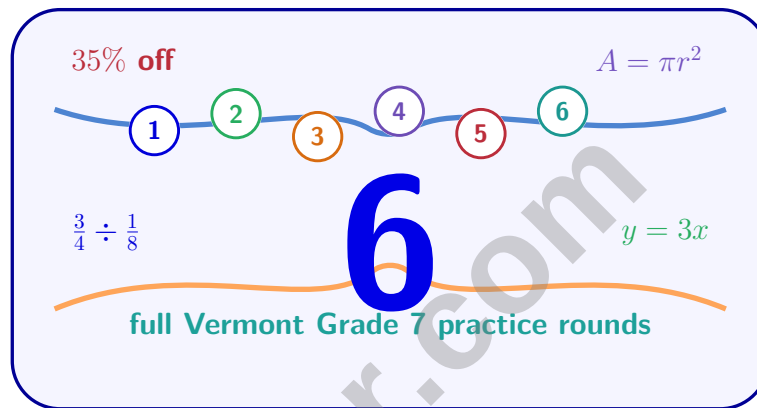


Improve Test
Performance



6 Vermont VTCAP Grade 7 Math Practice Tests

Standards-Aligned Practice with Review, Answer Keys, and Explanations



Six 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!

Six focused rounds for sharper VTCAP math thinking

This book gives you six 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 six-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?

Six VTCAP tests, 240 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.
Answer Pages	Compact keys and explanations that show why each answer works.

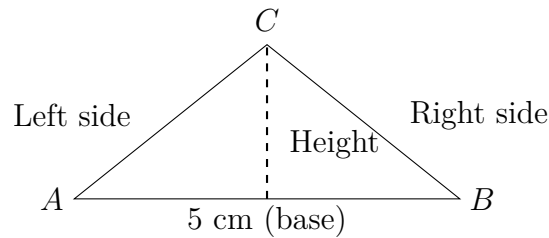
The tests are mixed on purpose. Grade 7 success means recognizing which idea is being tested even when the next question changes format.



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For more practice
& answers

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1)

The triangle has a base of 5 cm and the two other sides are equal. What type of triangle is this?

☐ A. Equilateral☐ C. Scalene☐ B. Isosceles☐ D. Right

2) A baker uses 3 eggs for every 2 cups of flour. If the baker uses 9 eggs, how much flour is needed?

☐ A. 3 cups☐ C. 9 cups☐ B. 4 cups☐ D. 6 cups

3) Solve for x : $-6(x - 3) = 12$

☐ A. $x = 1$ ☐ C. $x = 3$ ☐ B. $x = 2$ ☐ D. $x = 5$

4) A simulation is designed to estimate the probability of getting exactly two tails in three coin flips. What is the theoretical probability that the simulation should approach?

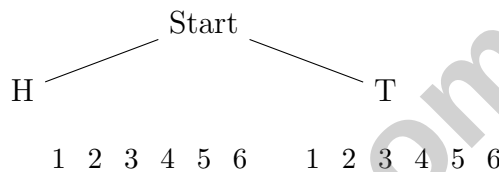
☐ A. $\frac{1}{8}$ ☐ C. $\frac{3}{8}$ ☐ B. $\frac{2}{8}$ ☐ D. $\frac{4}{8}$ 

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- 5) A line plot shows the number of rainy days per month for 12 months. There are 2 months with 8 rainy days, 4 months with 10 rainy days, 3 months with 12 rainy days, 2 months with 14 rainy days, and 1 month with 16 rainy days. What is the median number of rainy days?

- ☐ A. 8 days ☐ C. 11 days
☐ B. 10 days ☐ D. 12 days

- 6) A fair six-sided die is rolled and a coin is flipped. Which of the following is the correct way to count the sample space?



- ☐ A. $6 + 2 = 8$ outcomes ☐ C. $6 - 2 = 4$ outcomes
☐ B. $6 \times 2 = 12$ outcomes ☐ D. $\frac{6}{2} = 3$ outcomes
- 7) A cylinder has a radius of 2.5 m and a volume of 78.5 m^3 . What is the height? Use $\pi \approx 3.14$.
- ☐ A. 2 m ☐ C. 6 m
☐ B. 4 m ☐ D. 8 m
- 8) A school must choose between two lunch-line systems. System A averages 8 minutes wait with MAD 0.5 minutes. System B averages 8.2 minutes with MAD 1.8 minutes. For student experience, which is better?
- ☐ A. System B (slightly faster average) ☐ C. Both are equally acceptable
☐ B. System A (consistent experience, predictable waits) ☐ D. Requires knowing the number of students



9) A deck of cards has 52 cards. What is the probability of drawing a face card (Jack, Queen, or King) from a standard deck?

- ☐ A. $\frac{12}{52}$
☐ B. $\frac{2}{13}$

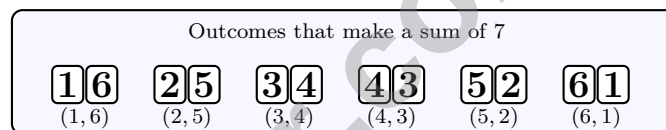
- ☐ C. $\frac{4}{13}$
☐ D. $\frac{1}{4}$

10) A fair coin is flipped twice. What is the probability of getting heads BOTH times?

- ☐ A. $\frac{1}{8}$
☐ B. $\frac{1}{4}$

- ☐ C. $\frac{1}{2}$
☐ D. $\frac{3}{4}$

11) A toss of two dice together was repeated 360 times. The number of times the sum was 7 was recorded as 58 times. What is the experimental probability of rolling a sum of 7?



- ☐ A. $\frac{1}{6}$
☐ B. $\frac{58}{360}$

- ☐ C. 0.16
☐ D. $\frac{7}{360}$

12) A dataset contains 24 values displayed in a stem-and-leaf plot. If the data is divided into lower and upper halves to find the interquartile range, how many values are in the upper half (excluding the median)?

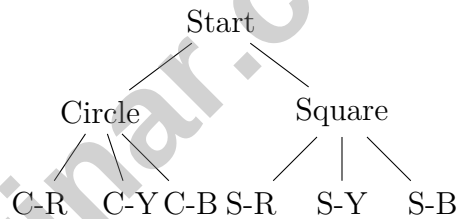
- ☐ A. 10
☐ B. 11

- ☐ C. 12
☐ D. 13



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- 1) A book costs \$15. After a 40% price increase, what is the new cost?
- ☐ A. \$6 ☐ C. \$21
☐ B. \$9 ☐ D. \$25
- 2) To simulate the probability of guessing a true/false question correctly 3 times in a row, which tool best models this compound event?
- ☐ A. Rolling a six-sided die once ☐ D. Drawing a card from a deck of 52 once
☐ B. Flipping a coin 3 times
☐ C. Spinning a spinner with 3 equal sections once
- 3) A tree diagram shows all outcomes for selecting a shape (Circle or Square) and a color (Red, Yellow, or Blue). How many final branches should the tree have?



- ☐ A. 2 branches ☐ C. 5 branches
☐ B. 3 branches ☐ D. 6 branches
- 4) An event has a probability of $\frac{2}{5}$. What is the probability of the complement (the event NOT happening)?
- ☐ A. $\frac{2}{5}$ ☐ C. $\frac{1}{5}$
☐ B. $\frac{3}{5}$ ☐ D. $\frac{5}{2}$



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& answers

5) A recipe calls for 2.5 cups of milk. A cook estimated 2.2 cups. What is the percent error?

☐ A. 14%

☐ B. 3%

☐ C. 10.5%

☐ D. 12%

6) Expand: $\frac{1}{4}(8b - 12)$

☐ A. $2b - 3$

☐ B. $2b - 12$

☐ C. $8b - 3$

☐ D. $2b - 4$

7) A box plot shows test scores with minimum 45, $Q1 = 65$, median = 75, $Q3 = 85$, maximum = 95. What is the interquartile range (IQR)?



8) A sports arena model has a scale of 1 : 200. The actual arena is 200 meters long. How long is the model in centimeters?

☐ A. 20000 cm

☐ B. 1 cm

☐ C. 200 cm

☐ D. 100 cm

9) A family takes out a personal loan of \$8000 at 10% simple interest for 3 years. What is the total amount they will repay?

☐ A. \$8800

☐ B. \$9200

☐ C. \$10400

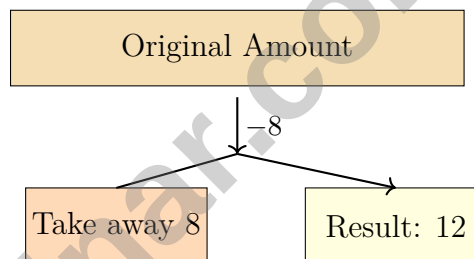
☐ D. \$11200



- 1) Three groups sampled students' favorite subjects. Group 1 found $\frac{24}{80}$ prefer science; Group 2 found $\frac{35}{100}$ prefer science; Group 3 found $\frac{27}{90}$ prefer science. Which group's sample shows a different proportion?

- ☐ A. Group 1 ☐ C. Group 3
☐ B. Group 2 ☐ D. All show the same proportion

- 2) For side lengths 9, 12, and 15, compute $9^2 + 12^2 - 15^2$.



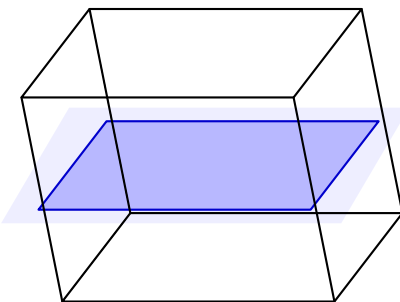
3)

Using the model, what is the original amount?

- ☐ A. 4 ☐ C. 20
☐ B. 12 ☐ D. 24



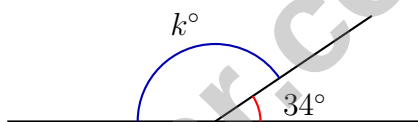
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& answers



4)

A slanted rectangular prism (parallelogram base) is cut by a plane perpendicular to its lateral edges. What is the shape of the cross-section?

- ☐ A. Always a square
- ☐ B. Always a rectangle
- ☐ C. A parallelogram congruent to the base
- ☐ D. A trapezoid



5)

A ray extends upward from a point on a horizontal line, creating angles of 34° and k° . These angles form a linear pair. What is the measure of angle k ?

- ☐ A. 34°
- ☐ B. 56°
- ☐ C. 90°
- ☐ D. 146°

6) A circle has a radius of 5 meters. Approximately, what is its circumference? Use $\pi \approx 3.14$.

- ☐ A. 15.7 m
- ☐ B. 25 m
- ☐ C. 31.4 m
- ☐ D. 78.5 m



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.1-7.G.5)** Two sides are equal (the left and right sides), making it isosceles.
- 2) **Choice D is correct.** **(7.RP.1-7.RP.3)** Proportion: $\frac{3}{2} = \frac{9}{f}$. Cross multiply: $3f = 18$, so $f = 6$ cups.
- 3) **Choice A is correct.** **(7.EE.4a)** Distribute: $-6x + 18 = 12$. Subtract 18: $-6x = -6$. Divide by -6 : $x = 1$.
- 4) **Choice C is correct.** **(7.SP.5-7.SP.8)** Outcomes with exactly two tails: TTH, THT, HTT. That is 3 out of 8 equally likely outcomes.
- 5) **Choice C is correct.** **(7.SP.1-7.SP.4)** With 12 data points, the median is the average of the 6th and 7th values. Counting: positions 1–2 are 8, positions 3–6 are 10, position 7–9 are 12. The 6th and 7th values average to 11.
- 6) **Choice B is correct.** **(7.SP.5-7.SP.8)** The counting principle for independent events uses multiplication: die outcomes (6) times coin outcomes (2) equals 12 total outcomes.
- 7) **Choice B is correct.** **(7.G.4-7.G.6)** $78.5 = 3.14 \times 6.25 \times h \Rightarrow 78.5 = 19.625h \Rightarrow h = 4$ m.
- 8) **Choice B is correct.** **(7.SP.1-7.SP.4)** System A's small MAD (0.5 min) means students wait reliably 8 minutes. System B's large MAD (1.8 min) means unpredictable waits: some 6 min, some 10+ min. Consistency matters for user experience.
- 9) **Choice A is correct.** **(7.SP.5-7.SP.8)** Face cards: 12 (4 suits $\times$ 3 types). $P(\text{face card}) = \frac{12}{52} = \frac{3}{13}$.
- 10) **Choice B is correct.** **(7.SP.5-7.SP.8)** $P(H) \cdot P(H) = \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$.
- 11) **Choice B is correct.** **(7.SP.6)** Experimental probability = $\frac{58}{360} \approx 0.161$. Note that the theoretical probability of rolling a sum of 7 is $\frac{6}{36} = \frac{1}{6} \approx 0.167$, which is very close to the experimental result.
- 12) **Choice C is correct.** **(7.SP.1-7.SP.4)** With 24 values (even), the upper half contains positions 13–24, which is 12 values.
- 13) **Choice B is correct.** **(7.SP.5-7.SP.8)** $60\% = \frac{60}{100} = 0.6$.
- 14) **Choice D is correct.** **(7.RP.3)** Estimate A: $\frac{168-72}{72} \times 100\% \approx 5.6\%$. Estimate B: $\frac{175-72}{72} \times 100\% \approx 4.2\%$. Estimate B has smaller error.
- 15) **Choice A is correct.** **(7.EE.1-7.EE.2)** Distribute -2 : $-2(3c) - 2(7) = -6c - 14$.
- 16) **Choice D is correct.** **(7.RP.1-7.RP.3)** Multiply each dimension by the scale factor: $3 \times 8 = 24$ feet and $2.5 \times 8 = 20$ feet.
- 17) **Choice D is correct.** **(7.RP.3)** Simple interest formula $I = Prt$ depends only on principal, rate, and time—not on external factors like bank location.
- 18) **The correct answer is B,C.** **(7.G.1-7.G.5)** B and C are equivalent and correct: two angles are equal (50° each), so by the Isosceles Triangle Theorem, the sides opposite those angles must be equal. A is wrong (equilateral requires all angles 60°). D is wrong (two angles are the same).
- 19) **Choice C is correct.** **(7.NS.1-7.NS.3)** $-3 - 6 = -3 + (-6) = -9$. Move left 6 units from -3 .
- 20) **Choice A is correct.** **(7.EE.1-7.EE.2)** GCF of 6 and 9 is 3. Both terms contain y . GCF is $3y$.
- 21) **Choice C is correct.** **(7.SP.1-7.SP.4)** 19% of $1200 = 0.19 \times 1200 = 228$ items.
- 22) **Choice D is correct.** **(7.RP.3)** If $16 = 0.80 \times a$, then $a = \frac{16}{0.80} = 20$ attempts.
- 23) **Choice A is correct.** **(7.NS.1b)** For $-2 + (-3)$, we combine 2 negative chips with 3 negative chips for a total of 5 negative chips, representing -5 . Option A shows this correctly.
- 24) **Choice A is correct.** **(7.EE.1-7.EE.2)** Base cost is \$20, plus \$0.15 for each of t messages: $20 + 0.15t$.
- 25) **Choice B is correct.** **(7.EE.1)** Combine p^2 terms and p terms: $(2 + 4)p^2 + (3 + 2)p = 6p^2 + 5p$.
- 26) **The correct answer is 0.** **(7.G.1-7.G.5)** Reflection over $y = -x$ uses the rule $(x, y) \rightarrow (-y, -x)$. Applying this to $(2, 0)$: $(2, 0) \rightarrow (-0, -2) = (0, -2)$. The x -coordinate of the image is 0.
- 27) **Choice B is correct.** **(7.EE.4b)** $x < -2$ means all values less than (but not equal to) -2 . Use an open circle and an arrow pointing left.
- 28) **Choice D is correct.** **(7.RP.1-7.RP.3)** Unit rate = $\frac{5/6}{1/3} = \frac{5}{6} \times 3 = \frac{15}{6} = \frac{5}{2} = 2.5$ gal/min.
- 29) **Choice A is correct.** **(7.NS.2d)** Divide $7 \div 12 = 0.58333 \dots = 0.58\overline{3}$. Since $12 = 2^2 \times 3$, the 3 causes repetition.



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 6 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 **6** 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:

6 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.



Improve Understanding

Learn with clear explanations and step-by-step solutions.



Test Confidence

Familiarize with test formats and improve accuracy and speed.



Boost 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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