

10

New York NYSTP

GRADE
8
MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

10

PRINTED
TESTS



2

ONLINE
TESTS



Build Confidence



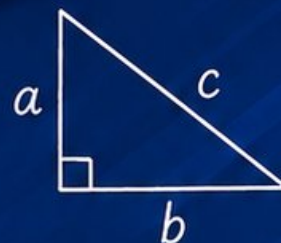
Master Key Math Skills



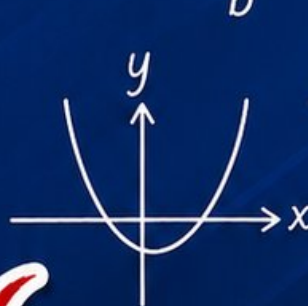
Answer Explanations for
Every Question



Test-Taking Strategies
That Work



$$y = mx + b$$



$$3x - 7 = 2(x + 5)$$
$$x = 17$$

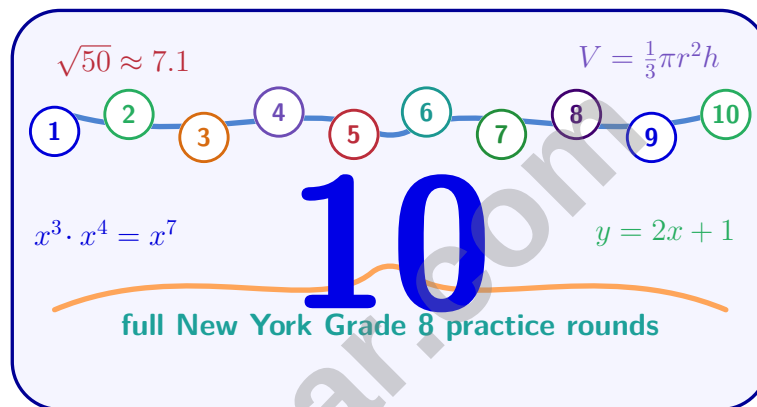


USE THESE TWO
**ADDITIONAL ONLINE
PRACTICE TESTS**

FOR EXTRA REVIEW AFTER
THE PRINTED TESTS
IN THIS BOOK.

10 New York NYSTP Grade 8 Math Practice Tests

New York Grade 8 NYSTP Practice for fast-moving review across linear relationships, algebra, measurement, data analysis, and chance



Ten complete 40-question Grade 8 NYSTP practice rounds with linear relationships, scientific notation, real numbers, equations, functions, geometry, data analysis, probability, answer keys, and clear explanations for every item.

Jay Daie and Reza Nazari



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Welcome, New York Grade 8 Problem Solver!

Ten focused rounds for sharper New York NYSTP math thinking

This book gives you ten full Grade 8 NYSTP math practice tests. Each round is built to help you notice structure, compare quantities, use linear reasoning, handle real numbers, and explain your thinking with care.

Grade 8 standards focus: This page supports **Angle Relationships** (8.G.7): Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. It also prepares you for **Volume of Pyramids** (8.G.9): Given the formulas for the volume of cones, cylinders, and spheres, solve mathematical and real-world problems.

Your New York 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 ten-session plan for confident Grade 8 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.

Grade 8 standards focus: Keep the routine connected to **Composite Figures: Area and Perimeter** (8.G.7): Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. Another recurring target is **Counting Principle and Permutations** (8.EE.7b): Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and combining like terms.

New York 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?

Ten New York NYSTP tests, 400 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Linear relationships, integer exponents, scientific notation, real-number reasoning, and careful reading.
Tests 4–6	Expressions, equations, inequalities, transformations, geometry, and multi-step problem solving.
Tests 7–9	Data analysis, probability, mixed review, stamina, and choosing efficient strategies.
Test 10	A final New York round to show growth across the whole book.
Answer Pages	Compact keys and explanations that show why each answer works.

The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.

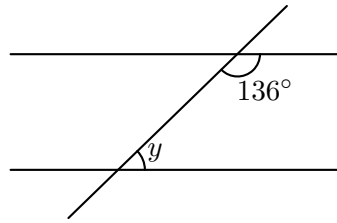
Grade 8 standards focus: Use these habits while practicing **Probability of Simple and Compound Events** (8.G.7): Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. The same routine helps with **Properties of Integer Exponents** (8.EE.1): Know and apply the properties of integer exponents to generate equivalent numerical expressions.



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& answers

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1)

Two parallel lines are cut by a transversal. One co-interior (same-side interior) angle is 136° . What is y , the other co-interior angle?

☐ A. 44° ☐ C. 156° ☐ B. 136° ☐ D. 176°

2) A rectangular prism has length 10 cm, width 6 cm, and height 4 cm. The lateral surface area (sides only, not top/bottom) is 128 cm^2 . What is the total surface area?

☐ A. 128 cm^2 ☐ C. 248 cm^2 ☐ B. 188 cm^2 ☐ D. 308 cm^2

3) A student found that a cone and a cylinder with the same radius r and height h have volumes differing by 600 cm^3 . If $V_{\text{cyl}} = 900 \text{ cm}^3$, what is V_{cone} ?

☐ A. 100 cm^3 ☐ C. 600 cm^3 ☐ B. 300 cm^3 ☐ D. 1500 cm^3

4) A store advertises: "Pay \$250 down and \$150/month for 12 months." If the item costs \$1,500 cash, what is the finance charge?

☐ A. \$0☐ C. \$100☐ B. \$50☐ D. \$550

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5) Which ordered pair satisfies both equations?

- $2x - y = 5$
- $x + 2y = 5$

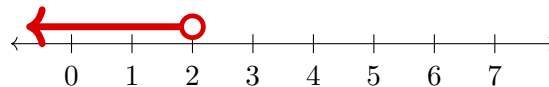
☐ A. (3, 1)

☐ C. (1, -3)

☐ B. (2, 0)

☐ D. (4, 3)

6) Which inequality has the solution graphed below?



☐ A. $x < 2$

☐ C. $x \leq 2$

☐ B. $x > 2$

☐ D. $x \geq 2$

7) Evaluate $(2x^3)^2$ when $x = 1$.

8) A student claims: "If input 5 appears three times in a table, it cannot be a function." Is the student correct?

- | | |
|---|---|
| ☐ A. Yes, any repeated input means it is not a function. | ☐ C. No, repeated inputs are only a problem if outputs differ. |
| ☐ B. No, repeated inputs are never a problem. | ☐ D. Yes, the domain cannot have repeated values. |



9) Which table represents a LINEAR function?

x	1	2	3	4
y	3	7	11	15

- ☐ A. Yes, the first differences are constant
☐ B. No, the y -values are not all even
☐ C. Yes, all y -values are positive
☐ D. No, the x -values increase



10)

Identify the intervals where the function is increasing.

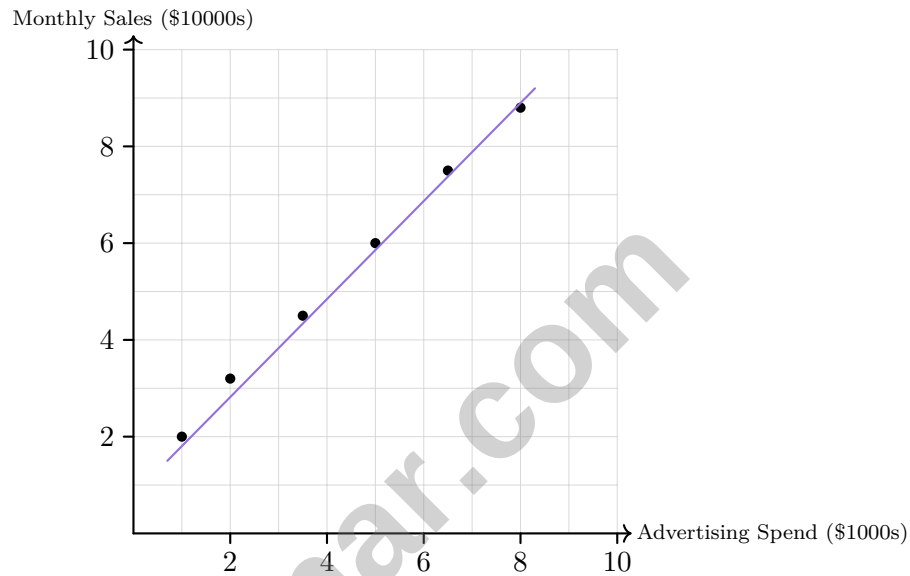
- ☐ A. From $x = 1$ to $x = 3$ only
☐ B. From $x = -1$ to $x = 1$
☐ C. From $x = 1$ to $x = 3$ and from $x = 3$ to $x = 5$
☐ D. From $x = -1$ to $x = 3$
- 11) A cube-shaped storage container has a volume of 512 cubic feet. What is the side length of the cube?



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- 1) Plan A costs \$10 plus \$5 per hour. Plan B costs \$20 plus \$2 per hour. After how many hours are the costs equal?

- ☐ A. 3 hours ☐ C. 5 hours
☐ B. 4 hours ☐ D. $\frac{10}{3}$ hours



2)

A business tracks advertising spend versus monthly sales. Based on the trend line, what is the approximate y -intercept (sales with no advertising)?

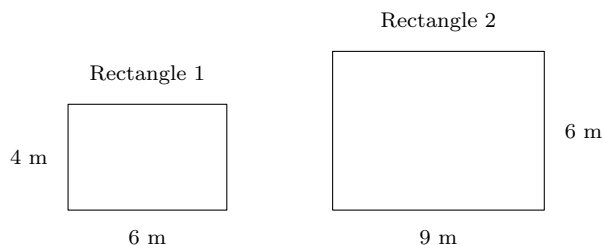
- ☐ A. \$30,000 ☐ C. \$10,000
☐ B. \$20,000 ☐ D. \$0

- 3) Two hikers start from the same point, walking in opposite directions. One walks at 4 mph, the other at 5 mph. After how many hours are they 27 miles apart?

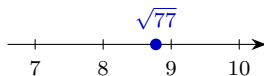


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- 4) Two rectangles are shown with proportional dimensions. Which similarity statement is correct?



- ☐ A. Rectangle 1 $\sim$ Rectangle 2 with scale factor 1.5
☐ B. The rectangles are not similar
☐ C. Rectangle 1 $\sim$ Rectangle 2 with scale factor 0.5
☐ D. They are congruent
- 5) A business profit function is $P(x) = 50x - 200$, where x is the number of units sold. What is the profit when 10 units are sold?
- ☐ A. \$300
☐ B. \$250
☐ C. \$200
☐ D. \$500
- 6) Which value is irrational?
- ☐ A. $0.5 + 0.25$
☐ B. $\frac{1}{2} + \frac{1}{3}$
☐ C. $\sqrt{10} + 1$
☐ D. 2^2
- 7) Where on a number line would $\sqrt{77}$ be located?



- ☐ A. At 9
☐ B. Between 9 and 10
☐ C. Between 8 and 9
☐ D. Between 7 and 8



1) Two students claim different answers for $0.\overline{9}$. Student A says $\frac{9}{9} = 1$. Student B says $\frac{9}{10}$. Who is correct and why?

☐ A. Student A is correct; $0.\overline{9} = 1$.

☐ C. Both are incorrect; the answer is $\frac{8}{9}$.

☐ B. Student B is correct; $0.\overline{9} = 0.9$.

☐ D. They are equal, so both are correct.

2) If a square has side length $(x + 3)$, and a smaller square inside has side length $(x - 3)$, what is the difference in their areas?

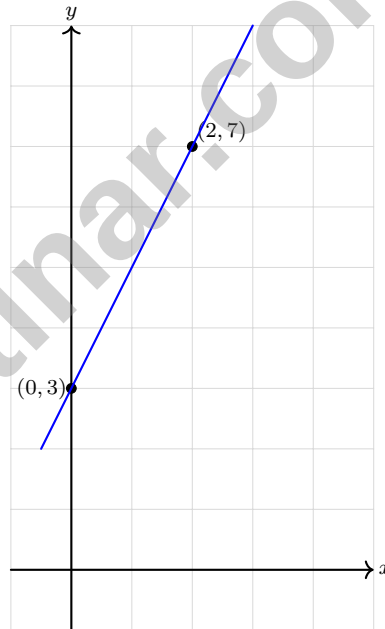
☐ A. 6

☐ C. $12x$

☐ B. 9

☐ D. x^2

3) The graph shows a linear function passing through points $(0, 3)$ and $(2, 7)$.



What is the slope of the line?

☐ A. 2

☐ C. $\frac{1}{2}$

☐ B. 3

☐ D. $\frac{2}{7}$



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4) Function f : “increases at 1.5 per unit, starts at 20.” Function g : “increases at 2 per unit, starts at 25.” Which function is larger at $t = 10$?

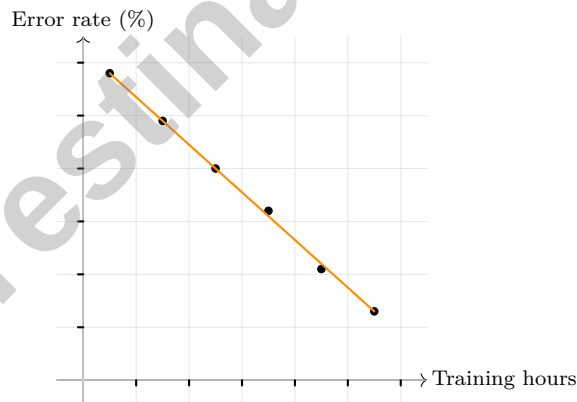
- ☐ A. Function f ☐ C. Both equal at $t = 10$
☐ B. Function g ☐ D. Cannot be determined.

5) A store notices that for every 2 customers who enter, 1 item is sold. What is the slope of items sold versus customers?

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

6) Two internet providers offer: Provider A costs \$60 per month (no setup). Provider B costs \$40 per month plus a \$100 installation fee. At how many months are the total costs equal?

- ☐ A. 3 months ☐ C. 5 months
☐ B. 4 months ☐ D. 6 months



7)

A training program finds error rate follows $E = -0.9t + 6$, where E is error rate (

- ☐ A. Error rate increases as training time increases ☐ C. Error rate stays constant regardless of training
☐ B. Error rate decreases as training time increases ☐ D. Training has no effect on errors



New York NYSTP Grade 8 Practice Test Answer Keys**How to use this section with a Grade 8 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 New York NYSTP practice test.

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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- Choice A is correct.** (8.G.7) Co-interior angles are supplementary when a transversal cuts parallel lines. So $y = 180 - 136 = 44^\circ$.
- Choice C is correct.** (8.G.9) Lateral area $= 2(10)(4) + 2(6)(4) = 80 + 48 = 128 \text{ cm}^2$ ✓. Area of two bases $= 2(10)(6) = 120 \text{ cm}^2$. Total $= 128 + 120 = 248 \text{ cm}^2$.
- Choice B is correct.** (8.G.9) $V_{\text{cone}} = \frac{1}{3}V_{\text{cyl}} = \frac{1}{3} \times 900 = 300 \text{ cm}^3$. Difference: $900 - 300 = 600 \text{ cm}^3$. ✓
- Choice D is correct.** (8.G.7) Total installment cost: $250 + 150 \times 12 = 250 + 1800 = \$2,050$. Finance charge: $2050 - 1500 = \$550$.
- Choice A is correct.** (8.EE.8a) Check (3, 1): $2(3) - 1 = 5$ ✓ and $3 + 2(1) = 5$ ✓. Both equations are satisfied.
- Choice A is correct.** (8.EE.8a) The open circle at 2 means 2 is not included. The ray points left to smaller values, so $x < 2$.
- The correct answer is 4.** (8.EE.1) $(2x^3)^2 = 4x^6$. With $x = 1$, the value is 4.
- Choice C is correct.** (8.F.1) A relation is a function only if each input has exactly one output. If input 5 appears three times but with the same output, it is still a function (just redundantly listed).
- Choice A is correct.** (8.F.3) For a linear function, the differences between consecutive y -values are constant. Here: $7 - 3 = 4$, $11 - 7 = 4$, $15 - 11 = 4$. A constant first difference indicates linearity.
- Choice A is correct.** (8.F.5) From $x = -1$ to $x = 1$: the function is constant at $f(x) = 2$ (neither increasing nor decreasing). From $x = 1$ to $x = 3$: the function increases from 2 to 4. From $x = 3$ onward: the function decreases.
- The correct answer is 8.** (8.EE.2) $e^3 = 512$, so $e = \sqrt[3]{512} = 8$ feet.
- Choice B is correct.** (8.G.1) Translation is a rigid motion, which preserves distances and angles. Therefore, quadrilateral A'B'C'D' is congruent to ABCD.
- Choice A is correct.** (8.G.3) Checking: $(1, 2) \rightarrow (-1, -2)$, $(3, 2) \rightarrow (-3, -2)$, $(2, 4) \rightarrow (-2, -4)$. All points follow the rule $(x, y) \rightarrow (-x, -y)$, confirming 180° rotation.
- Choice D is correct.** (8.G.5) Corresponding angles are equal: $5x - 10 = 3x + 50$, so $2x = 60$ and $x = 30$.
- Choice A is correct.** (8.G.6, 8.G.7) Check: $25 + 100 = 125$, so $5^2 + 10^2 = (\sqrt{125})^2$. Note that $\sqrt{125} = 5\sqrt{5}$. This is a valid right triangle using the converse theorem.
- The correct answer is 4.8×10^4 .** (8.EE.4) Same exponents: $(8.5 - 3.7) \times 10^4 = 4.8 \times 10^4$.
- Choice A is correct.** (8.G.9) $V = \frac{1}{3} \times (2 \times 2) \times 3 = \frac{1}{3} \times 4 \times 3 = 4 \text{ m}^3 = 4000 \text{ L}$.
- Choice B is correct.** (8.G.7) Decompose the perimeter: two long sides of rectangle plus two semicircles (which form one complete circle). Long sides: $100 + 100 = 200 \text{ m}$. Circle circumference: $\pi d = 3.14 \times 50 \approx 157 \text{ m}$. Total $= 200 + 157 = 357 \text{ m}$.
- Choice C is correct.** (8.G.5) Set $(n - 2) \times 180 = 900$. Then $n - 2 = 5$, so $n = 7$ (a heptagon).
- Choice A is correct.** (8.SP.1) Outliers in health data can indicate genuine health risks or data recording errors. Ignoring (B) or removing (C) the outlier without investigation risks missing important health concerns. The outlier should prompt further examination.
- Choice B is correct.** (8.SP.3) The magnitude (absolute value) of the residual tells us the size of the error. Model 2's error of 5 units is larger than Model 1's error of 2 units, regardless of whether the prediction was too high or too low.
- The correct answer is A, C.** (8.G.7) A is correct: $P(\text{heads}) = \frac{1}{2}$. C is correct: $P(\text{heads and 4}) = \frac{1}{2} \times \frac{1}{6} = \frac{1}{12}$. B is wrong: $P(4) = \frac{1}{6}$. D is wrong: total outcomes $= 12$. E is wrong: $P(\text{not heads}) = \frac{1}{2}$.
- Choice A is correct.** (8.G.8) Mean $= 10.4$. Deviations: 0.4, 0.6, 0.4, 0.6, 0.4. MAD $= (0.4 + 0.6 + 0.4 + 0.6 + 0.4)/5 = 2.4/5 = 0.48 < 1$. Set A clusters within 0.6 of the mean, so small MAD. Other sets are more spread.
- Choice A is correct.** (8.EE.7) Find two numbers that multiply to -8 and add to 2: 4 and -2 . So $x^2 + 2x - 8 = (x + 4)(x - 2)$.
- Choice B is correct.** (8.F.2) Rate of A: -3 liters/min. Rate of B: $(20 - 40)/5 = -4$ liters/min. Since $|-4| > |-3|$, Tank B empties faster.
- Choice A is correct.** (8.F.4) One-time premium feature fee is \$8 (intercept). Monthly service cost is \$12 (slope). Total is $T = 12m + 8$.



Hi, Future Algebra Thinker!

◇ Grade 8 practice builds a bridge to high school mathematics through exponents, linear systems, functions, transformations, geometry, and data models. This full-length book gave you ten complete Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. ◇

★ **Remember this:** Every time you solved for an unknown or explained a relationship, you were building skills that future math will use again. ★

Bridge Skills

- **Use Variables:** Let letters stand for unknown values.
- **Balance Equations:** Keep both sides fair.
- **Read Graphs:** Connect points to meaning.
- **Compare Rates:** Look for constant relationships.

Grade 8 test-day tip: When you see a variable, say what it represents. That keeps algebra connected to the problem.

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

Jay Daie

Your Algebra Bridge Coach

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **10** full-length Math practice tests and **2** online tests to help Grade 8 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:

10

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.



**Master
Key Skills**

Develop strong math skills and problem solving abilities.



**Improve
Understanding**

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



**Test
Strategies**

Learn proven strategies to approach every question with confidence.



**Boost
Performance**

Apply your knowledge and achieve your best score!

TOPICS COVERED

- | | |
|---------------------------|----------------------------|
| ✓ The Number System | ✓ Statistics & Probability |
| ✓ Expressions & Equations | ✓ Data Analysis |
| ✓ Inequalities | ✓ Measurement |
| ✓ Functions | ✓ Pythagorean Theorem |
| ✓ Geometry | ✓ Surface Area & Volume |
| ✓ Ratios & Proportions | ✓ 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!



PRACTICE
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FOCUSED



SOLVE
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SUCCEED
BRIGHTLY