

10 Utah RISE

GRADE
8
MATH

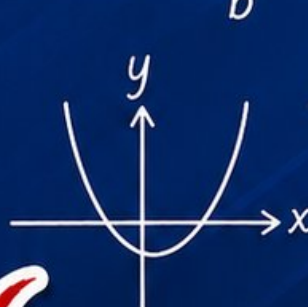
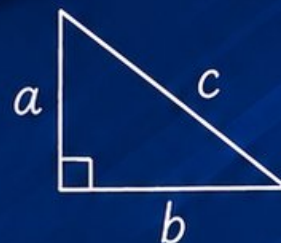
PRACTICE TESTS

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



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

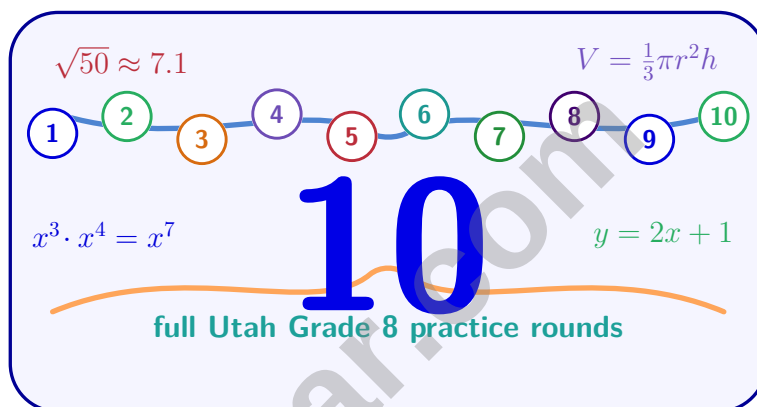


USE THESE TWO
**ADDITIONAL ONLINE
PRACTICE TESTS**

FOR EXTRA REVIEW AFTER
THE PRINTED TESTS
IN THIS BOOK.

10 Utah RISE Grade 8 Math Practice Tests

Utah Grade 8 RISE Practice for canyon-clear readiness across linear reasoning, expressions, scale, geometry, data analysis, and chance



Ten complete 40-question Grade 8 RISE 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, Utah Grade 8 Problem Solver!

Ten focused rounds for sharper Utah RISE math thinking

This book gives you ten full Grade 8 RISE 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 **Using a Linear Model** (8.SP.3): Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting slope and intercept. The same routine helps with **Graphing Linear Inequalities in Two Variables** (8.G.8): Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

Your Utah 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 **Solving Linear Inequalities** (8.EE.7): Solve linear equations and inequalities in one variable. You will also meet **Interior Angles of Polygons** (8.G.5): Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and....

Utah 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 Utah RISE 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 Utah 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 **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. A second useful connection is **Turning Repeating Decimals into Fractions** (8.G.1): Convert a decimal expansion which repeats eventually into a rational number.



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& answers

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1) Which of the following numbers is irrational?

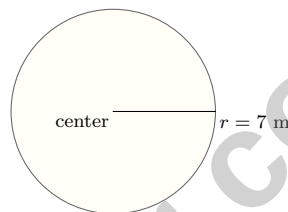
- ☐ A. $\frac{3}{5}$
☐ B. $0.\overline{6}$

- ☐ C. $\sqrt{7}$
☐ D. $\sqrt{25}$

2) An aquarium is a rectangular prism with dimensions 4 feet (length) $\times$ 2 feet (width) $\times$ 2.5 feet (height). The bottom and four sides are glass, but the top is open (no glass). How much glass (in square feet) is needed to build the aquarium?

- ☐ A. 32 sq. ft.
☐ B. 36 sq. ft.

- ☐ C. 38 sq. ft.
☐ D. 48 sq. ft.



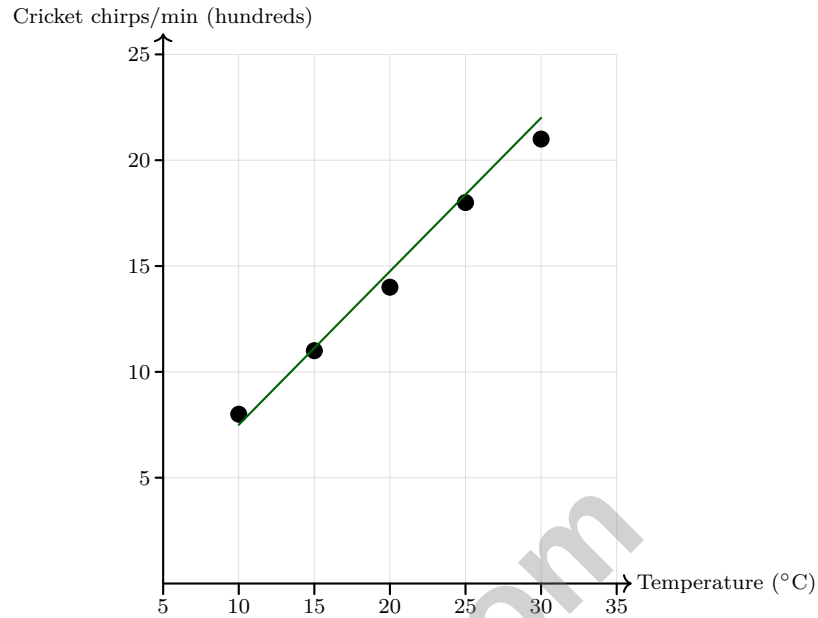
3)

A sphere with radius 7 m is shown. What is its approximate volume? (Use $\pi \approx 3.14$.)

- ☐ A. 615.44 m^3
☐ B. 1230.88 m^3

- ☐ C. 1436.03 m^3
☐ D. 1916.8 m^3





4)

Based on the scatter plot, as temperature increases by 5°C , cricket chirps increase by approximately how many (in hundreds)?

☐ A. 0.5 hundreds

☐ C. 1.5 hundreds

☐ B. 1 hundred

☐ D. 3 hundreds
5) Solve for x : $5(x - 2) = 3(x + 2)$
☐ A. $x = 8$
☐ C. $x = 1$
☐ B. $x = -8$
☐ D. $x = 10$

6) Which system has infinitely many solutions?

☐ A. $y = x + 2$ and $y = x - 2$
☐ C. $y = x + 2$ and $y = -x + 2$
☐ B. $y = x + 2$ and $y = 2x + 2$
☐ D. $y = x + 2$ and $2y = 2x + 4$


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7) Solve: $3(x + 2) < 9$

☐ A. $x < 1$

☐ C. $x < 3$

☐ B. $x > 1$

☐ D. $x > 3$

8) A student claims that $10x + 25$ factors as $5(2x + 5)$. Is this completely factored?

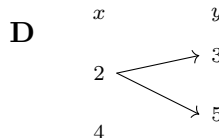
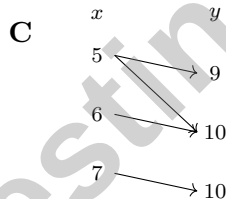
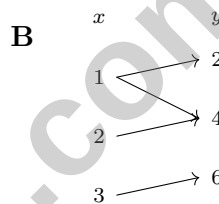
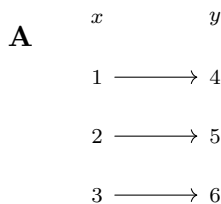
☐ A. Yes, this is the complete factorization.

☐ C. No; $2x + 5$ can be factored further.

☐ B. No; the GCF should be 10.

☐ D. No; a factor of 5 can still be removed.

9) Which mapping diagram represents a function?



10) Function f is given by $f(x) = 4x + 1$. Function g is given by the table: $g(0) = 2$, $g(1) = 5$, $g(2) = 8$. Which function has the greater rate of change?

x	0	1	2
$g(x)$	2	5	8

☐ A. $f(x)$

☐ C. Both are equal

☐ B. $g(x)$

☐ D. Cannot be determined


1) Solve: $\frac{x-2}{5} \leq 3$

☐ A. $x \leq 13$

☐ C. $x \leq 17$

☐ B. $x \geq 13$

☐ D. $x \geq 17$

2) Triangle X is similar to Triangle Y . In Triangle X , one angle measures 60° . What is the measure of the corresponding angle in Triangle Y ?

☐ A. 30°

☐ C. 120°

☐ B. 60°

☐ D. Cannot be determined

3) If $g(x) = x + 7$, what is $g(2)$?

☐ A. 5

☐ C. 10

☐ B. 9

☐ D. 14

4) Which set correctly separates rational and irrational numbers?

☐ A. Rational: all decimals; Irrational: all square roots

☐ C. Rational: π , $0.101001\dots$; Irrational: $\frac{7}{2}$, $\sqrt{16}$

☐ B. Rational: $\sqrt{2}$, $\frac{1}{3}$; Irrational: $0.\overline{3}$, $\sqrt{9}$

☐ D. Rational: $\sqrt{4}$, 0.5 ; Irrational: π , $\sqrt{10}$

5) A business selects 4 employees from 7 to form a team and arranges them in a specific order for a project. How many ways can this be done?

☐ A. $7 \times 6 \times 5 \times 4 = 840$

☐ C. $7^4 = 2,401$

☐ B. $\binom{7}{4} = 35$

☐ D. $7! = 5,040$



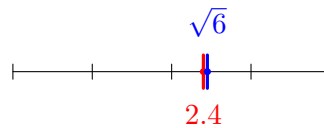
6) Convert $0.\overline{13}$ to a fraction.

☐ A. $\frac{1}{13}$
☐ B. $\frac{13}{100}$

☐ C. $\frac{13}{99}$
☐ D. $\frac{2}{15}$

Perfect Squares: $2^2 = 4$, $3^2 = 9$

Compare to $\sqrt{6}$ and 2.4



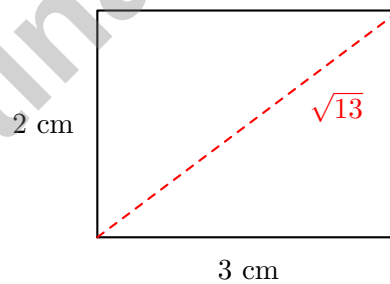
7)

Is $\sqrt{6}$ greater than 2.4 or less than 2.4?

- ☐ A. Cannot compare
☐ B. Less than

- ☐ C. Equal to
☐ D. Greater than

8) A rectangle has dimensions 2 cm by 3 cm. The diagonal is $\sqrt{13}$ cm. What is the best estimate of the diagonal?



- ☐ A. 3.0 cm
☐ B. 6.5 cm

- ☐ C. 4.2 cm
☐ D. 3.6 cm

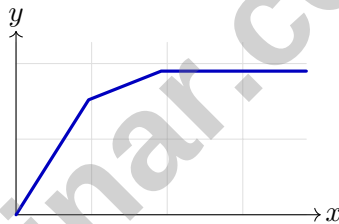


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- 1) A student solves: "A jar has pennies and quarters totaling \$5.00 with 40 coins. How many quarters are there?" The student correctly sets up $p + q = 40$ (coins) and $0.01p + 0.25q = 5.00$ (dollars) and solves to get $q \approx 19.17$. Which statement best describes the issue?

- ☐ A. The student should have used cents: $p + 25q = 500$ instead.
- ☐ B. The student should use elimination instead of substitution.
- ☐ C. The answer must be a whole number, so the problem statement likely has a typo.
- ☐ D. The system is correct, and 19.17 quarters is a valid final answer.

- 2) A student studies for an exam and creates a graph: time studied vs. score. The first 2 hours give a big score boost, the next 2 hours give less improvement, and after that, no more gains. What is the graph shape?



- ☐ A. Steep rise, then gentle rise, then flat
- ☐ B. Gradual rise throughout
- ☐ C. Steep rise throughout
- ☐ D. Flat throughout (no improvement)

- 3) What two positive integers multiply to 12 and add to 7?



4) A line passes through the points (2, 5) and (6, 13). What is the slope of the line?

☐ A. $\frac{1}{2}$

☐ B. 4

☐ C. $\frac{3}{2}$

☐ D. 2

5) Triangle P has sides 8, 15, 17. Triangle Q has sides 12, 22.5, 25.5. Are they similar?

☐ A. No, the sides are not equal☐ B. No, the ratios are 1.5, 1.5, 1.5 which is not constant☐ C. Yes, all sides have the same ratio 1.5 to Q 's sides☐ D. Only if corresponding angles equal 90°

6) For the function $y = \frac{1}{3}x + 5$, is it linear or nonlinear?

☐ A. Nonlinear, because the coefficient is a fraction☐ B. Linear, it has the form $y = mx + b$ ☐ C. Nonlinear, because the slope is less than 1☐ D. Linear, only because $b = 5$

7) 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☐ B. 4 hours☐ C. 5 hours☐ D. $\frac{10}{3}$ hours

8) Parallelogram DEFG is rotated 180 degrees about its center to form parallelogram D'E'F'G'. Which statement is NOT true?

☐ A. Side DE equals side D'E'☐ B. Angle E equals angle E'☐ C. The perimeters are equal☐ D. The figure has rotated and is no longer a parallelogram

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& answers

Utah RISE 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 Utah RISE practice test.

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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice C is correct.** (8.NS.1) $\sqrt{7}$ is irrational because 7 is not a perfect square; its decimal expansion is non-terminating and non-repeating. $\frac{3}{5} = 0.6$ and $0.\overline{6} = \frac{2}{3}$ are rational. $\sqrt{25} = 5$ is rational.
- 2) **Choice C is correct.** (8.G.9) Bottom: $4 \times 2 = 8$ sq. ft. Two long sides: $2(4 \times 2.5) = 20$ sq. ft. Two short sides: $2(2 \times 2.5) = 10$ sq. ft. Total = $8 + 20 + 10 = 38$ sq. ft.
- 3) **Choice C is correct.** (8.G.9) $V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times 3.14 \times 343 \approx 1436.03 \text{ m}^3$.
- 4) **Choice D is correct.** (8.SP.3) From 10°C to 15°C (an increase of 5°), chirps go from about 8 to 11 hundreds, an increase of about 3 hundreds.
- 5) **Choice A is correct.** (8.EE.7) Expand: $5x - 10 = 3x + 6$. Subtract $3x$ and add 10: $2x = 16$, so $x = 8$.
- 6) **Choice D is correct.** (8.EE.8) Simplify the second equation: $2y = 2x + 4$ becomes $y = x + 2$, the same as the first equation. They represent the same line, so they intersect at infinitely many points.
- 7) **Choice A is correct.** (8.EE.7) Distribute: $3x + 6 < 9$. Subtract 6: $3x < 3$. Divide by 3: $x < 1$.
- 8) **Choice A is correct.** (8.EE.7) GCF of $10x$ and 25 is 5, so $10x + 25 = 5(2x + 5)$ is completely factored (since $2x + 5$ is linear and cannot be factored further).
- 9) **Choice A is correct.** (8.F.1) Option A has each input mapping to exactly one output. Option B has input 1 mapping to two outputs. Option C has input 5 mapping to two outputs. Option D has input 2 mapping to two outputs.
- 10) **Choice A is correct.** (8.F.2) The slope of f is 4. For g : $\Delta y / \Delta x = 3/1 = 3$. Since $4 > 3$, f has the greater rate of change.
- 11) **Choice C is correct.** (8.F.3) Rewrite as $y = -5x + 2$. In the form $y = mx + b$, the slope $m = -5$ and the y -intercept $b = 2$.
- 12) **The correct answer is 0.125.** (8.EE.1) $2^{-3} = \frac{1}{2^3} = \frac{1}{8} = 0.125$.
- 13) **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.
- 14) **The correct answer is 8.** (8.EE.2) $e^3 = 512$, so $e = \sqrt[3]{512} = 8$ feet.
- 15) **Choice B is correct.** (8.G.2) Congruent figures have equal perimeters. Since ABCDEF is congruent to GHIJKL, and the perimeter of ABCDEF is 48 cm, the perimeter of GHIJKL is also 48 cm.
- 16) **The correct answer is 3×10^3 .** (8.EE.4) Divide: $\frac{9.6}{3.2} = 3$ and $10^{8-5} = 10^3$. Answer: 3×10^3 .
- 17) **Choice D is correct.** (8.G.5) Use the triangle angle sum: $50 + 30 + \angle ACB = 180$. So $\angle ACB = 180 - 50 - 30 = 100^\circ$.
- 18) **Choice B is correct.** (8.G.6, 8.G.7) From $(\sqrt{7})^2 + 3^2 = c^2$, we get $7 + 9 = 16$, so $c = \sqrt{16} = 4$.
- 19) **Choice A is correct.** (8.G.8) Distance = $\sqrt{6^2 + 8^2} = \sqrt{36 + 64} = \sqrt{100} = 10$ units.
- 20) **Choice C is correct.** (8.G.7) Co-interior angles sum to 180° : $(m - 15) + (m + 35) = 180 \Rightarrow 2m + 20 = 180 \Rightarrow 2m = 160 \Rightarrow m = 80^\circ$.
- 21) **The correct answer is B,E.** (8.G.7) There are 10 marbles total. B is true because $P(\text{blue}) = \frac{3}{10}$. E is true because $P(\text{red or blue}) = \frac{5+3}{10} = \frac{8}{10} = \frac{4}{5}$. A is false because $P(\text{red}) = \frac{1}{2}$. C is false because $P(\text{green}) = \frac{1}{5}$. D is false because $P(\text{yellow}) = 0$.
- 22) **Choice C is correct.** (8.G.9) $V_A = \frac{1}{3} \times 16 \times 9 = 48 \text{ cm}^3$. $V_B = \frac{1}{3} \times 64 \times 18 = 384 \text{ cm}^3$. Ratio: $\frac{384}{48} = 8$. When linear scale is $2\times$, volume scales by $2^3 = 8\times$.
- 23) **Choice C is correct.** (8.G.5) For a regular polygon, each interior angle is $\frac{(n-2) \times 180}{n} = 144$. Solving: $(n - 2) \times 180 = 144n \Rightarrow 180n - 360 = 144n \Rightarrow 36n = 360 \Rightarrow n = 10$.
- 24) **Choice A is correct.** (8.G.8) Smaller MAD (1.5) indicates more consistent performance near the mean. Player A's scores vary less, making him more predictably reliable.
- 25) **Choice D is correct.** (8.EE.5) A proportional equation has the form $y = kx$ (passes through origin, no constant term). Only $y = -5x$ fits this form.
- 26) **Choice A is correct.** (8.F.4) The sign-up fee \$25 is a one-time cost (the y -intercept, the value when $m = 0$). The monthly rate \$15 is the slope (rate of change per month). Therefore, $C = 15m + 25$. The slope tells how much additional cost per month; the intercept tells the starting cost.



Hi, Strategy Solver!

◇ Grade 8 math rewards students who think before they calculate. You practiced choosing strategies, not just hunting for answers. 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:** That matters because stronger math students do not use one method for every question. They notice the structure and choose the tool that fits. ★

Strategy Moves

- **Estimate:** Know the neighborhood of the answer.
- **Simplify:** Rewrite numbers in friendlier forms.
- **Model:** Draw what the words describe.
- **Verify:** Put the answer back into the problem.

Grade 8 test-day tip: Pause for ten seconds before hard questions. A short plan can save several minutes.

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

Jay Daie

Your Strategy Guide

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
- ✓ Expressions & Equations
- ✓ Inequalities
- ✓ Functions
- ✓ Geometry
- ✓ Ratios & Proportions
- ✓ Statistics & Probability
- ✓ Data Analysis
- ✓ Measurement
- ✓ Pythagorean Theorem
- ✓ Surface Area & Volume
- ✓ 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
REGULARLY



STAY
FOCUSED



SOLVE
CONFIDENTLY



SUCCEED
BRIGHTLY