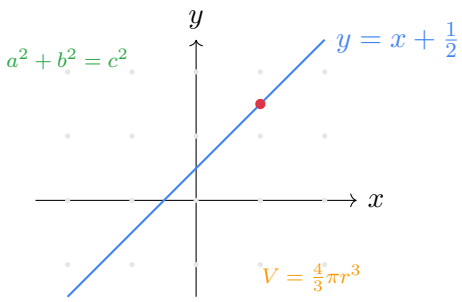
Missouri MAP
8th Grade Math Workbook

Comprehensive Practice, Challenging Exercises, and Strategic Guidance for Complete Test-Day Confidence



Reza Nazari

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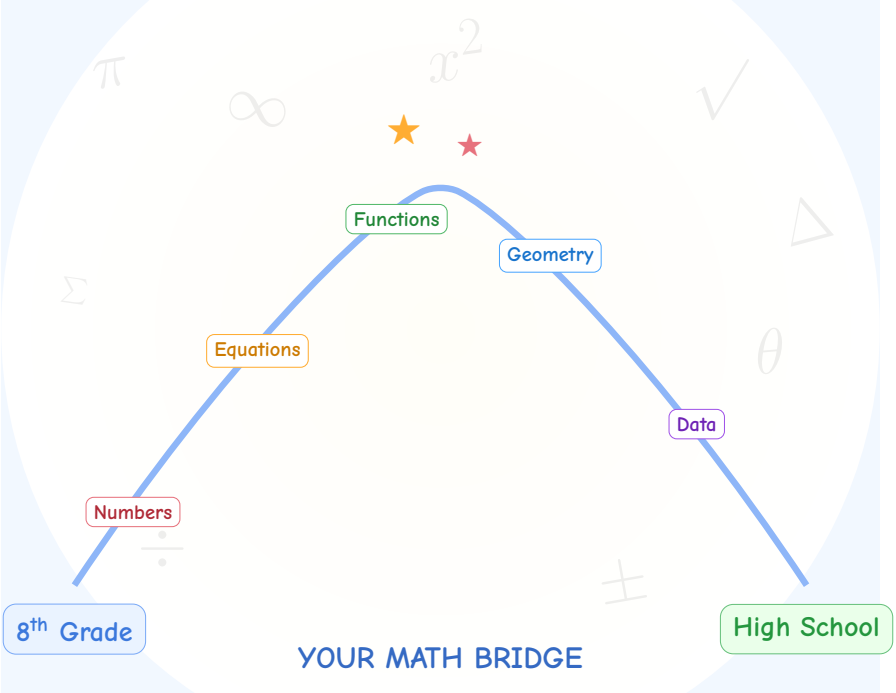
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Welcome, 8th Grader!

The Bridge Between Middle School and High School Starts Here



Dear Eighth Grader,

Welcome! This is *your* year. Everything you have built so far — working with fractions, decimals, ratios, and basic geometry — has been preparing you for this moment. Eighth-grade math is where all of those skills come together and open the door to high school and beyond.

Apply geometric reasoning and measurement to solve problems

8.GM.A	Understand congruence and similarity using physical models, transparencies or geometry software
8.GM.A.1	Verify experimentally the congruence properties of rigid transformations
8.GM.A.2	Understand that two-dimensional figures are congruent if a series of rigid transformations can be performed to map the pre-image to the image
8.GM.A.3	Describe the effect of dilations, translations, rotations and reflections on two-dimensional figures using coordinates
8.GM.A.4	Understand that two-dimensional figures are similar if a series of transformations (rotations, reflections, translations and dilations) can be performed to map the pre-image to the image
8.GM.A.5	Explore angle relationships and establish informal arguments
8.GM.B	Understand and apply the Pythagorean Theorem
8.GM.B.6	Use models to demonstrate a proof of the Pythagorean Theorem and its converse
8.GM.B.7	Use the Pythagorean Theorem to determine unknown side lengths in right triangles in problems in two- and three-dimensional contexts
8.GM.B.8	Use the Pythagorean Theorem to find the distance between points in a Cartesian coordinate system
8.GM.C	Solve problems involving volume of cones, pyramids and spheres
8.GM.C.9	Solve problems involving surface area and volume

8.NS | Number Sense and Operations

Understand number properties and apply operations with rational numbers

8.NS.A	Know that there are numbers that are not rational, and approximate them by rational numbers
8.NS.A.1	Explore the real number system
8.NS.A.2	Estimate the value and compare the size of irrational numbers and approximate their locations on a number line

Table of Contents

★ 1 Real Numbers & Number Sense 13

★ 2 Exponents, Roots, & Scientific Notation 23

★ 3 Proportional Relationships & Slope 33

★ 4 Equations & Systems 41

★ 5 Functions: Foundations 51

★ 6 Functions: Models And Patterns 58

★ 7 Transformations & Similarity 66

★ 8 Angles & The Pythagorean Theorem 75

★ 9 Surface Area & Volume 84

★ 10 Statistics & Data Modeling 92

★ Test Overview 103

★ Test-Taking Strategies 106

★ Practice Test 1 109

★ Practice Test 2 127

★ Practice Test Answer Keys 147

★ Practice Test Answers and Explanations 149

★ Chapters Answers and Explanations 153

CHAPTER

1

Real Numbers & Number Sense

1. Rational and Irrational Numbers 8.NS.A, 8.NS.A.1
2. Turning Repeating Decimals into Fractions 8.NS.A, 8.NS.A.1
3. Estimating Irrational Numbers 8.NS.A, 8.NS.A.2
4. Estimating Expressions with Irrational Numbers 8.NS.A, 8.NS.A.2

★ Chapter 1 Answer Key ★

Real Numbers & Number Sense

Topic 1 • Rational and Irrational Numbers

1) 3
2) 7
3) -12
4) Rational
5) Irrational
6) Irrational
7) Rational
8) Irrational
9) Rational
10) Irrational
11) Irrational
12) 13
13) Irrational
14) Yes
15) Irrational
16) No
17) Rational; 8 ft
18) 4 rational
19) False

Topic 2 • Turning Repeating Decimals into Fractions

1) $\frac{5}{9}$
2) $\frac{2}{9}$
3) $\frac{8}{9}$
4) 1
5) $\frac{1}{9}$
6) $\frac{2}{3}$
7) $\frac{5}{11}$
8) $\frac{3}{11}$
9) $\frac{2}{11}$
10) $\frac{7}{11}$
11) $\frac{1}{11}$
12) $\frac{6}{11}$
13) $\frac{1}{7}$
14) $\frac{1}{6}$
15) 36 pieces
16) Yes—the repeating decimal *is* the fraction $\frac{8}{11}$
17) $0.\overline{6} = \frac{2}{3}$; total $= \frac{2}{3} \times 5 = \frac{10}{3} = 3\frac{1}{3}$ cups
18) Both fractions are equal, but Eddie's is fully simplified: $\frac{5}{11}$
19) $\frac{1}{3} + \frac{2}{3} + \frac{5}{9} = \frac{14}{9} = 1\frac{5}{9}$ minutes

Topic 3 • Estimating Irrational Numbers

1) 3 and 4
2) 4 and 5
3) 5 and 6
4) 7 and 8
5) 8 and 9
6) 9 and 10
7) ≈ 2.4
8) ≈ 3.7
9) ≈ 5.5
10) ≈ 7.2
11) $\sqrt{3}$, 2, $\sqrt{5}$
12) $\sqrt{11}$
13) $8 < \sqrt{75} < 9$; closer to 9 since $\sqrt{75} \approx 8.66$
14) Drone A; $\sqrt{60} \approx 7.75 > 7.5$
15) Side ≈ 9.5 ft; fencing $\approx 4(9.5)(\$12) = \$456$
16) $\sqrt{113} \approx 10.6$ cm; need an 11 cm strip
17) 7.07 is more accurate; $7.07^2 = 49.9849 \approx 50$

Scan Me

Topic 4 • Estimating Expressions with Irrational Numbers

1) ≈ 6.28
2) ≈ 4.14
3) ≈ 5.64
4) ≈ 3.73
5) ≈ 4.42
6) 2
7) ≈ 6.21
8) ≈ 5.86
9) ≈ 1.86
10) ≈ 3.81
11) 5
12) ≈ 2.44
13) $\approx 9.4\ \text{m}^2$
14) Rope A; ≈ 0.55 m longer
15) Total $\approx 4.5 + 3.14 = 7.64$ km; time $\approx 7.64 \div 5 \times 60 \approx 92$ min
16) Perimeter $\approx 2(4.24 + 4.24) \approx 16.96$ in; cost $\approx \$25.44$
17) $r \approx 4.0$ m; $C \approx 25.1$ m

Answers and Explanations on page: 153
Full worked solutions for Chapter 1 are waiting there.

CHAPTER

2

Exponents, Roots, & Scientific Notation

1. Properties of Integer Exponents 8.EEI.A, 8.EEI.A.1
2. Square Roots and Cube Roots 8.EEI.A.2, 8.EEI.B, 8.EEI.B.6
3. Understanding Scientific Notation 8.EEI.A, 8.EEI.A.1, 8.EEI.A.4
4. Operations with Scientific Notation 8.EEI.A, 8.EEI.A.3