Illinois IAR 5th Grade Math Workbook

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



- Strengthen Every Key Skill
- Sharpen Math Skills the Smart Way
- Essential Practice for Real Growth



Practice Master Achieve

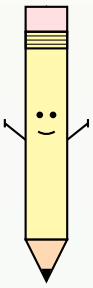
Reza Nazari

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



Professor Owl



Pip

with Professor Owl and Pip

Reza Nazari

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★ A Note for Parents and Teachers ★

Dear Parents and Teachers,

Welcome to the **Illinois IAR 5th Grade Math Workbook**! This is your child's final year of elementary math, and it introduces some of the most important concepts they will carry into middle school: decimal arithmetic, fraction operations with unlike denominators, volume, coordinate geometry, and algebraic thinking.

This workbook is structured so students can work *independently*. Each topic is taught with clear explanations and worked examples *before* practice problems appear.

What makes this workbook effective:

⋆ **Teach-then-practice:** Every section explains the concept first, then provides guided and independent practice

⋆ **Rich visual models:** Fraction bars, area models, 3-D diagrams, and coordinate grids

⋆ **Gradual progression:** Problems increase in difficulty so students build confidence naturally

⋆ **Student-friendly language:** Clear enough for a 5th grader to read on their own

⋆ **IAR-aligned:** Every section targets Illinois state standards

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Getting the Most From This Workbook

1. One topic at a time. Let your child read the lesson, study examples, then complete the practice. Do not rush multiple topics in one sitting.

2. Emphasize understanding over speed. A student who can explain *why* $\frac{1}{3}+\frac{1}{4}=\frac{7}{12}$ has deeper mastery than one who memorized the answer.

3. Connect math to daily life. Cooking, shopping, building, and sports all use 5th-grade math. Make these connections whenever you can.

4. Celebrate effort, not just scores. Finishing a hard chapter deserves a high-five. Growth from Test 1 to Test 2 is worth a celebration.

5. Use the progress tracker. The tracking pages help both you and your child see exactly where they stand.

Your belief in your child is the most powerful math tool there is.



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The Constellation Decoder

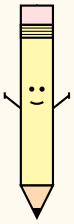
Learn the symbols and language of 5^{th}-grade math!

Symbols Every 5^{th} Grader Must Know

Symbol	Name	Example
$+ \ - \ \times \ \div$	Four operations	$3.75 \times 2.4 = 9.0$
$= \neq$	Equal / Not equal	$\frac{2}{6} = \frac{1}{3}, \quad 0.3 \neq 0.03$
$> < \geq \leq$	Comparison symbols	$0.45 > 0.405$
$(\ )$	Parentheses	$(6 + 2) \times 3 = 24$
$\{ \ \}$	Braces	Set of multiples: $\{5, 10, 15 \ldots\}$
$[\ ]$	Brackets	$2 \times [3 + (4 - 1)]$
10^n	Power of 10	$10^3 = 1{,}000$
$(x, \ y)$	Ordered pair	Point at $(3, \ 5)$
V	Volume	$V = l \times w \times h$
cm^3, in^3, ft^3	Cubic units	$V = 120 \text{ in}^3$
$\frac{a}{b}$	Fraction	$\frac{5}{8}$ = five eighths
$\angle$	Angle	$\angle PQR = 75°$
$\parallel \ \perp$	Parallel / Perpendicular	$\overline{AB} \parallel \overline{CD}$

Mission-Critical Vocabulary

Word	What It Means
Expression	A math phrase with numbers and operations $(3 + 7 \times 2)$
Evaluate	Calculate the value of an expression
Coordinate Plane	A grid with x-axis (horizontal) and y-axis (vertical)
Ordered Pair	(x, y) — the exact address of a point on the grid
Origin	$(0, 0)$ — where the two axes cross
Volume	Space inside a 3-D shape, measured in cubic units
Common Denominator	A shared bottom number for adding/subtracting fractions
Powers of 10	$10^1 = 10$, $10^2 = 100$, $10^3 = 1{,}000$, $10^4 = 10{,}000$
Thousandths	Third digit after the decimal: $0.00\underline{7}$
Quotient / Remainder	Answer to division / what is left over
Composite Figure	A 3-D shape made of two or more prisms joined together
Hierarchy	A ranking system (e.g., all squares are rectangles)



Pip's Tip: Bookmark this Constellation Decoder! Flip back whenever you hit a symbol or word you need to check. Great commanders always consult their instruments.



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Understanding Decimals

Decimal Place Value

Tens	Ones	•	Tenths	Hundredths	Thousandths
1	4	•	7	5	3

14.753

$\frac{7}{10}$ $\frac{5}{100}$ $\frac{3}{1000}$

Decimals Are Parts of a Whole!

Tenths (1 decimal place): $0.7 = \frac{7}{10}$

Hundredths (2 decimal places): $0.05 = \frac{5}{100}$

Thousandths (3 decimal places): $0.003 = \frac{3}{1000}$

14.753 $= 14 + 0.7 + 0.05 + 0.003$

⋆ **Pip Keypoint** ⋆ The decimal point separates whole numbers (left) from fractional parts (right). One place = tenths, two places = hundredths, three places = thousandths. Always read from left to right.

✎ Practice Questions

Write the value of the underlined digit.

1. $3.\underline{8}2 =$ _____ **2.** $15.4\underline{6}1 =$ _____ **3.** $7.09\underline{5} =$ _____

Write each decimal as a fraction.

4. $0.9 =$ _____ **5.** $0.43 =$ _____ **6.** $0.187 =$ _____

Write each fraction as a decimal.

7. $\frac{3}{10} =$ _____ **8.** $\frac{27}{100} =$ _____ **9.** $\frac{409}{1000} =$ _____

10. $\frac{7}{10} =$ _____ **11.** $\frac{53}{100} =$ _____ **12.** $\frac{6}{1000} =$ _____

Write each decimal in expanded form.

13. $5.68 =$ _____ **14.** $12.305 =$ _____

15. $9.042 =$ _____ **16.** $0.607 =$ _____

Challenge!

17. In the decimal 6.342, what is the sum of the values of the digit 3 and the digit 2?

_____

Comparing and Ordering Decimals

Comparing on a Number Line



Tip: Add zeros to make the same number of decimal places, then compare!

$3.5 = 3.50$ vs $3.47 \quad \rightarrow \quad 3.50 > 3.47$

Steps to Compare Decimals

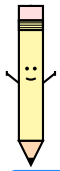
1. Line up the decimal points
2. Add zeros so both have equal places
3. Compare digit by digit from the left

Example: Compare 0.65 and 0.618

Line up: 0.650 vs 0.618

Tenths equal ($6 = 6$). Hundredths: $5 > 1$

So **0.65 > 0.618**



⋆ **Pip Keypoint** ⋆ Line up decimals by place value. Add zeros so both have the same number of decimal places. Compare digit by digit from left to right—the first different digit determines which is greater.

✎ Practice Questions

Compare. Write >, <, or = in each circle.

1. 0.45 ◯ 0.54 **2.** 3.70 ◯ 3.7 **3.** 0.8 ◯ 0.08

4. 12.305 ◯ 12.350 **5.** 7.091 ◯ 7.19 **6.** 5.600 ◯ 5.6

Order from least to greatest.

7. 0.52, 0.25, 0.5 _____ < _____ < _____

8. 4.08, 4.8, 4.008 _____ < _____ < _____

Order from greatest to least.

9. 1.3, 1.31, 1.03 _____ > _____ > _____

10. 6.125, 6.215, 6.152 _____ > _____ > _____

Challenge!

11. Three runners finished a race: Ali: 11.08 s, Ben: 11.8 s, Cara: 11.008 s. Who won (shortest time)? Order them from 1st to 3rd place? _____

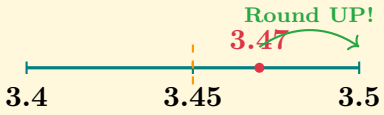


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Rounding Decimals

Round 3.47 to the nearest tenth



Round 8.623 to the nearest hundredth



Same Rules as Whole Numbers!

Next digit $\geq$ 5? Round **UP!** $\uparrow$

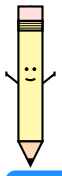
Next digit $\leq$ 4? Round **DOWN!** $\downarrow$

Round 3.47 to nearest tenth:

Look at hundredths: **7** $\geq 5 \rightarrow$ **3.5**

Round 8.623 to nearest hundredth:

Look at thousandths: **3** $< 5 \rightarrow$ **8.62**



⋆ **Pip Keypoint** ⋆ Find the place you are rounding to. Look at the digit immediately to the right. If it is 5 or greater, round up. If it is less than 5, keep the digit the same. Replace all digits to the right with zeros (or drop them for decimals).

✎ Practice Questions

Round each decimal to the nearest whole number.

1. 6.82 $\approx$ ____ **2.** 14.37 $\approx$ ____ **3.** 9.503 $\approx$ ____ **4.** 0.85 $\approx$ ____

Round each decimal to the nearest tenth.

5. 4.56 $\approx$ ____ **6.** 12.93 $\approx$ ____ **7.** 0.349 $\approx$ ____ **8.** 7.051 $\approx$ ____

Round each decimal to the nearest hundredth.

9. 5.834 $\approx$ _____ **10.** 0.2671 $\approx$ _____ **11.** 21.995 $\approx$ _____

Round 16.4857 to each place.

12. Whole: _____ **13.** Tenth: _____ **14.** Hundredth: _____

Challenge!

15. A scientist measured a liquid as 4.3450 liters. If rounded to the nearest tenth, is it 4.3 or 4.4? Explain. _____

16. A scale shows 2.555 kg. If rounded to the nearest hundredth, is it 2.55 or 2.56? Explain. _____

17. A weather station recorded 18.649°. If rounded to the nearest hundredth, is it 18.64 or 18.65? Explain. _____