

7

Illinois IAR

Grade 7 Math Practice Tests



ONLINE

7 PRINTED TESTS + 2 ONLINE TESTS



**Standards Aligned Problem Solving
For Comprehensive Assessment Programs**



8 Illinois IAR Grade 7 Math Practice Tests

Test-ready practice with Illinois Grade 7 percents, interest, expressions, inequalities, volume, data, and chance



Eight complete 40-question Grade 7 IAR 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, Illinois Grade 7 Problem Solver!

Eight focused rounds for sharper IAR math thinking

This book gives you seven full Grade 7 IAR 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 Illinois 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

An eight-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.

Illinois 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?

Eight IAR tests, 280 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.
Tests 7–8	Statistics, probability, mixed review, stamina, and choosing efficient strategies.
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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- 1) A student has \$50 and spends \$12 on a book. Write an inequality to find how much can be spent on a pen.

☐ A. $12 + p \leq 50$

☐ C. $p \geq 62$

☐ B. $p + 50 \geq 12$

☐ D. $p \leq 50$

- 2) The image shows repeated groups of chips. How many chips in total?



4 groups of 1

What multiplication does this represent?

☐ A. $4 \times 1 = 4$

☐ C. $1 \times 4 = 4$

☐ B. $4 \times 2 = 8$

☐ D. $2 \times 4 = 8$

- 3) Which of the following is NOT a perfect square?

☐ A. 81

☐ C. 121

☐ B. 72

☐ D. 169

Tip Scenarios on \$60 Bill

15% tip: \$9.00 18% tip: \$10.80

20% tip: \$12.00 25% tip: \$15.00

4)

If a diner leaves a 25% tip on a \$60 bill, what is the total amount paid?

☐ A. \$69

☐ C. \$75

☐ B. \$72

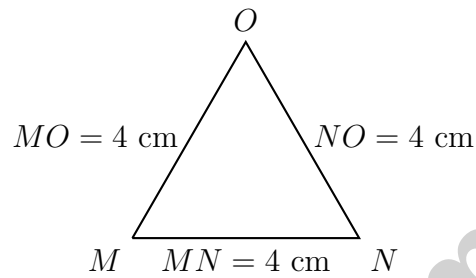
☐ D. \$85



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- 5) Tanya deposits \$800 in an account at 9% annual compound interest. What is the balance after 2 years?

☐ A. \$944.72 ☐ C. \$952
☐ B. \$972 ☐ D. \$950.48



6)

Triangle MNO has all three sides equal: $MN = NO = OM = 4$ cm. What are the measures of all angles?

☐ A. $60^\circ, 60^\circ, 60^\circ$ ☐ D. Cannot be determined without more info
☐ B. $45^\circ, 45^\circ, 90^\circ$
☐ C. $30^\circ, 60^\circ, 90^\circ$

- 7) What is $12 + (-5)$?

☐ A. 7 ☐ C. 17
☐ B. -7 ☐ D. -17

- 8) A student calculates the surface area of a rectangular prism with dimensions 5 cm, 3 cm, and 4 cm. They compute $5 \times 3 + 5 \times 4 + 3 \times 4 = 47 \text{ cm}^2$ and forget to multiply by 2. What error did they make?

☐ A. They calculated only one pair of faces instead of all pairs. ☐ C. They used subtraction instead of addition.
☐ B. They forgot to square each dimension. ☐ D. They included a face that doesn't exist.



- 9) A proportional relationship is shown by a line through the origin and $(4, 6)$. What is the constant of proportionality?

10)

Input-Output Table

x	y
1	5
2	8
3	11

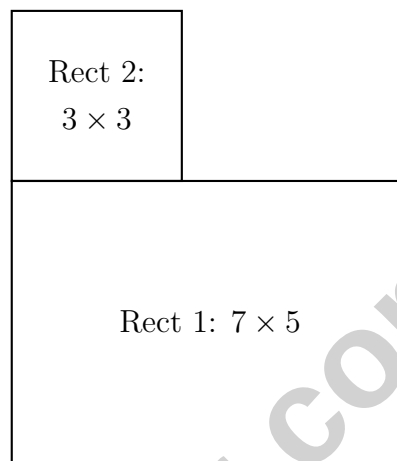
What is y in terms of x ?

- ☐ A. $y = 3x - 2$
☐ C. $y = 3x + 2$
- ☐ B. $y = 2x + 3$
☐ D. $y = x + 4$
- 11) Simplify: $3xy + 5xy - 2xy$
- ☐ A. $6xy$
☐ C. $8xy$
- ☐ B. $10xy$
☐ D. 0
- 12) What is the GCF of $28xy$ and $42x$?
- ☐ A. $14x$
☐ C. $42x$
- ☐ B. $28xy$
☐ D. $7x$



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- 1) An angle and its supplement are in the ratio 2 : 7. What is the measure of the supplement?

☐ A. 140°
☐ C. 40°
☐ B. 80°
☐ D. 160°


2)

An L-shaped room consists of a large rectangle ($7\text{ m} \times 5\text{ m}$) and a small rectangle ($3\text{ m} \times 3\text{ m}$) attached at a corner. Which equation correctly finds the total area?

☐ A. $7 \times 5 \times 3 \times 3$
☐ C. $7 \times 5 + 3 \times 3$
☐ B. $(7 + 5) + (3 + 3)$
☐ D. $7 + 3 \times 5 + 3$

- 3) A rectangular prism has length 8 cm, width 6 cm, and height 10 cm. Convert its volume to liters if $1\text{ liter} = 1,000\text{ cm}^3$.

☐ A. 0.48 L

☐ C. 48 L

☐ B. 480 L

☐ D. 4.8 L


- 4) A triangle with sides of 6 cm, 8 cm, and 11 cm is to be drawn. Which reason explains why exactly one such triangle exists?
- ☐ A. The sides satisfy the Triangle Inequality
- ☐ B. Three specific side lengths uniquely determine a triangle
- ☐ C. The triangle has no right angle
- ☐ D. The sides can be arranged in only one order
- 5) A circle has a diameter of 13.4 mm. What is its radius?
- ☐ A. 6.7 mm
- ☐ B. 13.4 mm
- ☐ C. 20.1 mm
- ☐ D. 26.8 mm
- 6) A painter needs to paint all six faces of a cubic wooden crate with edge length 2 m. If one liter of paint covers 10 m^2 , how many liters of paint are needed?
- ☐ A. 2.4 liters
- ☐ B. 4 liters
- ☐ C. 5 liters
- ☐ D. 24 liters
- 7) A recipe calls for 2 cups of flour for every 1 cup of sugar. If the recipe uses s cups of sugar, which expression shows the amount of flour needed?
- ☐ A. $s + 2$
- ☐ B. $2s$
- ☐ C. $\frac{s}{2}$
- ☐ D. $2 + s$
- 8) On a number line, if the point -12 is 12 units from zero, how many units from zero is the point 12?



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1) How many unique triangles can be constructed with sides of length 6 cm, 8 cm, and 10 cm?

☐ A. 0☐ C. 2☐ B. 1☐ D. More than 2

2) A runner tracks distance and heartbeats. For every $\frac{1}{5}$ mile run, the runner's heart beats 25 times. What is the constant of proportionality relating heartbeats to miles?

☐ A. $k = \frac{1}{5}$ beats per mile☐ C. $k = 0.2$ beats per mile☐ B. $k = 5$ beats per mile☐ D. $k = 125$ beats per mile

3) A bank statement shows the following transactions in one week:

Transaction	Amount
Starting balance	\$2 500
Debit card purchase	−\$45
Direct deposit (paycheck)	+\$800
ATM withdrawal	−\$100

What is the ending balance?

☐ A. \$2 145☐ C. \$3 155☐ B. \$2 255☐ D. \$3 255

4) A company's sales dropped from \$500 000 to \$400 000 in one quarter. To return to \$500 000, what percent increase is needed from the new sales figure?

☐ A. 20%☐ C. 33.3%☐ B. 50%☐ D. 25%

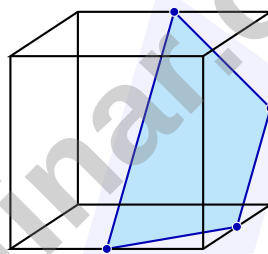
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- 5) A triangular prism has a right triangular base with legs 6 in and 8 in (hypotenuse 10 in). The prism is 12 in long. What is the surface area?

☐ A. 216 in^2 ☐ C. 336 in^2
☐ B. 288 in^2 ☐ D. 420 in^2

- 6) A simulation of rolling two dice (using two spinners, each with 6 equal sections) is performed 200 times. The event "getting a sum of at least 10" is tracked. The successful outcomes are (4, 6), (5, 5), (5, 6), (6, 4), (6, 5), (6, 6) — that is, 6 outcomes out of 36. If the simulation results show 35 successes in 200 trials, what is the estimated probability of rolling a sum of at least 10?

☐ A. 0.12 ☐ C. 0.31
☐ B. 0.17 ☐ D. 0.35



7)

A cube is sliced by a plane passing through the midpoints of four edges, forming a square cross-section. If the cube's edge is 6 cm, what is the side length of the square cross-section?

☐ A. 3 cm ☐ C. 4.5 cm
☐ B. $3\sqrt{2}$ cm ☐ D. 6 cm



Illinois Assessment of Readiness 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 Illinois Assessment of Readiness practice test.



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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice A is correct.** (7.EE.4b) Total spending (book + pen) must not exceed \$50, so $12 + p \leq 50$.
- 2) **Choice A is correct.** (7.NS.2) The diagram shows 4 groups of 1 chip each, totaling 4 chips. This represents $4 \times 1 = 4$.
- 3) **Choice B is correct.** (7.NS.1-7.NS.3) Perfect squares: $81 = 9^2$, $121 = 11^2$, $169 = 13^2$. The number 72 is not a perfect square since no whole number times itself equals 72.
- 4) **Choice C is correct.** (7.RP.3) Tip: $0.25 \times 60 = \$15$. Total amount paid: $60 + 15 = \$75$.
- 5) **Choice D is correct.** (7.RP.3) Year 1: $800 \times 1.09 = 872$. Year 2: $872 \times 1.09 = 950.48$.
- 6) **Choice A is correct.** (7.G.1-7.G.5) An equilateral triangle has all sides and all angles equal. Since the angle sum is 180° and all three angles are equal, each angle is $180^\circ \div 3 = 60^\circ$.
- 7) **Choice A is correct.** (7.NS.1b) Subtract the smaller absolute value from the larger: $|12| - |-5| = 12 - 5 = 7$. The larger absolute value is positive, so the answer is 7.
- 8) **Choice A is correct.** (7.G.4-7.G.6) The formula $SA = 2(lw + lh + wh)$ requires multiplying by 2 because each rectangle pair appears twice. The student calculated only one of each pair, missing half the surface area.
- 9) **The correct answer is 1.5.** (7.RP.1-7.RP.3) The unit rate is $6 \div 4 = 1.5$.
- 10) **Choice C is correct.** (7.EE.1-7.EE.2) Pattern: when $x = 1$, $y = 5$; when $x = 2$, $y = 8$; when $x = 3$, $y = 11$. Each increase of 1 in x adds 3 to y . Check: $3(1) + 2 = 5$ ✓.
- 11) **Choice A is correct.** (7.EE.1) All terms are like terms with variable xy . Combine: $(3 + 5 - 2)xy = 6xy$.
- 12) **Choice A is correct.** (7.EE.1-7.EE.2) GCF of 28 and 42 is 14. Both terms have x . GCF is $14x$.
- 13) **Choice C is correct.** (7.SP.5-7.SP.8) Expected frequency = $\frac{3}{8} \times 400 = 150$ times.
- 14) **Choice A is correct.** (7.NS.1-7.NS.3) Distance: $12,718.5 - 12,450 = 268.5$ miles.
- 15) **Choice A is correct.** (7.NS.1-7.NS.3) $20 \times 10^1 = 20 \times 10 = 200 = 2.0 \times 10^2$. This is equivalent by adjusting coefficient and exponent by one power of 10.
- 16) **Choice B is correct.** (7.EE.1-7.EE.2) When raising a power to a power, multiply the exponents: $(y^2)^6 = y^{2 \times 6} = y^{12}$.
- 17) **Choice A is correct.** (7.EE.3-7.EE.4) Add $\frac{1}{2}$ to both sides: $6x = \frac{11}{2} + \frac{1}{2} = \frac{12}{2} = 6$. Divide by 6: $x = 1$.
- 18) **The correct answer is 62.5%.** (7.RP.3) Move the decimal two places right: $0.625 = 62.5\%$.
- 19) **The correct answer is \$60.** (7.RP.3) A 20% discount means the sale price is $100\% - 20\% = 80\%$ of the original. So $48 = \text{original} \times 0.80$, giving $\text{original} = 48 \div 0.80 = \60 . Check: $60 \times 0.80 = 48$ ✓.
- 20) **Choice B is correct.** (7.G.1-7.G.5) A plane can intersect a rectangular prism in a triangle if it passes through three points not on the same face. A common example is a plane through one vertex and two points on opposite edges.
- 21) **The correct answer is A,C.** (7.RP.3) Choice A: $50\% = \frac{1}{2}$. Choice B: $75\% = \frac{3}{4}$, not $\frac{2}{3}$. Choice C: $\frac{3}{4} = 0.75 = 75\%$. Choice D is false because $\frac{1}{5} = 20\%$, not 25% .
- 22) **Choice A is correct.** (7.G.4-7.G.6) $C_1 = 2\pi(3) = 18.84$ m; $C_2 = 2\pi(6) = 37.68$ m; difference = $37.68 - 18.84 = 18.84$ m. (B is half the difference; C is sum of both; D is incorrect product.)
- 23) **Choice C is correct.** (7.G.4-7.G.6) Total surface area includes two circular bases ($2\pi r^2$) and lateral area ($2\pi rh$), which factors to $2\pi r(r + h)$.
- 24) **Choice A is correct.** (7.SP.1-7.SP.4) Surveying only customers at one store at one time is a convenience sample because it only includes people who are easy to reach, not a random selection of all teenagers in the city.
- 25) **Choice A is correct.** (7.SP.1-7.SP.4) Product X: mean 2.5%, IQR 1.0% (tight middle spread, consistent control). Product Y: mean 2.3%, IQR 2.5% (wider spread, less predictable). For quality control, consistency (smaller IQR) matters more than a 0.2% mean advantage.
- 26) **Choice B is correct.** (7.SP.5-7.SP.8) $\frac{16}{40} = \frac{2}{5}$ is correct. GCD(16,40)=8, so $\frac{16}{40} = \frac{2}{5}$.
- 27) **The correct answer is 2.** (7.RP.3) $180 = 1500 \times 0.06 \times t \Rightarrow 180 = 90t \Rightarrow t = 2$ years.
- 28) **Choice B is correct.** (7.NS.1-7.NS.3) $-5 + 12 = 7^\circ\text{C}$.
- 29) **Choice D is correct.** (7.NS.1-7.NS.3) Negative divided by negative is positive. Calculate the magnitude: $36 \div 9 = 4$. Apply sign rule: $(-) \div (-) = (+)$. Thus $-36 \div (-9) = 4$.



Hi, Confident Learner!

◇ This broad and demanding book gave you seven strong Grade 7 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. Grade 7 math can feel big because it brings together rational numbers, expressions, equations, geometry, probability, and data. ◇

★ **Remember this:** But big topics become manageable when you practice one skill at a time. That is what you have been doing with every test in this book. ★

Confidence Builders

- **Know the Goal:** Identify what the question asks.
- **Use Vocabulary:** Math words point to math actions.
- **Show Work:** Give yourself something to check.
- **Celebrate Effort:** Practice is proof that you are moving.

Grade 7 test-day tip: When reviewing, do not only mark wrong answers. Write one sentence about what you learned from each one.

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

Jay Daie

Your Confidence Coach

Practice Today. Succeed Tomorrow!

This book includes **7** 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:

7 Full-Length Printed Tests

2 Online Practice Tests

 Detailed Answer 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



Stronger Math Skills

Build a solid foundation through targeted practice and review.



Better Problem Solving

Develop logical thinking and effective solution strategies.



Deeper Understanding

Reinforce key concepts with clear explanations and meaningful practice.



Test Confidence

Familiarize with test formats and improve accuracy and speed.



Achieve Success

Build confidence and perform your best on test day.

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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