

3

Illinois
IAR

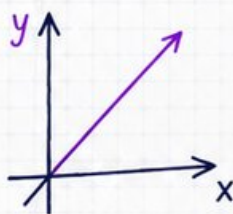
GRADE

7

MATH

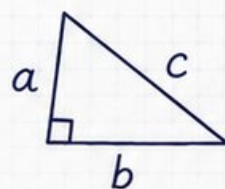
PRACTICE TESTS

- ✓ Standards Aligned
Problem Solving
For Comprehensive
Assessment Programs



$$y = mx + b$$

$$\frac{2}{3}x - \frac{4}{5} = \frac{1}{2}$$



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

3 PRINTED
TESTS2 ONLINE
TESTS

USE THESE TWO
ADDITIONAL ONLINE
PRACTICE TESTS
FOR EXTRA REVIEW AFTER
THE PRINTED TESTS
IN THIS BOOK.



Build
Confidence



Strengthen
Math Skills



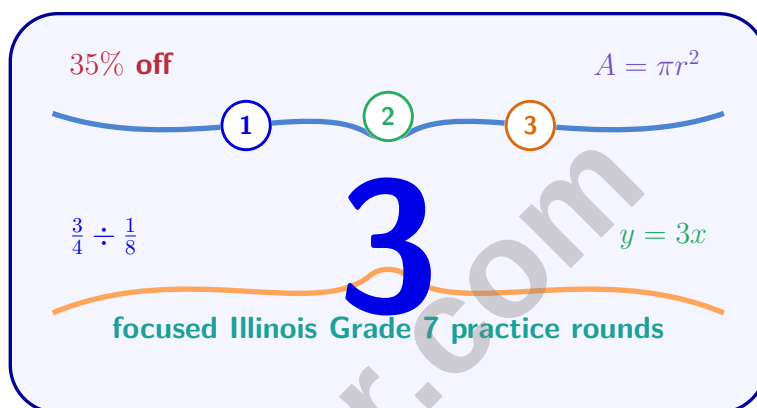
Detailed Answers
& Explanations



Improve Test
Performance

3 Illinois IAR Grade 7 Math Practice Tests

Grade 7 IAR Math Practice for Confident Test Readiness



Three 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!

Three focused rounds for sharper IAR math thinking

This book gives you three 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

A three-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?

Three IAR tests, 120 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Proportional relationships, unit rates, percents, rational-number operations, and careful reading.
Test 3	Expressions, equations, inequalities, scale drawings, geometry, data, probability, and multi-step problem solving.
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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& answers

Table of Contents

★ Practice Test 1	_____	15
★ Practice Test 2	_____	28
★ Practice Test 3	_____	45
Practice Test Answer Keys	_____	58
Practice Test Answers and Explanations	_____	61

1) What is $-6 \times \frac{2}{3}$?

☐ A. -9

☐ C. 4

☐ B. -4

☐ D. 9

2) An estimate of 144 is made for a measurement. If the actual value is 120 and the percent error is 20%, did the student's estimate match?

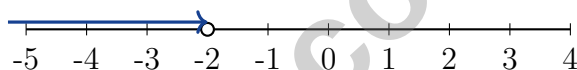
☐ A. Yes, the percent error is 80%.

☐ D. Yes, the percent error is exactly 20%.

☐ B. No, the percent error is 16.7%.

☐ C. No, the percent error is 12.5%.

3) A student writes the inequality $x \leq -2$ but graphs it with an open circle instead of a closed circle at -2 . What value is incorrectly excluded from the solution set?



☐ A. All values less than -2

☐ C. All negative numbers

☐ B. The value -2 itself

☐ D. The value -1

4) The diagram below shows the steps to expand $3(x + 2)$. What should replace the question mark?

$$\begin{array}{ccc} 3(x + 2) & & \\ \downarrow & & \\ 3 \cdot x & + & 3 \cdot 2 \\ \downarrow & & \\ 3x & + & ? \end{array}$$

☐ A. 2

☐ C. 5

☐ B. 3

☐ D. 6



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- 5) A dollhouse is built to a scale of 1 : 12 (model to real). If an actual bedroom is 12 feet long, 10 feet wide, and 8 feet tall, what is the volume of the dollhouse bedroom in cubic feet?

- ☐ A. 960×12 cubic feet ☐ C. 960 cubic feet
☐ B. $\frac{960}{12}$ cubic feet ☐ D. $\frac{960}{1728}$ cubic feet

- 6)
- | | |
|-------------------------------------|----------|
| \$1200 | ? |
| Principal | Interest |
| Principal: \$1200 at 3% for 2 years | |

What is the amount of interest earned?

- ☐ A. \$36 ☐ C. \$60
☐ B. \$48 ☐ D. \$72
- 7) A cube's edge length is s cm. If the surface area is 600 cm^2 , which equation correctly represents this relationship?
- ☐ A. $6s = 600$ ☐ C. $6s^2 = 600$
☐ B. $s^3 = 600$ ☐ D. $2s + 2s + 2s = 600$
- 8) A mountain climber is at 200 meters above sea level. She descends 350 meters. At what elevation is she now? Write your answer as an integer.



- 9) A plumber completes $\frac{1}{2}$ of a job in $\frac{2}{3}$ hour. At this rate, how many total hours does it take to complete the entire job?

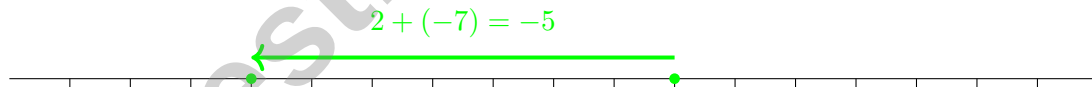
- 10) A gym membership costs \$75 per month. You pay for 12 months, which totals \$900. What is 20% of the total cost?

- ☐ A. \$300 ☐ C. \$280
☐ B. \$250 ☐ D. \$180

- 11) A restaurant bill is \$120 before tax and tip. The customer pays 8% sales tax and then adds a 15% tip on the pre-tax bill. What is the total amount paid?

- ☐ A. \$129.60 ☐ C. \$147.60
☐ B. \$139.20 ☐ D. \$148.80

- 12) Which addition problem results in a sum of -5 ?



- ☐ A. $8 + (-3)$ ☐ C. $-1 + 6$
☐ B. $-9 + 3$ ☐ D. $2 + (-7)$

- 13) Evaluate $3x - 2y$ when $x = 4$ and $y = -3$.

- ☐ A. 6 ☐ C. 18
☐ B. 14 ☐ D. 20



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1) A group pays a \$50 entry fee plus \$8 per person. Is total cost proportional to the number of people?

☐ A. Yes, $k = 8$

☐ C. Yes, $k = 50$

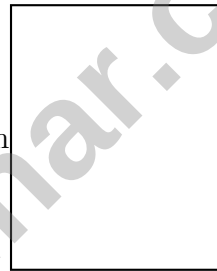
☐ B. Only if more than 6 people attend

☐ D. No, there is a fixed entry fee

2) A business's profit increased from \$12 000 to \$16 800. What is the percent increase in profit?

Scale: 1 cm : 5 cm

5 cm



4 cm

3)

A student calculated the actual area by multiplying $4 \times 5 \times 5 = 100 \text{ cm}^2$ instead of correctly squaring the scale factor. What is the correct actual area?

☐ A. 100 cm^2

☐ C. 400 cm^2

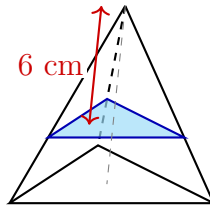
☐ B. 200 cm^2

☐ D. 500 cm^2



- 4) A rectangle on a map is 5 cm by 8 cm. The scale is 1 cm : 10 km. If the scale changes to 1 cm : 5 km, what are the new dimensions?

- ☐ A. 5 cm by 8 cm ☐ C. 2.5 cm by 4 cm
☐ B. 10 cm by 16 cm ☐ D. 50 cm by 80 cm



parallel triangular slice

5)

A triangular pyramid is sliced by a plane parallel to the base, creating a triangular cross-section. If the original pyramid has height 9 cm and the plane is 6 cm below the apex, what is the linear scale factor of the cross-section to the base?

- ☐ A. $\frac{1}{3}$ ☐ C. $\frac{2}{9}$
☐ B. $\frac{3}{4}$ ☐ D. $\frac{2}{3}$

- 6) An angle is 3 times its complement. What is the measure of the larger angle?

- ☐ A. 67.5° ☐ C. 22.5°
☐ B. 45° ☐ D. 90°



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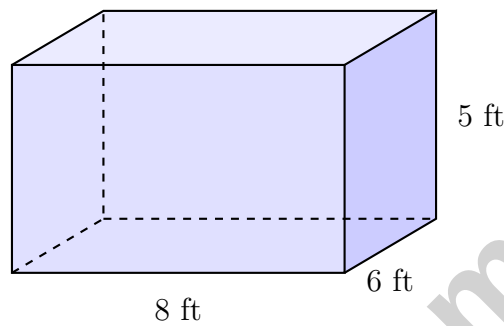
- 1) A CD has diameter 12 cm. Using $\pi \approx 3.14$, what is its circumference?
- ☐ A. 37.68 cm ☐ C. 75.36 cm
☐ B. 18.84 cm ☐ D. 452.16 cm
- 2) A survey uses a probability model with outcomes {Agree, Neutral, Disagree}. The model shows $P(\text{Agree}) = \frac{7}{20}$ and $P(\text{Disagree}) = \frac{1}{4}$. Find $P(\text{Neutral})$.
- ☐ A. $\frac{6}{20}$ ☐ C. $\frac{9}{20}$
☐ B. $\frac{8}{20}$ ☐ D. $\frac{12}{20}$
- 3) A construction contractor charges a \$500 deposit plus \$75 per hour of labor. A job takes 20 hours. What is the total cost?
- ☐ A. \$1,200 ☐ C. \$1,800
☐ B. \$1,500 ☐ D. \$2,000
- 4) A student earns simple interest at 6% annually on \$500. After 3 years, the total interest is:
- ☐ A. \$30 ☐ C. \$91.46
☐ B. \$120 ☐ D. \$90
- 5) A credit score ranges from 300 to 850. A score above 700 is considered good. Jamie's score is 680. By how many points does her score fall short of the good credit threshold?
- ☐ A. 15 points ☐ C. 25 points
☐ B. 30 points ☐ D. 20 points



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- 6) An athlete's workout time decreased from 90 minutes to 72 minutes. What is the percent decrease?

- ☐ A. 18% ☐ C. 25%
☐ B. 80% ☐ D. 20%

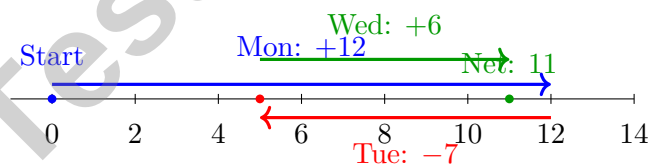


7)

A rectangular prism has dimensions $8\text{ ft} \times 5\text{ ft} \times 6\text{ ft}$. Find the total surface area.

- ☐ A. 120 ft^2 ☐ C. 240 ft^2
☐ B. 236 ft^2 ☐ D. 480 ft^2

- 8) A warehouse inventory shows: gained 12 boxes Monday, lost 7 boxes Tuesday, gained 6 boxes Wednesday. What is the net change?



- ☐ A. -25 boxes ☐ C. 11 boxes
☐ B. -11 boxes ☐ D. 25 boxes



Illinois IAR 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 IAR practice test.

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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice B is correct.** (7.NS.2) $-6 \times \frac{2}{3} = \frac{-12}{3} = -4$. A negative times a positive is negative.
- 2) **Choice D is correct.** (7.RP.3) Percent error = $\frac{|144-120|}{120} \times 100\% = \frac{24}{120} \times 100\% = 20\%$. The estimate has the expected percent error.
- 3) **Choice B is correct.** (7.EE.4b) The inequality $x \leq -2$ includes the boundary value -2 . Using an open circle instead of a closed circle removes -2 from the solution set, changing it to $x < -2$.
- 4) **Choice D is correct.** (7.EE.1-7.EE.2) The diagram shows $3(x) + 3(2) = 3x + 6$. The missing value is 6.
- 5) **Choice D is correct.** (7.RP.1-7.RP.3) Linear scale is 1 : 12. Model dimensions: 1 ft, $\frac{10}{12}$ ft, $\frac{8}{12}$ ft. Volume scales by $(1/12)^3 = 1/1728$. Real volume is $12 \times 10 \times 8 = 960$ cu ft. Model volume = $960 \div 1728 = \frac{960}{1728}$ cu ft.
- 6) **Choice D is correct.** (7.RP.3) $I = 1200 \times 0.03 \times 2 = \72 .
- 7) **Choice C is correct.** (7.G.4-7.G.6) A cube has 6 faces, each with area s^2 . The surface area formula is $SA = 6s^2$. Setting this equal to 600 gives $6s^2 = 600$.
- 8) **The correct answer is -150 .** (7.NS.1-7.NS.3) The elevation change is $200 - 350 = -150$. She is now 150 meters below sea level.
- 9) **The correct answer is $\frac{4}{3}$.** (7.RP.1-7.RP.3) If $\frac{1}{2}$ job takes $\frac{2}{3}$ hour, then 1 full job takes $\frac{2}{3} \times 2 = \frac{4}{3}$ hours.
- 10) **Choice D is correct.** (7.RP.3) Total cost is $75 \times 12 = 900$ dollars. 20% of 900 is $0.20 \times 900 = 180$ dollars.
- 11) **Choice C is correct.** (7.RP.3) Tax = $0.08 \times 120 = \$9.60$. Tip on pre-tax bill = $0.15 \times 120 = \$18$. Total = $120 + 9.60 + 18 = \$147.60$.
- 12) **Choice D is correct.** (7.NS.1b) Check each: A: $8 + (-3) = 5$. B: $2 + (-7) = -5$ ✓. C: $-1 + 6 = 5$. D: $-9 + 3 = -6$. Only B equals -5 .
- 13) **Choice C is correct.** (7.EE.1-7.EE.2) Substitute: $3(4) - 2(-3) = 12 + 6 = 18$.
- 14) **Choice A is correct.** (7.EE.1) Combine: $(11 - 6 + 2)a = 7a$.
- 15) **Choice C is correct.** (7.EE.1-7.EE.2) Expand $8(x + 2) = 8x + 16$. Check others: A) $8x + 16$ ✓, B) $4(2x + 4) = 8x + 16$ ✓, D) $2(4x + 8) = 8x + 16$ ✓. Only C) $8x + 2 \neq 8x + 16$ is not equivalent.
- 16) **Choice B is correct.** (7.SP.5-7.SP.8) Two equally likely outcomes (red or blue, heads or tails) match perfectly.
- 17) **Choice B is correct.** (7.NS.1-7.NS.3) Total volume = $\frac{3}{8} + \frac{5}{8} = \frac{8}{8} = 1$ liter.
- 18) **Choice B is correct.** (7.NS.1-7.NS.3) Proper scientific notation requires $1 \leq a < 10$. The coefficient $0.34 < 1$, so it violates this rule.
- 19) **The correct answer is A,B.** (7.SP.1-7.SP.4) Smartphones (45%) is the largest, so A is correct. Tablets (20%) plus smart watches (5%) make 25%, so B is correct. Laptops (30%) is not more than 50%, and smart watches (5%) are not more than 10%.
- 20) **Choice A is correct.** (7.EE.1-7.EE.2) Combine like terms: $(-3q + 8q) + (-7 + 2) = 5q - 5$.
- 21) **Choice C is correct.** (7.EE.3-7.EE.4) First, undo the subtraction by adding 1 to both sides to isolate the fraction $\frac{3x}{4}$.
- 22) **Choice B is correct.** (7.EE.4b) Set up: $47 + t \geq 200$. Subtract 47: $t \geq 153$. At least 153 more tickets are needed.
- 23) **The correct answer is 15.** (7.RP.1-7.RP.3) Ratio: $30/2 = 15$, $60/4 = 15$, $90/6 = 15$. Hourly wage is \$15; constant of proportionality is $k = 15$.
- 24) **Choice C is correct.** (7.G.4-7.G.6) $V = \pi r^2 h \approx 3.14 \times 25 \times 6 = 471$ ft³.
- 25) **Choice B is correct.** (7.SP.1-7.SP.4) The population is the entire group being studied, which is the complete database of 50,000 customers. The sample is the 200 randomly selected customers.
- 26) **Choice A is correct.** (7.SP.5-7.SP.8) Total tokens = $3 + 4 + 8 = 15$. $P(\text{purple}) = \frac{4}{15}$.
- 27) **Choice D is correct.** (7.RP.1-7.RP.3) Rate is $\frac{960}{8} = 120$ pages per minute. So $p = 120m$.
- 28) **Choice D is correct.** (7.RP.1-7.RP.3) The unit rate is $6 \div 4 = 1.5$. So $y = 1.5x$. At $x = 8$, $y = 1.5 \times 8 = 12$ cups.
- 29) **Choice C is correct.** (7.RP.3) Set up the proportion $\frac{x}{100} = \frac{16}{80}$. Cross-multiply: $x = \frac{16 \times 100}{80} = 20$.



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The Power of Showing Work

Hi, Organized Solver!

◇ You practiced Grade 7 skills that often require more than one step. That means your written work matters. ◇

★ **Remember this:** Showing work is not extra. It is how you track your thinking, find errors, and prove that your answer did not happen by luck. You practiced across 3 full Grade 7 practice tests, and that repeated effort matters. ★

Organized Work Habits

- **One Line Per Step:** Keep the path readable.
- **Box the Answer:** Make the final result easy to find.
- **Use Labels:** Tell what each value represents.
- **Check the Path:** Follow your steps backward if needed.

Grade 7 test-day tip: When a problem has several steps, write less on each line. Space makes checking easier.

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

Jay Daie

Your Organized-Work Coach

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **3** 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.

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- ✓ Algebraic Thinking
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