7 Oklahoma OSTP Grade 7 Math Practice Tests

Comprehensive Test Prep with Detailed Answers

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7 Practice Tests

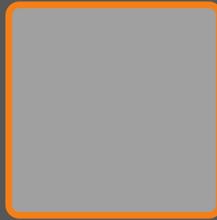🔨 *Grade 7 Math — Forged in Practice* 🔨

Welcome to **The Forge.**

Seven tests. Seven chances to hammer your skills into something unbreakable. Each test is a piece of raw material — and you are the blacksmith.

🔥 **Heat 1–2:** Warm the metal — learn the form

🔥 **Heat 3–5:** Shape with precision — build power

🔥 **Heat 6–7:** Temper and finish — prove your craft

Great skill isn't found. It's forged.

> " *A sword isn't made with one strike. Seven rounds of hammering — that's how you forge something strong.* "

🔨 The Blueprint 🔨

Your 3-heat forging plan for Grade 7 mastery

📋 What's in The Forge

- **7 Full-Length Practice Tests** — every test spans all 9 Grade 7 domains: proportional reasoning, percents, rational numbers, algebraic expressions, equations, geometry, measurement, statistics, and probability.
- **Complete Answer Explanations** — learn the craft behind every solution, not just the result.
- **Forge Record** — track your progress heat by heat and see your skills harden into mastery.

🔥 Heat I: Warm the Metal (Tests 1–2)

No timer. No pressure. Feel the material — discover the question types, learn the format, and identify which topics are solid and which need shaping.

⌄ ⌄ ⌄

🔨 Heat II: Shape with Precision (Tests 3–5)

Add a timer (60–75 min). Show every step of your work. After each test, study the problems you missed and practice those topics before the next heat.

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Heat III: Temper & Finish (Tests 6–7)

Full test conditions: timed, quiet, independent. These final two heats prove your craft. Compare your scores with Heat I — see how far you've come.

🛠️ Materials in Every Test

🔴 **Multiple Choice** — select the best answer   🟠 **Multi-Select** — choose ALL that apply

🟠 **Short Answer** — show your work   🟢 **Open Response** — explain your reasoning

Master Techniques

The techniques every skilled crafter needs at the anvil

🔨 The S.T.R.I.K.E. Method

S **Scan** *Read the whole problem. What is given? What is asked?*

T **Tag** *Underline key values. Circle the operation clue words.*

R **Reason** *Choose a strategy: proportion, equation, diagram, or estimation.*

I **Implement** *Solve step by step. Write every calculation. Label units.*

K **Know** *Check: does the answer make sense in context?*

E **Evaluate** *Re-read the question. Did you answer what was actually asked?*

🔥 Forging Techniques

Technique 1: Convert between fractions, decimals, and percents freely. Many Grade 7 problems become easier in a different form.

Technique 4: On geometry questions, draw a diagram if one isn't given. Label all known measurements before computing.

Technique 2: When solving proportions, cross-multiply carefully. Keep track of which quantity is in the numerator and which is in the denominator.

Technique 5: Estimation is your ally. Before computing an exact answer, estimate. If your answer is far from the estimate, recheck your work.

Technique 3: For integer operations, use the number line mentally. Subtracting a negative? That's adding. Don't let sign rules trip you up.

Technique 6: Never leave a blank. On constructed response, even writing the equation you'd use can earn partial credit.

🌙 *Night Before Practice:* *Sleep 8+ hours. Eat a solid meal. Gather your tools (pencils, eraser, scratch paper). Tell yourself: "Every strike makes me stronger."*

The Forgemaster says: *"The greatest crafters don't avoid the hardest pieces — they lean into them. Review every mistake. That's where the real tempering happens."*

Math Reference Sheet

You may use this page during your practice tests!

Symbol	Name	What It Means	
$(\ )$	Parentheses	Do this part first.	$(3+4) \times 2 = 14$
10^3	Exponent	Multiply the base by itself that many times. $10^3 = 1{,}000$	
$\frac{a}{b}$	Fraction	a parts out of b equal parts; also means $a \div b$.	
$\frac{7}{3}$	Improper Fraction	Numerator $\geq$ denominator.	$\frac{7}{3} = 2\frac{1}{3}$
0.45	Decimal	A number with a decimal point.	$0.45 = \frac{45}{100}$
$> \ < \ =$	Comparison	Greater than, less than, equal to.	$0.5 > 0.35$
$(3{,}5)$	Ordered Pair	A point on the coordinate plane: (x, y).	

▦ Key Formulas

- **Volume of a rectangular prism:**

  $V = l \times w \times h$

- **Order of operations:**

  Parentheses $\rightarrow$ Exponents $\rightarrow$ Multiply/Divide

  $\rightarrow$ Add/Subtract

- **Powers of 10:**

  $10^1 = 10 \quad 10^2 = 100$

  $10^3 = 1{,}000 \quad 10^4 = 10{,}000$

- **Fraction as division:**

  $\frac{a}{b} = a \div b$

🔲 Place Value Chart

Millions	1,000,000
Hundred-Thousands	100,000
Ten-Thousands	10,000
Thousands	1,000
Hundreds	100
Tens	10
Ones	1

Decimals

Tenths	0.1
Hundredths	0.01
Thousandths	0.001

*Each place is **10**× the place to its right, and $\frac{1}{10}$ of the place to its left.*

📖 Key Math Vocabulary

- **Sum** — the result of addition
- **Difference** — the result of subtraction
- **Product** — the result of multiplication
- **Quotient** — the result of division
- **Remainder** — what's left over after dividing
- **Factor** — a number you multiply
- **Expression** — numbers and operations without =
- **Equation** — a math sentence with =
- **Numerator** — the top number of a fraction
- **Denominator** — the bottom number of a fraction
- **Mixed number** — a whole number + a fraction
- **Equivalent fractions** — fractions with equal value
- **Decimal** — a number written with a decimal point
- **Volume** — the space inside a 3D shape
- **Coordinate plane** — a grid with x and y axes
- **Ordered pair** — (x, y) location on the plane

🔍 Word Problem Clue Words

- **Add** (+): total, altogether, combined, sum, increase, more than
- **Subtract** (−): difference, how many more, fewer, remain, decrease, left
- **Multiply** (×): each, every, groups of, times, product, per, of (with fractions)
- **Divide** (÷): share equally, split, each group, how many groups, quotient, per

Contents

1

Practice Test 1

📋 *30 Questions*

✏️ Before You Start ✏️

- ✔ **Read each question carefully** *before choosing your answer.*
- ✔ **Show your work** *on scratch paper when you need to.*
- ✔ **Skip hard questions** *and come back to them later.*
- ✔ **Check your answers** *when you're done.*
- ✔ **Take your time** *— there's no rush!*

⭐ *You've Got This!* ⭐

Do your best and show what you know!

1. A recipe uses cups of flour proportional to servings. If 12 servings need 9 cups, what is k in cups per serving?

(A) $\frac{3}{4}$

(B) $\frac{4}{3}$

(C) 3

(D) 9

2. A recipe uses $2\frac{1}{2}$ cups of flour to make 30 cookies. How many cups are needed for 48 cookies?

(A) 3 cups

(B) $3\frac{1}{2}$ cups

(C) 4 cups

(D) $4\frac{1}{2}$ cups

3. On a map, 1 cm represents 5 km. Two towns are 8 cm apart on the map. What is the actual distance in kilometers?

Your Answer:

4. 18 is what percent of 72?

(A) 18%

(B) 20%

(C) 25%

(D) 36%

5. A $60 video game is on sale for 15% off. Sales tax is 7%. What is the total cost?

(A) $48.42

(B) $51.00

(C) $54.57

(D) $55.47

6. Which estimate has a lower percent error?

- Estimate A: guessed 45, actual was 50
- Estimate B: guessed 95, actual was 100

(A) Estimate A (10% error)   (B) Estimate B (5% error)

(C) They have the same percent error   (D) Cannot be determined

7. You deposit $600 at 5% annual interest for 1 year. How much interest do you earn?

Your Answer:

8. A diver is at -15 feet (below sea level). What does $|-15|$ represent in this context?

(A) The diver is 15 feet above sea level   (B) The diver's distance from sea level is 15 feet

(C) The diver moves 15 feet deeper   (D) The diver returns to sea level

9. Write an expression for "9 less than the quotient of a number m and 5."

Your Answer:

10. Look at the two groups of algebra tiles below. Which expression represents their sum?

Group 1

| x | x | 1 |

Group 2

| x | 1 | 1 | 1 |
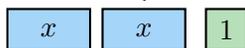
(A) $3x + 3$ (B) $2x + 4$

(C) $3x + 4$ (D) $2x + 3$

11. *The rectangle below has an area of 56 square cm. What is the value of x?*

$(x+3)$ *cm*

7 cm
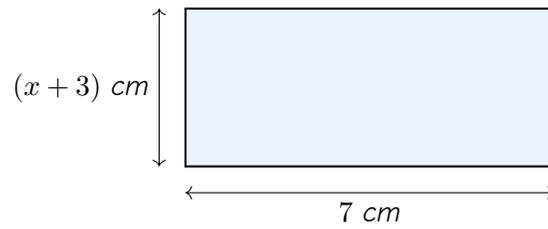
(A) $x = 5$

(B) $x = 8$

(C) $x = 11$

(D) $x = 4$

12. *Solve $0.25n - 1.5 = 3.5$.*

(A) $n = 8$

(B) $n = 20$

(C) $n = 14$

(D) $n = 2$

13. *Solve $3x + 7 \leq 25$.*

(A) $x \leq \dfrac{32}{3}$

(B) $x \leq 6$
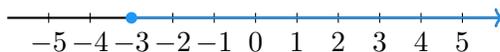
(C) $x \geq 6$

(D) $x \leq 9$

14. Look at the two number lines below. Which statement is true?

Line 1:

$$-5\ -4\ -3\ -2\ -1\ \ 0\ \ 1\ \ 2\ \ 3\ \ 4\ \ 5$$

Line 2:

$$-5\ -4\ -3\ -2\ -1\ \ 0\ \ 1\ \ 2\ \ 3\ \ 4\ \ 5$$

(A) Both graphs include -3 as a solution

(B) Line 1 shows $x \geq -3$ and Line 2 shows $x > -3$

(C) Line 1 shows $x > -3$ and Line 2 shows $x \geq -3$

(D) Both graphs represent the same inequality

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15. A model uses scale $1 : 100$. You need to redraw it at scale $1 : 50$. A wall that is 4 cm on the original model becomes how long?

(A) 2 cm

(B) 4 cm

(C) 8 cm

(D) 200 cm

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16. Can a triangle have sides 6, 8, and 14?

(A) Yes, it is a right triangle

(B) Yes, it is an obtuse triangle

(C) No, the triangle inequality is not satisfied

(D) No, because the sides are all even numbers

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17. A triangle has angles $40°$, $60°$, and $80°$. How many different triangles can be drawn?

(A) None
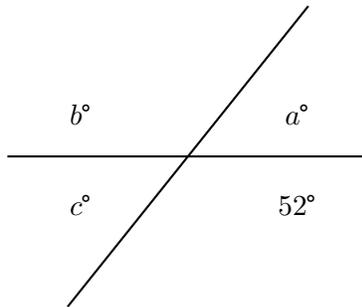
(B) Exactly one

(C) Exactly three

(D) Infinitely many

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18. Name two different cross-section shapes you can get from slicing a cube.

Your Answer:

19. Two lines intersect as shown. Find the values of a, b, and c.

$b°$ $a°$

$c°$ $52°$

Your Answer:

20. A square has sides of 10 m. A quarter circle with radius 10 m is removed from one corner. What is the area of the remaining figure? Use $\pi \approx 3.14$.

(A) 21.5 m^2 (B) 50 m^2

(C) 78.5 m^2 (D) 100 m^2

21. A rectangular box is 10 in by 6 in by 4 in. What is the total surface area?

(A) 120 in^2 (B) 240 in^2

(C) 248 in^2 (D) 148 in^2

22. *A rectangular prism has a volume of* $360 \ cm^3$*. Its length is* $12 \ cm$ *and its height is* $5 \ cm$*. What is its width?*

Your Answer:

23. *A random sample of* 100 *out of* $4{,}000$ *residents found that* 45 *support a new library. Predict how many residents support it.*

Your Answer:

24. *Group A: mean 65, MAD 5. Group B: mean 75, MAD 5. How many MADs apart are the means?*

Your Answer:

25. *Which measure of variability focuses on the middle 50% of the data?*

(A) Range

(B) Mean

(C) Interquartile range (IQR)

(D) Median

26. *In a stem-and-leaf plot,* $5 \mid 3$ *means:*

(A) 5.3

(B) 35

(C) 53

(D) $5 + 3 = 8$

27. *In a double bar graph, Team X scored* $30, 45, 50$ *over three games and Team Y scored* $35, 40, 55$*. What was Team Y's total?*

(A) 120

(B) 125

(C) 130

(D) 135

28. A probability model assigns $P(A) = 0.35$, $P(B) = 0.25$, $P(C) = 0.25$, and $P(D) = 0.20$. Is this a valid model? Explain.

Your Answer:

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29. A bag has 4 green and 6 yellow marbles. You pick one marble without replacement and then pick another. What is the probability that the first is green and the second is yellow?

(A) $\frac{24}{100}$

(B) $\frac{24}{90}$

(C) $\frac{4}{15}$

(D) $\frac{6}{10}$

30. Why are simulations useful?

(A) They always give exact answers

(B) They can estimate probabilities when real experiments are too difficult or impractical

(C) They replace all mathematical calculations

(D) They only work for coin flips

⭐ *End of Practice Test 1* ⭐

Great job finishing the test!

☑ *My Score*

I got _____ out of 30 questions right.

*Check your answers in the **Answer Key** at the back of the book.*

💡 *Review any questions you missed. That's how we learn!*

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