

3 Virginia SOL Grade 7 Math Practice Tests

Full-Length Test Prep with Detailed Answer Explanations

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MISSION LAUNCHPAD

3 Practice Tests

 Grade 7 Math — Launch Sequence 

Calling all future mathematicians!

*You're about to launch into **3 full-length practice missions** covering every Grade 7 math topic — from proportional relationships to probability.*

 **Mission 1:** Explore the terrain

 **Mission 2:** Navigate with precision

 **Mission 3:** Achieve orbit

Three missions. One launchpad. Infinite potential.

“ Three missions is the perfect count for a focused launch. You'll cover the whole course and still have fuel to review! ”



Mission Briefing

Your 3-mission flight plan for Grade 7 math mastery

Mission Payload

- **3 Full-Length Practice Tests** — each covering all 9 chapters of Grade 7 math: ratios, percents, rational numbers, expressions, equations, geometry, circles & volume, statistics, and probability.
- **Detailed Answer Explanations** — not just the correct answer, but the reasoning behind every solution.
- **Mission Log** — record your scores, spot patterns, and track your trajectory toward mastery.

Flight Plan

- 🚀 **Mission 1 Survey Orbit.** Take this test without a timer. Get a clear read on the question types and discover which topics are your strongest — and which need fuel.
- 🚀 **Mission 2 Guided Re-entry.** Review your Mission 1 results, study your weak spots, then launch Mission 2 with a soft timer (70 minutes). Focus on showing full work for every multi-step problem.
- 🚀 **Mission 3 Full Launch.** Simulate test-day conditions: timed, quiet, independent. Compare your score with Mission 1 and celebrate your growth!

● Multiple Choice

Select the **single best answer** from A–D. Eliminate clearly wrong options first, then reason through what’s left. Show scratch work even when it’s not required — it sharpens your thinking.

Constructed Response

Show every step of your solution. In Grade 7, partial credit often comes from demonstrating the **process** — setting up proportions, writing equations, and justifying your reasoning — not just the final number.



Mission Control says: Space your 3 missions at least a week apart. Use the days between to review mistakes and study the topics that tripped you up. By Mission 3, you’ll be flying.

Navigation Protocols

Smart strategies to stay on course during every mission

The S.C.A.N. Protocol

- S** **Study the question** *Read it fully. Identify what is given and what is being asked.*
- C** **Choose a strategy** *Proportion? Equation? Estimation? Pick your tool before computing.*
- A** **Apply and solve** *Show every step. Label units. Write the equation before plugging in.*
- N** **Navigate back** *Re-read the question. Does your answer match what was asked?*

Pre-Launch Checklist

- Get a full night's sleep — your brain processes what you studied while you rest.*
- Clear your workspace and gather supplies before you begin.*
- Set a goal: "I'll show my work on every problem today."*

Green-Light Moves

- Read the entire question before glancing at choices*
- Circle key numbers; underline what is asked*
- Convert fractions, decimals, and percents when it helps*
- Use estimation to check reasonableness*
- Skip tough problems and return with fresh eyes*

✖ Red-Alert Traps

- Rushing through word problems
- Forgetting negative signs (rational numbers!)
- Confusing “percent of” with “percent increase”
- Choosing an answer that solves only part of the problem
- Leaving constructed-response blank instead of attempting it



“Every astronaut debriefs after a mission. After each test, review every wrong answer and ask yourself **“What would I do differently next time?”** That single habit will launch your score. ”



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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 $10\times$ 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 (\times)**: each, every, groups of, times, product, per, of (with fractions)
- **Divide (\div)**: share equally, split, each group, how many groups, quotient, per



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PREVIEW



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PREVIEW

PRACTICE TEST

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 painter paints $\frac{2}{3}$ of a room per hour. Write an equation for rooms painted r in h hours, then find how many hours to paint 5 rooms.

Your Answer:

2. 0.5% of 800 is what number?

Your Answer:

3. 156 is 120% of what number?

Your Answer:

4. A \$90 pair of shoes is 30% off. What is the sale price?

Your Answer:

5. A builder estimated a project would cost \$8,000. The actual cost was \$7,500. What is the percent error?

(A) 5%

(B) 6.25%

(C) 6.67%

(D) 10%

6. You owe \$25 and borrow \$10 more. Which expression represents your total debt?

(A) $25 + 10 = 35$

(B) $(-25) + 10 = -15$

(C) $(-25) + (-10) = -35$

(D) $25 - 10 = 15$



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7. What is $(-20) - (-20)$?

(A) -40

(B) 40

(C) 0

(D) -20

8. What is $-\frac{1}{3} + \left(-\frac{1}{4}\right) + \frac{5}{12}$?

(A) $-\frac{1}{6}$

(B) $\frac{1}{6}$

(C) $-\frac{5}{12}$

(D) $\frac{5}{12}$

9. A rectangular room has length $(2x + 3)$ feet and width 5 feet. Write and expand an expression for its area.

Your Answer:

10. What is the GCF of $9x$, $12x$, and $15x$?

(A) x

(B) 3

(C) $3x$

(D) $9x$

11. Solve $1.2x + 0.8 = 4.4$

(A) $x = 3$

(B) $x = 4.33$

(C) $x = 3.6$

(D) $x = 2.5$



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12. Solve $-x + 9 \leq 15$.

(A) $x \leq -6$

(B) $x \geq 6$

(C) $x \geq -6$

(D) $x \leq 6$

13. The graph of an inequality has an open circle at -1 and is shaded to the left. Which inequality matches?

(A) $x \leq -1$

(B) $x < -1$

(C) $x \geq -1$

(D) $x > -1$

14. A map uses $1 \text{ cm} = 30 \text{ km}$. Two cities are 210 km apart. How far apart are they on the map?

(A) 6 cm

(B) 7 cm

(C) 70 cm

(D) 180 cm

15. A drawing uses scale $1 : 200$. It is redrawn at scale $1 : 100$. How does the area on the new drawing compare to the original?

(A) It is 2 times as large

(B) It is 4 times as large

(C) It is half as large

(D) It is the same

16. Which cross-section is NOT possible from slicing a rectangular prism?

(A) Rectangle

(B) Triangle

(C) Circle

(D) Pentagon



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21. What does surface area measure?

- (A) The space inside a 3D figure (B) The distance around a 3D figure
(C) The total area of all faces of a 3D figure (D) The height of a 3D figure

22. What is the volume of a cube with side length 5 m?

- (A) 15 m^3 (B) 25 m^3
(C) 125 m^3 (D) 150 m^3

23. A cylindrical candle has a radius of 2 cm and a height of 15 cm. How much wax is needed to make the candle? Use $\pi \approx 3.14$.

- (A) 94.2 cm^3 (B) 188.4 cm^3
(C) 376.8 cm^3 (D) 60 cm^3

24. A website asks visitors to rate a product. Only 5% of visitors respond. This is a:

- (A) Random sample (B) Systematic sample
(C) Voluntary response sample (D) Stratified sample

25. Which display is best for comparing the overall shapes of two large data sets?

- (A) A single dot plot (B) Two histograms
(C) A circle graph (D) A frequency table with one column



★ *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!*

THANK YOU

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- ✓ *Reference sheets and progress trackers*

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