

10 Virginia SOL Grade 7 Math Practice Tests

The Ultimate Test Prep Collection with Answer Explanations

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10 Practice Tests

10 tests × full coverage

 Grade 7 Math — Engineered for Mastery 

Welcome to **The Architect's Workshop**.

Ten practice tests. Ten floors of a tower you're about to build. Each test lays another level of understanding — from foundation to capstone.

 **Foundation (Tests 1–3):** Learn the blueprints

 **Framework (Tests 4–6):** Build structural strength

 **Finishing (Tests 7–9):** Refine under pressure

 **Capstone (Test 10):** The final inspection

Precision. Practice. Perfection.

“ Every great structure
is built one floor at a time.
Ten levels of practice makes
your math rock-solid. ”



The Architectural Plan

A 4-phase construction plan for complete mastery

Phase I: Foundation (Tests 1–3)

Untimed. Explore the test format and question types. Read every answer explanation after each test.

Goal: understand the blueprint before you build.



Phase II: Framework (Tests 4–6)

Add a timer (70 minutes). Focus on the topics that gave you trouble in Phase I. Practice showing complete work and labeling units. Goal: build structural strength.



Phase III: Finishing (Tests 7–9)

Full timed conditions (60 minutes). Simulate the real exam. Review only the questions you missed — don't re-study what you already know. Goal: refine under real pressure.



Phase IV: Capstone (Test 10)

Your final inspection. Full exam conditions. This is the capstone — compare with Test 1 and measure your entire growth arc. Goal: prove your mastery.

Blueprint Specifications

 **Multiple Choice** — select the single best answer

 **Short Answer** — show your process

 **Multi-Select** — choose ALL that apply

 **Open Response** — explain and justify

Engineering Principles

Precision techniques for building every solution

The D.R.A.F.T. Method

- D Define** What exactly is the question asking? Write it in your own words.
- R Retrieve** Pull out given information. List numbers, units, and relationships.
- A Assemble** Choose the right formula or strategy. Set up the equation or proportion.
- F Figure** Compute step by step. Show every operation. Label units.
- T Test** Does the answer make sense? Re-read the question. Verify the units.

Seven Precision Rules

1. **Read twice, solve once.** The first read gives context; the second reveals what to compute.
2. **Annotate the problem.** Circle key information and underline the question.
3. **Estimate before calculating.** A quick mental approximation catches major errors.
4. **Set up the equation.** Write down the formula and plug in the numbers.
5. **Track your signs.** Rational number operations are the #1 error source in Grade 7.
6. **Eliminate unreasonable answers.** Use logic to rule out impossible solutions.
7. **Never submit blanks.** On open response, even a partial setup can earn credit.

Timing Blueprint

Tests 1–3: **Untimed** (learn the blueprints) > Tests 4–6: **70 min** (build speed) > Tests 7–10: **60 min** (exam conditions)



“Every great structure starts with a solid plan. Study the blueprints, learn from each test, and build something extraordinary.”

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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 (×)**: each, every, groups of, times, product, per, of (with fractions)
- **Divide (÷)**: share equally, split, each group, how many groups, quotient, per



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PREVIEW

PRACTICE TEST

1

Practice Test 1

 10 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!* ★

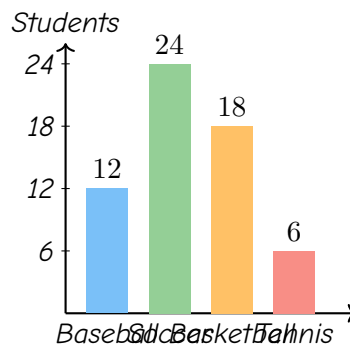
Do your best and show what you know!



1. A store sells beads at a constant price. The equation is $c = 0.15b$. How many beads can you buy with \$6?

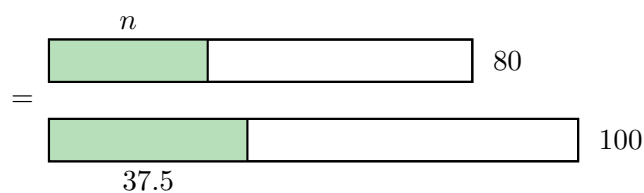
Your Answer:

2. The bar graph shows how many students chose each favorite sport. What percent of the students chose soccer?



- (A) 24% (B) 30%
- (C) 40% (D) 50%

3. Look at the proportion model below. What value of n makes the proportion true?



- (A) 28 (B) 30
- (C) 32 (D) 37.5



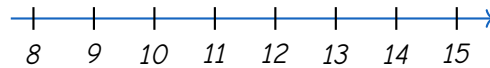
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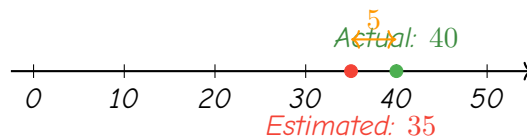


4. A plant was 8 inches tall. It grew to 14 inches. What is the percent increase?



- (A) 43% (B) 57%
- (C) 60% (D) 75%

5. The number line below shows an estimated value and an actual value. What is the percent error?



- (A) 5% (B) 10%
- (C) 12.5% (D) 14.3%

6. What integer must you add to -15 to get -6 ?

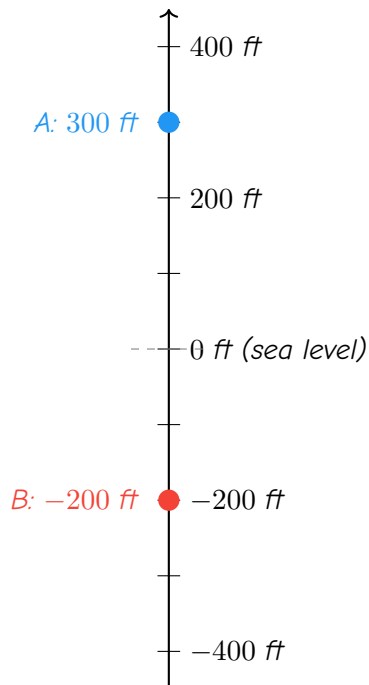
Your Answer:



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7. The diagram shows elevations. What is the difference in elevation from Point B to Point A?



(A) 100 ft

(B) -100 ft

(C) 500 ft

(D) -500 ft

8. What is $5.6 - 8.1$?

(A) 2.5

(B) -2.5

(C) 13.7

(D) -13.7

9. Expand and simplify $-2(x + 6) + 3(2x - 1)$.

Your Answer:



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10. Factor $-10m - 15$.

Your Answer:

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★ *End of Practice Test 1* ★

Great job finishing the test!

My Score

I got _____ out of 10 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!*

Answer Key & Explanations



Answer Key

First try each test on your own, then check your work here.



Practice Test 1 — Answer Key

1 40 beads

2 C

3 B

4 D

5 C

6 9

7 C

8 B

9 $4x - 15$

10 $-5(2m + 3)$

💡 Time to Learn! 💡

Review the explanations below, *especially for the questions you missed*.

Understanding why each answer is correct builds stronger problem-solving skills.

Tip: Circle any questions you got wrong, then read their explanation carefully.



Practice Test 1 — Detailed Explanations

1 $6 = 0.15b$, so $b = 6 \div 0.15 = 40$ beads.

2 Total students: $12 + 24 + 18 + 6 = 60$. Soccer: 24. Percent: $24 \div 60 = 0.40 = 40\%$.

3 $\frac{n}{80} = \frac{37.5}{100}$. Cross-multiply: $100n = 3000$. Divide: $n = 30$.



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4 Change: $14 - 8 = 6$. Percent increase: $6 \div 8 = 0.75 = 75\%$.

5 $\frac{|35-40|}{40} \times 100 = \frac{5}{40} \times 100 = 12.5\%$.

6 $(-15) + n = -6$, so $n = -6 - (-15) = -6 + 15 = 9$.

7 Difference from B to A: $300 - (-200) = 300 + 200 = 500$ ft.

8 $5.6 - 8.1 = 5.6 + (-8.1) = -2.5$. The larger absolute value (8.1) is negative.

9 Expand: $-2x - 12 + 6x - 3$. Combine: $(-2x + 6x) + (-12 - 3) = 4x - 15$.

10 GCF of 10 and 15 is 5. Factor out -5 : $-10m \div (-5) = 2m$ and $-15 \div (-5) = 3$. Result: $-5(2m + 3)$.



Well done checking your answers!

Keep practicing to strengthen your skills.



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THANK YOU

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- ✓ *All chapters and topics*
- ✓ *Hundreds of practice problems*
- ✓ *Complete answer key with explanations*
- ✓ *Colorful visuals and step-by-step examples*
- ✓ *Reference sheets and progress trackers*

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