

3

South Dakota

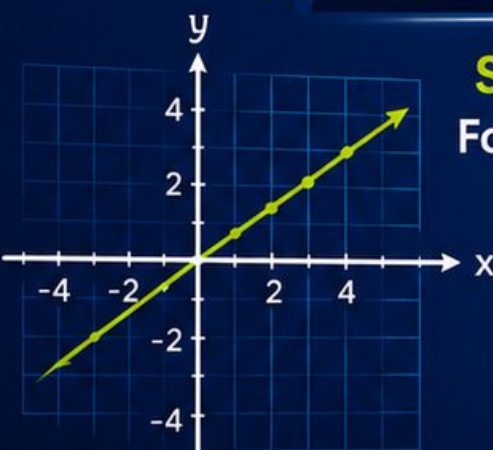
Smarter Balanced

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$V = s^3$$



$$y = mx + b$$
$$2x + 5 = 13$$
$$x = 4$$



3 PRINTED TESTS



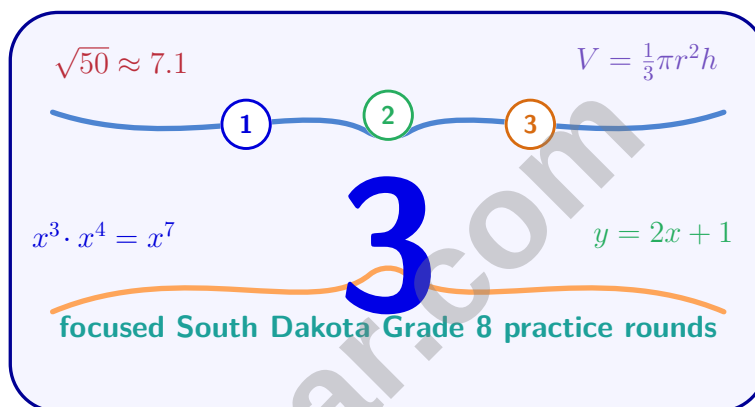
2 ONLINE TESTS



Use these **two additional online practice tests** for extra review after the printed tests in this book.

3 South Dakota Smarter Balanced Grade 8 Math Practice Tests

Three Complete South Dakota Practice Rounds for Grade 8 Readiness



Three complete 40-question Grade 8 Smarter Balanced practice rounds with real numbers, exponents, scientific notation, equations, functions, transformations, geometry, data analysis, probability, answer keys, and clear explanations for every item.

Jay Daie and Reza Nazari



Copyright ©

Testinar Inc



Published by Testinar Inc

Testinar.com

All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the author, except in the case of brief quotations embodied in critical reviews and certain other noncommercial uses permitted by copyright law, including Section 107 or 108 of the 1976 United States Copyright Act.

This publication is independently produced and has no official connection to any state, district, or national testing program.

Test names and organizational names used herein are the property of their respective trademark holders.



Copyright ©

Welcome, South Dakota Grade 8 Problem Solver!

Three focused rounds for sharper Smarter Balanced math thinking

This book gives you three full Grade 8 Smarter Balanced math practice tests. Each round is built to help you recognize structure, reason with real numbers and exponents, analyze linear relationships, connect equations with graphs, and explain your thinking with care.

Your South Dakota 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 8 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 an exponent rule, equation, graph, transformation, diagram, 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.

South Dakota 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 Smarter Balanced tests, 120 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Test 3	Functions, systems, transformations, geometry, data analysis, and multi-step problem solving.
Answer Pages	Compact keys and explanations that show why each answer works.

The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.



Scan me!
For more practice
& answers

Table of Contents



Testinar.com

1) Which is the best estimate of $3\sqrt{5}$?

☐ A. 4.5

☐ C. 6.7

☐ B. 6.0

☐ D. 9.8

2) A rectangular prism has length 8 m, width 5 m, and height 3 m. What is its surface area?

☐ A. 120 m^2

☐ C. 238 m^2

☐ B. 158 m^2

☐ D. 280 m^2

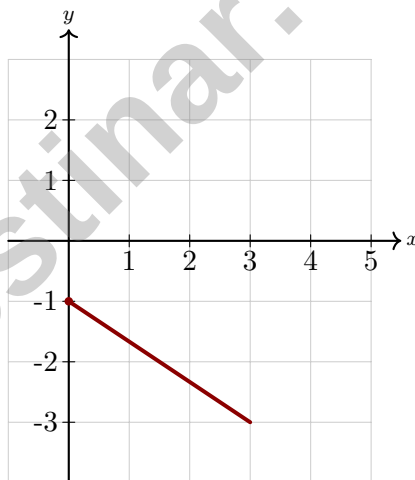
3) A quadrilateral is rotated 270° clockwise about the origin. This is equivalent to a counterclockwise rotation of how many degrees?

☐ A. 90°

☐ C. 270°

☐ B. 180°

☐ D. 360°



4)

What is the y -intercept of the line shown?

☐ A. -3

☐ C. -2

☐ B. 0

☐ D. -1



5) Solve for x : $5x - 3 = 2x + 9$

☐ A. $x = 2$

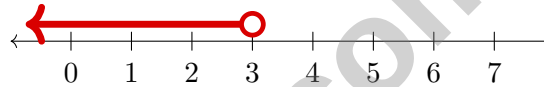
☐ C. $x = 6$

☐ B. $x = 12$

☐ D. $x = 4$

6) Write 4.7×10^{-4} in decimal (standard) form.

7) Graph the solution to $x + 4 < 7$ on a number line.



The inequality is:

☐ A. $x < 3$

☐ C. $x \leq 3$

☐ B. $x > 3$

☐ D. $x \geq 3$

8) Express $0.12\overline{3}$ as a fraction.

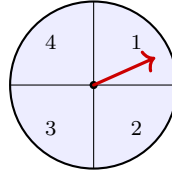


Scan me!
For more practice
& answers

- 9) The inequality has x -intercept 6 and y -intercept -3 . The boundary line passes through both. Which inequality has shading that includes the origin?
- ☐ A. $x - 2y \leq 6$ ☐ C. $2y - x \leq 6$
☐ B. $x - 2y \geq 6$ ☐ D. $2y - x \geq 6$
- 10) Two cylinders have the same volume. Cylinder A has radius 4 m and height 10 m. Cylinder B has radius 5 m. What is the height of Cylinder B?
- ☐ A. 6.4 m ☐ C. 10 m
☐ B. 8 m ☐ D. 12.5 m
- 11) A regression model for test performance is $P = 5.2q + 12$, where P is percent score and q is the number of quiz attempts. A teacher observes data only for q values 1 through 5. Is predicting performance at $q = 8$ interpolation or extrapolation? Why?
- ☐ A. Interpolation; $q = 8$ is close to observed values ☐ C. Neither; the model fails beyond $q = 5$
☐ B. Extrapolation; $q = 8$ is outside the observed range $[1, 5]$ ☐ D. Interpolation; the formula works for any positive number
- 12) Simplify $\frac{a^4b^3}{a^2b}$.
- ☐ A. a^2b^{-2} ☐ C. $\frac{a^6b^4}{a^2b^2}$
☐ B. a^2b^3 ☐ D. $\frac{a^2b^2}{1}$ or a^2b^2
- 13) What is $\sqrt[3]{1728}$?
- ☐ A. 10 ☐ C. 12
☐ B. 11 ☐ D. 13



- 1) A spinner has 4 equal sections. If it is spun three times, what is the probability of landing on section 1 all three times?



- ☐ A. $\frac{1}{16}$ ☐ C. $\frac{1}{64}$
☐ B. $\frac{1}{12}$ ☐ D. $\frac{3}{4}$
- 2) What is $0.1\overline{2}$ as a fraction?
- ☐ A. $\frac{12}{100}$ ☐ C. $\frac{12}{99}$
☐ B. $\frac{1}{12}$ ☐ D. $\frac{11}{90}$
- 3) Which two perfect squares help locate $\sqrt{72}$?
- ☐ A. 36 and 49 ☐ C. 81 and 100
☐ B. 49 and 64 ☐ D. 64 and 81
- 4) The radius of Jupiter is about 7.14×10^7 m. What is this in standard form?
- ☐ A. 714,000 m ☐ C. 714,000,000 m
☐ B. 7,140,000,000 m ☐ D. 71,400,000 m
- 5) A credit card has a balance of \$800 with 18% APR. Which list correctly shows the interest charged each month (assuming no payments)?
- ☐ A. \$12, \$12, \$12, ... ☐ C. \$12, \$24, \$36, ...
☐ B. \$18, \$18, \$18, ... ☐ D. \$12, \$12.18, \$12.36, ...



Scan me!
For more practice
& answers

- 6) Use the table to find the value of x if $f(x) = 7$.

x	0	1	2	3
$f(x)$	1	3	5	7

- 7) A cube with edge 2 m is attached to a rectangular prism with dimensions $4 \times 2 \times 2$ m (where the cube shares a 2×2 face). If we ignore the shared face, what is the total surface area of the composite solid?

- ☐ A. 40 m^2
☐ C. 64 m^2
☐ B. 56 m^2
☐ D. 72 m^2

- 8) A point P is translated by the vector $(5, -2)$ to get point P' . If you want to undo this translation and return to P , which translation vector should you apply to P' ?

- ☐ A. $(5, -2)$
☐ C. $(5, 2)$
☐ B. $(-5, 2)$
☐ D. $(-5, -2)$

- 9) The equation $2x - y = 4$ can be rewritten in slope-intercept form as:

- ☐ A. $y = 2x - 4$
☐ C. $y = 2x + 4$
☐ B. $y = -2x - 4$
☐ D. $y = x - 2$



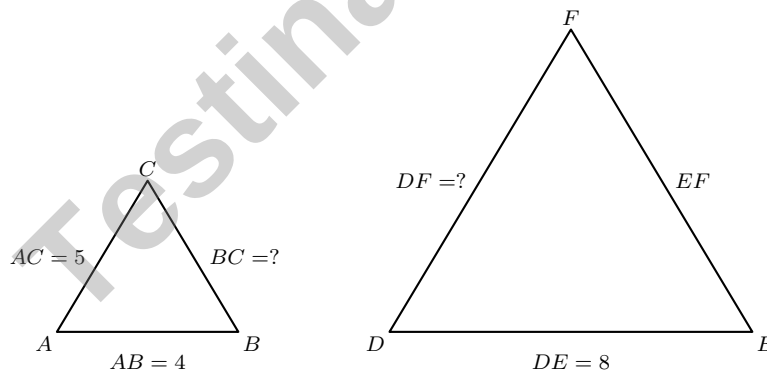
1) Which graph feature indicates that an object momentarily stops during a distance-time journey?

- ☐ A. A vertical line segment ☐ C. A steep downward slope
☐ B. A horizontal line segment ☐ D. A negative y -intercept

2) A data analyst fits two different trend lines to a scatter plot. Line A has MAD (mean absolute deviation of residuals) = 0.3, while Line B has MAD = 0.8. Which conclusion is justified?

- ☐ A. Line B is better because it has a higher MAD ☐ C. Both lines are equally good
☐ B. Line A is better because residuals are closer to zero ☐ D. We cannot compare lines using MAD alone

3) Two similar triangles are shown. Triangle ABC has sides 4 cm and 5 cm. Triangle DEF has a corresponding side of 8 cm. Find the length of the side in DEF corresponding to the 5 cm side in ABC .



- ☐ A. 10 cm ☐ C. 9 cm
☐ B. 6.5 cm ☐ D. 2.5 cm



4) A savings account has $S(n) = 50 + 10n$ dollars after n weeks. After how many weeks will the account have \$150?

☐ A. 5 weeks

☐ C. 15 weeks

☐ B. 10 weeks

☐ D. 20 weeks

5) Which pair of irrational numbers, when multiplied, produces a rational number?

☐ A. $\sqrt{3} \times \sqrt{5}$

☐ C. $\sqrt{6} \times \sqrt{10}$

☐ B. $\sqrt{7} \times \sqrt{11}$

☐ D. $\sqrt{2} \times \sqrt{8}$

6) Which fraction is equivalent to $0.\overline{999}$?

☐ A. $\frac{999}{1000}$

☐ C. $\frac{1}{999}$

☐ B. $\frac{9}{10}$

☐ D. $\frac{999}{999} = 1$

7) $\sqrt{68}$ is closest to which integer?

☐ A. 7

☐ C. 9

☐ B. 6

☐ D. 8

8) A computer hard drive has a storage capacity of 1.5×10^{12} bytes. How many times larger is this than a USB stick with capacity 1.5×10^{10} bytes?

☐ A. 200 times

☐ C. 10,000 times

☐ B. 1,000 times

☐ D. 100 times

9) A person compares two loans for \$2,000:

Loan	APR	Term
X	5%	2 years
Y	4%	3 years

If the person wants to minimize total borrowing cost, which loan is better?

☐ A. Need more information

☐ C. They cost the same

☐ B. Loan Y

☐ D. Loan X



Scan me!
For more practice
& answers

South Dakota Smarter Balanced Grade 8 Practice Test Answer Keys

How to use this section with a Grade 8 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 South Dakota Smarter Balanced practice test.

Testinar.com



Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice C is correct.** (8.NS.2) $\sqrt{5} \approx 2.24$, so $3\sqrt{5} \approx 3 \times 2.24 = 6.72$.
- 2) **Choice B is correct.** (8.G.9) Using $SA = 2(lw + lh + wh) = 2(40 + 24 + 15) = 2(79) = 158 \text{ m}^2$.
- 3) **Choice A is correct.** (8.G.1) Clockwise and counterclockwise are opposite directions. 270° clockwise $= 360^\circ - 270^\circ = 90^\circ$ counterclockwise.
- 4) **Choice D is correct.** (8.EE.6) The y -intercept is where the line crosses the y -axis, at point $(0, -1)$.
- 5) **Choice D is correct.** (8.EE.7) Subtract $2x$ and add 3: $3x = 12$. Divide by 3: $x = 4$. (Distractor A: result of dividing 12 by 3 incorrectly; C: forgetting to distribute constant; D: result of incorrect arithmetic.)
- 6) **The correct answer is 0.00047.** (8.EE.3) Move the decimal 4 places to the left: $4.7 \times 10^{-4} = 0.00047$.
- 7) **Choice A is correct.** (8.EE.7) Subtract 4: $x < 3$. The open circle and left-pointing ray show all numbers less than 3.
- 8) **The correct answer is $\frac{37}{300}$.** (8.G.1) Set $x = 0.12\bar{3} = 0.12333\dots$. Then $100x = 12.\bar{3}$ and $1000x = 123.\bar{3}$. Subtracting: $900x = 111$, so $x = \frac{111}{900} = \frac{37}{300}$.
- 9) **Choice A is correct.** (8.G.8) The line is $x - 2y = 6$. Test origin: $0 - 0 = 0 \leq 6$ TRUE. So the origin is in the solution region with $\leq$.
- 10) **Choice A is correct.** (8.G.9) Cylinder A: $V_A = \pi \times 16 \times 10 = 160\pi$. For equal volumes: $160\pi = \pi \times 25 \times h_B \Rightarrow h_B = \frac{160}{25} = 6.4 \text{ m}$.
- 11) **Choice B is correct.** (8.SP.3) Extrapolation means predicting beyond observed data. Since only $q \in [1, 5]$ was observed, $q = 8$ requires extrapolation and carries risk.
- 12) **Choice D is correct.** (8.EE.1) Quotient rule for each variable: $\frac{a^4}{a^2} = a^2$ and $\frac{b^3}{b} = b^2$. Result: a^2b^2 .
- 13) **Choice C is correct.** (8.EE.2) $12 \times 12 \times 12 = 1728$, so $\sqrt[3]{1728} = 12$.
- 14) **Choice D is correct.** (8.EE.5) Slope $= \frac{\Delta y}{\Delta x} = \frac{15-0}{5-0} = 3$. For a proportional line through the origin, the slope equals the unit rate.
- 15) **Choice C is correct.** (8.EE.8) Add the equations to eliminate y : $(2x + y) + (x - y) = 7 + 2$, so $3x = 9$, giving $x = 3$. Substitute: $3 - y = 2$, so $y = 1$. Solution: $(3, 1)$.
- 16) **Choice A is correct.** (8.EE.7) Find two numbers that multiply to 45 and add to -14 : -5 and -9 . Verify: $(-5)(-9) = 45$ and $-5 - 9 = -14$.
- 17) **Choice A is correct.** (8.F.1) The range is the set of all outputs (y -coordinates): $-1, 2, 5, 8$.
- 18) **Choice A is correct.** (8.F.4) Using $y = mx + b$ with $m = -2$ and $b = 5$: equation is $y = -2x + 5$.
- 19) **Choice B is correct.** (8.G.2) Since the hexagons are congruent, all corresponding angles are equal. Hexagon GHIJKL has the same angles as ABCDEF: $120^\circ, 120^\circ, 120^\circ, 120^\circ, 120^\circ, 120^\circ$. (Note: The interior angle sum of any hexagon is always 720° , so option C is incorrect.)
- 20) **The correct answer is A, C.** (8.NS.1) Statement A is true because rational numbers are closed under addition. Statement C is true because any terminating decimal, such as $0.75 = \frac{3}{4}$, is rational. Statement B is false because two irrational numbers can multiply to a rational number, for example $\sqrt{2} \times \sqrt{8} = 4$. Statement D is false because integers are rational. Statement E is false because perfect squares have rational square roots, not irrational ones.
- 21) **Choice B is correct.** (8.G.5) The vertex angle plus the two equal base angles sum to 180° : $(5r - 5) + 2(2r + 25) = 180$. This simplifies to $9r + 45 = 180$, so $9r = 135$ and $r = 15$.
- 22) **Choice D is correct.** (8.G.6, 8.G.7) Check option D: $7^2 + 8^2 = 49 + 64 = 113 \neq 81 = 9^2$. The other options are all known Pythagorean triples.
- 23) **Choice C is correct.** (8.G.8) $d = \sqrt{40^2 + 9^2} = \sqrt{1600 + 81} = \sqrt{1681} = 41 \text{ m}$.
- 24) **Choice A is correct.** (8.G.9) $B = 7 \times 9 = 63 \text{ m}^2$. $V = \frac{1}{3} \times 63 \times 15 = \frac{945}{3} = 315 \text{ m}^3$.
- 25) **The correct answer is $(6, 7)$.** (8.NS.2) $6^2 = 36$ and $7^2 = 49$. Since $36 < 45 < 49$, we have $6 < \sqrt{45} < 7$.
- 26) **Choice A is correct.** (8.G.7) Circle area $= \pi r^2 = 3.14 \times 7^2 = 153.86 \text{ m}^2$. Square area $= 4 \times 4 = 16 \text{ m}^2$. Remaining $= 153.86 - 16 = 137.86 \text{ m}^2$.



Scan me!
For more practice
& answers

Hi, Grade 8 Math Star!

◇ You finished this practice set with real effort. Grade 8 math asks you to connect ideas, explain your thinking, and stay steady through multi-step problems. ◇

★ **Remember this:** Every page you completed helped build stronger habits: reading carefully, choosing a method, showing work, and checking whether the answer makes sense. You practiced across 3 full Grade 8 practice tests, and that repeated effort matters. ★

What You Built

- **Focus:** You stayed with challenging questions.
- **Accuracy:** You learned to slow down when details matter.
- **Reasoning:** You practiced explaining why a method works.
- **Readiness:** You are more prepared than when you started.

Grade 8 test-day tip: Before test day, review the questions that made you pause. Those are the best teachers.

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

Jay Daie

Your Grade 8 Math Friend

PRACTICE TODAY, ACHIEVE TOMORROW!

GRADE
8

Give your child the edge they need with **3 full-length** Grade 8 Math practice tests that reflect real test formats and cover all key math standards. Perfect for building skills, boosting confidence, and preparing for success on test day!



WHAT'S INSIDE?



Standards-Aligned Practice

Questions designed to cover essential Grade 8 math standards.



Variety of Question Types

Multiple-choice, short answer, and more to build well-rounded skills.



Real-World Applications

Engaging problems that connect math to everyday life.



Step-by-Step Progress

Track improvement and build confidence with every test.



Build Skills & Boost Confidence

Strengthen understanding and feel prepared for test day.

COVERS ALL ESSENTIAL TOPICS

- ✓ The Number System
- ✓ Expressions & Equations
- ✓ Ratios & Proportional Relationships
- ✓ Linear Equations
- ✓ Functions
- ✓ Geometry
- ✓ Measurement & Data
- ✓ Statistics & Probability
- ✓ Pythagorean Theorem
- ✓ Volume & Surface Area
- ✓ Transformations
- ✓ Inequalities
- ✓ Data Analysis & Graphing
- ✓ And More!



2 Extra Online Practice Tests Included!

Use these two additional online practice tests for extra review after the printed tests.

testinar.com/math8

PRACTICE. PREPARE. SUCCEED.



Testinar

More Practice. More Confidence.
Better **Results**.