

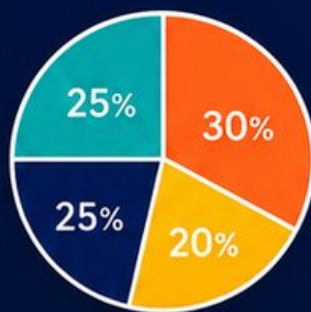
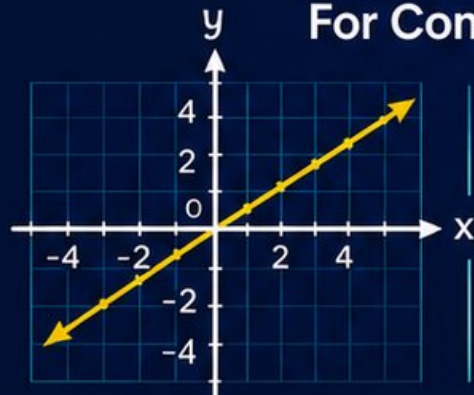
4

Montana
MAST

GRADE 8

MATH

PRACTICE TESTS

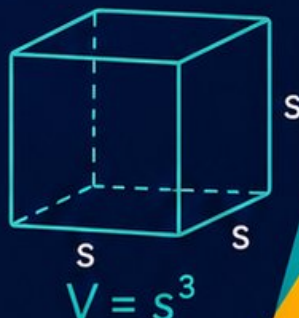
Standards Aligned Problem Solving
For Comprehensive Assessment Programs

$$y = mx + b$$

$$2x - 3y = 6$$

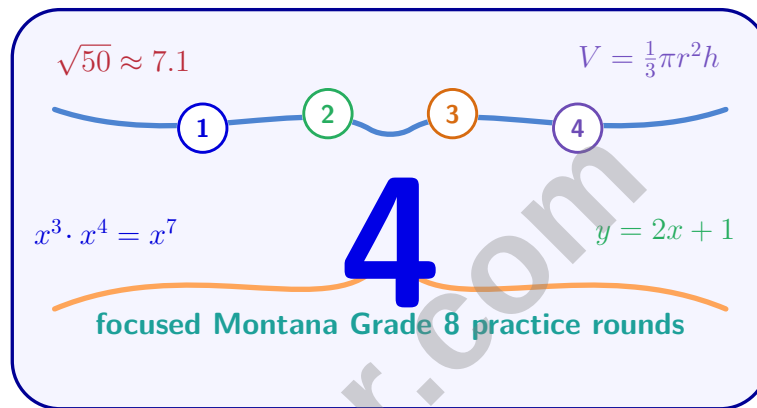
$$\sqrt{x^2 + y^2}$$

$$A = bh$$

4 PRINTED
TESTS2 ONLINE
TESTSUse these **two additional online practice tests**
for extra review after the printed tests in this book.

4 Montana MAST Grade 8 Math Practice Tests

Four MAST Math Rounds for Skill-Building and Test Confidence



Four complete 40-question Grade 8 MAST 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, Montana Grade 8 Problem Solver!

Four focused rounds for sharper MAST math thinking

This book gives you four full Grade 8 MAST 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 Montana 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 four-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.

Montana 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?

Four MAST tests, 160 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 3–4	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.

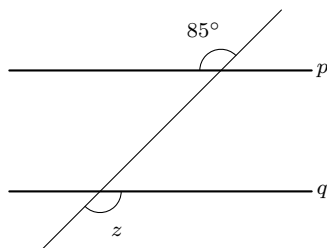


Scan me!
For more practice
& answers

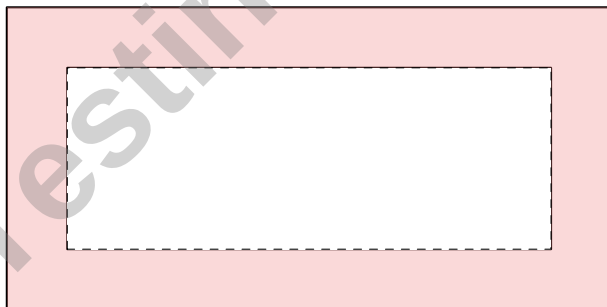
Table of Contents

★ Practice Test 1	_____	14
★ Practice Test 2	_____	31
★ Practice Test 3	_____	47
★ Practice Test 4	_____	61
Practice Test Answer Keys	_____	78
Practice Test Answers and Explanations	_____	81

- 1) In the figure, parallel lines are cut by a transversal. If the angle marked is 85° , find the alternate exterior angle.



- ☐ A. 85° ☐ C. 105°
☐ B. 95° ☐ D. 145°
- 2) If $g(x) = x + 7$, what is $g(2)$?
- ☐ A. 5 ☐ C. 10
☐ B. 9 ☐ D. 14
- 3) A rectangular path (outer dimensions 20 m by 10 m, inner rectangle 16 m by 6 m) forms a frame. What is the area of the path only?



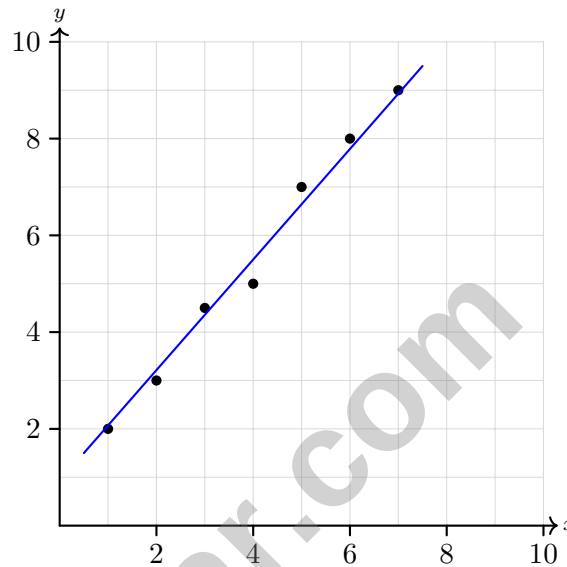
- ☐ A. 56 m^2 ☐ C. 96 m^2
☐ B. 76 m^2 ☐ D. 104 m^2



4) When rolling two dice, what is the probability of rolling a sum of 10 or higher?

- ☐ A. $\frac{1}{12}$
☐ B. $\frac{5}{36}$

- ☐ C. $\frac{6}{36}$
☐ D. $\frac{7}{36}$



5)

Which statement best explains why the trend line does NOT pass through every data point?

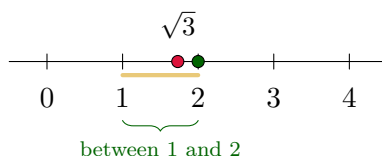
- ☐ A. The data is not perfectly linear; there is natural variation
☐ B. The trend line is drawn incorrectly
☐ C. Some data points are too far from the line
☐ D. The axes are not labeled correctly

6) A parallelogram has base 6 in and height 4 in. It is dilated by a scale factor of 2.5. What is the new height?

- ☐ A. 4 in
☐ B. 10 in
☐ C. 15 in
☐ D. 6.5 in



Scan me!
For more practice
& answers



7)

Which statement is true?

☐ A. $\sqrt{3} > 2$

☐ C. $\sqrt{3} < 2$

☐ B. $\sqrt{3} = 1.73$

☐ D. $\sqrt{3}$ is rational

8) Points $(-1, 5)$ and $(2, 14)$ lie on a line. Find the slope.

9) A student can wear a shirt, pants, and shoes. There are 3 shirt colors, 2 pant types, and 4 shoe styles. How many different outfits are possible?

Shirts	Pants	Shoes
3 colors	2 types	4 styles

☐ A. $3 + 2 + 4 = 9$

☐ C. $3^2 \times 4 = 36$

☐ B. $3 \times 2 \times 4 = 24$

☐ D. $24 + 3 = 27$

10) What denominator appears when a repeating decimal has a 4-digit repeating block?

☐ A. 10

☐ C. 999

☐ B. 100

☐ D. 9999



1) When sketching a line of best fit by eye, the line should:

- ☐ A. Pass through every single point ☐ D. Have approximately equal numbers
☐ B. Have the steepest possible slope of points above and below it
☐ C. Avoid all outliers completely

2) A video streaming service charges a flat fee plus a per-minute rate. The relationship is shown:

Minutes watched	10	20	30
Cost (\$)	2.50	4.50	6.50

What is the slope?

- ☐ A. \$0.20 per minute ☐ C. \$0.10 per minute
☐ B. \$2.50 per minute ☐ D. \$0.05 per minute

3) A gym offers two membership plans. Plan A costs \$50 upfront plus \$10 per month. Plan B costs \$20 per month with no upfront fee. After how many months do the total costs equal?

- ☐ A. 3 months ☐ C. 5 months
☐ B. 4 months ☐ D. 6 months

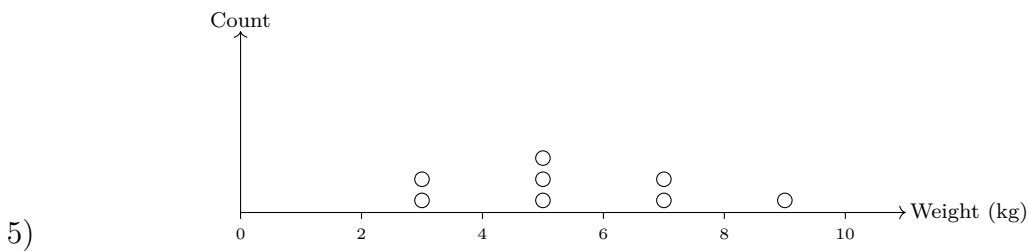
4) The table shows $f(x)$. If $f(x) = 8$, what is x ?

x	1	2	3	4
$f(x)$	4	6	8	10

- ☐ A. 1 ☐ C. 3
☐ B. 2 ☐ D. 4

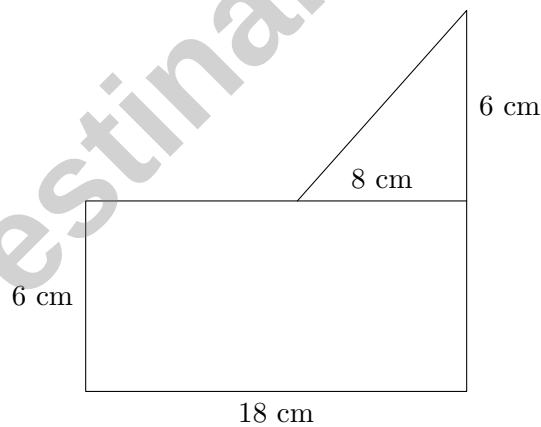


Scan me!
For more practice
& answers



Pet weights: $\{3, 3, 5, 5, 5, 7, 7, 9\}$ kg with mean = 5.5 kg. Find MAD.

- ☐ A. 1.5 ☐ C. 2
☐ B. 1.63 ☐ D. 2.25
- 6) In a right triangle, the legs are each $\sqrt{8}$. What is the hypotenuse?
- ☐ A. 4 ☐ C. $2\sqrt{2}$
☐ B. $\sqrt{16}$ ☐ D. 8
- 7) A composite figure has a rectangle (18 cm by 6 cm) with a right triangle (*legs* = 6 cm and 8 cm) placed on one of the longer sides. What is the total area?



- ☐ A. 24 cm^2 ☐ C. 84 cm^2
☐ B. 60 cm^2 ☐ D. 132 cm^2



1)

	M	F
Soccer	8	6
Tennis	5	7

The table shows the number of boys (M) and girls (F) who play soccer and tennis. If one student is selected at random, what is the probability that they play tennis?

☐ A. $\frac{6}{26}$

☐ B. $\frac{5}{26}$

☐ C. $\frac{14}{26}$

☐ D. $\frac{12}{26}$

2) Point $D(4, 5)$ undergoes a dilation centered at the origin with scale factor 2. What is the distance from the origin to the dilated point D' ?

☐ A. $\sqrt{41}$

☐ B. $2\sqrt{41}$

☐ C. 18

☐ D. 9

3) A student's test score improves by 3 points for every hour of study. What is the slope if hours are on the x -axis?

☐ A. $\frac{1}{3}$

☐ B. -3

☐ C. 6

☐ D. 3

4) Function through $(1, 2)$ and $(4, 14)$. y -intercept?



Scan me!
For more practice
& answers

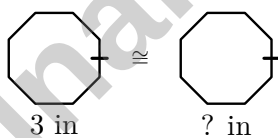
- 5) A register contains pennies, nickels, and dimes. There are twice as many nickels as pennies, and twice as many dimes as nickels. If there are 70 coins total, how many pennies are there?

☐ A. 5 ☐ C. 10
☐ B. 8 ☐ D. 12

- 6) The function $f(x)$ represents postage cost based on weight in ounces: $f(x) =$
- $$\begin{cases} 0.55 & \text{if } 0 < x \leq 1 \\ 0.75 & \text{if } 1 < x \leq 2 \\ 0.95 & \text{if } 2 < x \leq 3 \end{cases}$$
- What is $f(1.5)$?

☐ A. \$0.55 ☐ C. \$0.95
☐ B. \$0.75 ☐ D. \$1.50

- 7) Two congruent regular polygons are shown. Each polygon has 8 sides. If one octagon has a side length of 3 inches, what is the side length of the other octagon?



☐ A. 1.5 inches ☐ C. 6 inches
☐ B. 3 inches ☐ D. 9 inches



Montana MAST 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 Montana MAST practice test.

Testinar.com



Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice A is correct.** (8.G.5) Alternate exterior angles are congruent when lines are parallel.
- 2) **Choice B is correct.** (8.F.1) Substitute $x = 2$: $g(2) = 2 + 7 = 9$.
- 3) **Choice D is correct.** (8.G.7) Decompose using subtraction: outer rectangle minus inner rectangle. Outer area $= 20 \times 10 = 200 \text{ m}^2$. Inner area $= 16 \times 6 = 96 \text{ m}^2$. Path area $= 200 - 96 = 104 \text{ m}^2$.
- 4) **Choice C is correct.** (8.G.7) Sums of 10, 11, 12: (4,6), (5,5), (6,4), (5,6), (6,5), (6,6). That's 6 outcomes.
- 5) **Choice A is correct.** (8.SP.2) Real-world data rarely fits a perfect line. A trend line balances passing close to all points, even if it doesn't pass through every one.
- 6) **Choice B is correct.** (8.G.4) $4 \times 2.5 = 10 \text{ in.}$
- 7) **Choice C is correct.** (8.NS.2) From the number line, $\sqrt{3} \approx 1.73$ is positioned to the left of 2, so $\sqrt{3} < 2$. We can verify: $1.73^2 = 2.9929 < 4 = 2^2$. Also, $\sqrt{3}$ is irrational.
- 8) **The correct answer is 3.** (8.EE.8) Slope $= \frac{14 - 5}{2 - (-1)} = \frac{9}{3} = 3$.
- 9) **Choice B is correct.** (8.NS.2) Multiply the number of choices at each step: $3 \times 2 \times 4 = 24$ different outfits.
- 10) **Choice D is correct.** (8.NS.1) For a pure repeating decimal with block length n , the denominator is $\underbrace{99 \dots 9}_n$. A 4-digit block uses 9999.
- 11) **Choice D is correct.** (8.NS.2) Since the square root function is increasing and $26 < 27$, we have $\sqrt{26} < \sqrt{27}$. Therefore $\sqrt{27}$ is larger.
- 12) **Choice D is correct.** (8.NS.2) $\frac{\sqrt{10}}{\sqrt{2}} = \sqrt{5} \approx 2.236$.
- 13) **Choice C is correct.** (8.G.7) Savings account: $A = 1000(1 + 0.02 \times 4) = \$1,080$. Investment: $A = 1000(1 + 0.05 \times 4) = \$1,200$. Difference: $\$1,200 - \$1,080 = \$120$.
- 14) **Choice C is correct.** (8.EE.3) Move the decimal 8 places right: $1.496 \times 10^8 = 149,600,000 \text{ km.}$
- 15) **Choice A is correct.** (8.G.9) Prism A: $SA = 2(60 + 20 + 12) = 184 \text{ cm}^2$. Prism B: $SA = 2(40 + 24 + 15) = 158 \text{ cm}^2$. Prism A has the greater surface area.
- 16) **Choice A is correct.** (8.G.1) 270° counterclockwise equals 90° clockwise, using the rule $(x, y) \rightarrow (y, -x)$. Distractor B is 90° counterclockwise.
- 17) **Choice A is correct.** (8.EE.6) The y -intercept is -2 . Using $(4, -4)$: slope $= \frac{-4 - (-2)}{4 - 0} = \frac{-2}{4} = -\frac{1}{2}$.
- 18) **Choice A is correct.** (8.EE.7) Multiply both sides by 5: $3x - 2 = 10$. Add 2: $3x = 12$. Divide by 3: $x = 4$.
- 19) **Choice D is correct.** (8.EE.7) Subtract 3: $-\frac{1}{2}x \geq 2$. Multiply by -2 (FLIP): $x \leq -4$.
- 20) **Choice A is correct.** (8.G.8) The strict inequality $<$ uses a DASHED line. Since $y <$ the expression, shade BELOW.
- 21) **Choice C is correct.** (8.G.9) Radius $r = 8 \text{ mm}$. $V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times 3.14 \times 512 = 2143.57 \text{ mm}^3$.
- 22) **The correct answer is A,E.** (8.EE.7) A: Let $a =$ apples, $o =$ oranges. Then $a + o = 30$ and $1 \cdot a + 2 \cdot o = 45$. Two equations, two unknowns.
E: Let $w =$ width, $\ell =$ length. Then $\ell = w + 2$ and $2w + 2\ell = 24$. Two equations, two unknowns.
B: The wheat row is 50 m; corn is 60 m. This is one equation or direct calculation, not a system.
C: This is a computation, not a system.
D: This gives a constant meeting time, not requiring a system to answer "when do they meet?"—already stated as 2 hours.
- 23) **The correct answer is 50.** (8.G.3) Original perimeter: $2(6 + 4) = 20$. Dilated perimeter: $20 \times 2.5 = 50$.
- 24) **Choice B is correct.** (8.SP.3) The line crosses the y -axis at approximately $y = 2$, representing the base shipping cost.
- 25) **Choice D is correct.** (8.EE.1) 2^3 has 3 factors, 2^4 has 4 factors. Total: $3 + 4 = 7$ factors. This illustrates the product rule: $2^3 \times 2^4 = 2^7$.
- 26) **Choice D is correct.** (8.EE.2) $6 \times 6 \times 6 = 216$, so $\sqrt[3]{216} = 6$.
- 27) **The correct answer is 3.** (8.G.6, 8.G.7) From $(\sqrt{6})^2 + (\sqrt{3})^2 = c^2$, we get $6 + 3 = 9$, so $c = \sqrt{9} = 3$.



Scan me!
For more practice
& answers

+ −

.....

81

.....

× ÷

Testinar.com

Hi, Progress Maker!

◇ You have done more than complete a set of tests. You have rehearsed the habits that make Grade 8 math feel less surprising. ◇

★ **Remember this:** Progress is not always loud. Sometimes it looks like fewer careless errors, clearer work, better pacing, and more confidence when a problem is unfamiliar. You practiced across 4 full Grade 8 practice tests, and that repeated effort matters. ★

Signs of Growth

- **Clear Work:** Your steps are easier to follow.
- **Better Pacing:** You know when to move on and return.
- **Stronger Checks:** You catch mistakes earlier.
- **Calmer Thinking:** You know what to try next.

Grade 8 test-day tip: Keep one short list of mistakes you often make, then check that list before each practice session.

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

Jay Daie

Your Growth Coach

PRACTICE TODAY, ACHIEVE TOMORROW!

Give your child the confidence and skills they need with **4 full-length Grade 8 Math** practice tests that reflect real test formats and cover all key math standards. Perfect for building skills, strengthening problem-solving abilities, and achieving success on test day!

4



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.



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!



4 PRINTED TESTS



2 ONLINE TESTS



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