

Practice Test 1: Setup and Questions 1-4



Test Overview & Instructions

This practice test evaluates core proficiency in whole number arithmetic, signed integers, multi-digit operations, and standard order of operations (PEMDAS/BODMAS). Complete all 8 questions without a calculator. Write down each intermediate calculation clearly in the provided working space before recording your final answer.

- Simplify expressions inside parentheses and grouping symbols first.
- Evaluate powers and exponents second.
- Perform multiplication and division from left to right as encountered.
- Complete addition and subtraction from left to right as encountered.



Order of Operations Reminder

Multiplication does not automatically precede division, nor does addition precede subtraction. Both pairs possess equal priority and must be worked strictly from left to right.



Practice Test 1: Questions 1 to 4

Solve each problem in the box provided. Show every step of your arithmetic.

- Question 1: Evaluate $48 - 18 / 3 + 2 * 5$.
- Question 2: Compute $14 + 3 * (8 - 3)^2 - 19$.
- Question 3: Calculate $-15 + (-8) * (-4) - 12 / (-3)$.
- Question 4: Evaluate $120 - \{4 * [18 - (6 + 7)]\} + 9$.

Q1 Work & Solution ($48 - 18 / 3 + 2 * 5$)

Q2 Work & Solution ($14 + 3 * (8 - 3)^2 - 19$)

Q3 Work & Solution ($-15 + (-8) * (-4) - 12 / (-3)$)

Q4 Work & Solution ($120 - \{4 * [18 - (6 + 7)]\} + 9$)





Continue solving the remaining four multi-step arithmetic problems.

- **Question 5:** Evaluate $[54 - (3^3 - 9)] / (-6) + 14$.
- **Question 6:** Multi-Digit Arithmetic: Find the exact value of $425 * 36 - 1,872 / 12$.
- **Question 7:** Evaluate $-7 * [(-2)^3 + 15 / (-5)] - (-18)$.
- **Question 8:** Evaluate $(64 / 4^2 * 3) + [(-9) - (-4)] * 7$.

Q5

$$([54 - (3^3 - 9)] / (-6) + 14)$$

Q6

$$(425 * 36 - 1,872 / 12)$$

Q7

$$(-7 * [(-2)^3 + 15 / (-5)] - (-18))$$

Q8

$$((64 / 4^2 * 3) + [(-9) - (-4)] * 7)$$



Practice Test 1: Worked Step-by-Step Solutions



Worked Step-by-Step Solutions: Questions 1 to 4

Review detailed step-by-step solutions to verify mathematical logic and error identification.

1 Q1

$$48 - (18 / 3) + (2 * 5)$$

$$= 48 - 6 + 10$$

$$= 42 + 10$$

$$= 52 \quad \checkmark$$

2 Q2

1. Parentheses first:
 $(8 - 3) = 5.$
2. Exponent: $5^2 = 25.$
3. Multiplication:
 $3 * 25 = 75.$
4. Sequence:
 $14 + 75 - 19 = 89 - 19$
 $= 70.$

$$= 70 \quad \checkmark$$

3 Q3

1. Multiply:
 $(-8) * (-4) = 32.$
2. Divide:
 $12 / (-3) = -4.$
3. Expression becomes:
 $-15 + 32 - (-4)$
 $= 17 + 4 = 21.$

$$= 21 \quad \checkmark$$

4 Q4

1. Innermost parentheses:
 $6 + 7 = 13.$
2. Brackets: $18 - 13 = 5.$
3. Multiply: $4 * 5 = 20.$
4. Final sequence:
 $120 - 20 + 9$
 $= 100 + 9 = 109.$

$$= 109 \quad \checkmark$$



Sign Rules Check

Remember that subtracting a negative number is equivalent to adding its positive counterpart:
 $a - (-b) = a + b.$



Key Steps to Remember

1

Step 1: Simplify Groupings and Exponents

Isolate nested brackets from inside out, resolving powers (e.g., $5^2 = 25$ or $(-2)^3 = -8$) before applying products.

2

Step 2: Execute Left-to-Right Operations

Resolve all products and quotients in order of appearance, followed by sums and differences from left to right.



Practice Test 1: Worked Step-by-Step Solutions



Worked Step-by-Step Solutions: Questions 5 to 8

Complete solutions for problems 5 through 8 with intermediate checks.

5 Q5

1. Innermost power:
 $3^3 = 27.$
2. Subtraction:
 $27 - 9 = 18.$
3. Inner bracket:
 $54 - 18 = 36.$
4. Division: $36 / (-6) = -6.$
5. Final: $-6 + 14 = 8.$

$$= 8 \quad \checkmark$$

6 Q6

1. Product:
 $425 * 36 = 15,300.$
2. Long division:
 $1,872 / 12 = 156.$
3. Subtraction:
 $15,300 - 156 = 15,144.$

$$= 15,144 \quad \checkmark$$

7 Q7

1. Power:
 $(-2)^3 = -8.$
2. Quotient:
 $15 / (-5) = -3.$
3. Inner bracket:
 $-8 + (-3) = -11.$
4. Multiplication:
 $-7 * (-11) = 77.$
5. Final: $77 - (-18)$
 $= 77 + 18 = 95.$

$$= 95 \quad \checkmark$$

8 Q8

1. Power:
 $4^2 = 16.$
2. Left bracket:
 $64 / 16 * 3 = 4 * 3 = 12.$
3. Right bracket:
 $(-9) - (-4) = -5.$
4. Product:
 $-5 * 7 = -35.$
5. Final: $12 + (-35)$
 $= -23.$

$$= -23 \quad \checkmark$$

Practice Test 1:

Score Tracker & Performance Diagnostics



Score Tracking & Performance Diagnostics

Tally your points to determine your current mastery level on integer arithmetic and order of operations.

- **8/8 Correct (100%):** Mastery demonstrated. Ready for fractions and decimals.
- **6-7/8 Correct (75-88%):** Proficient. Review isolated arithmetic or sign slips.
- **Below 6/8 (<75%):** Needs practice. Revisit order of operations rules and signed number conventions.

Total Correct Answers (out of 8)

Calculated Score Percentage
(Score / 8 * 100%)

Identified Error Patterns
(e.g., negative signs, operator precedence)

Targeted Action Plan for Practice Test 2



Did you score 75% (6 out of 8) or higher on this assessment?

Did you score 75% (6 out of 8)
or higher on this assessment?

Score is 6 to 8 correct

Score is 5 or fewer correct



Proceed to Practice Test 2:
Fractions, Decimals, and
Percentages.



Review signed integer rules
and order of operations
worked examples, redo missed
problems, and re-test before
advancing.



Practice Test 2:

Questions 1 to 4 & Instructions



Student Name: _____

Date of Assessment: _____

Practitioner / Tutor Name: _____



Assessment Instructions & Student Information

This practice assessment evaluates fluency across fractions, decimals, and proportional reasoning. Complete all 8 problems independently before referencing the scoring guide and solution steps.

- Time allocation: 25 to 30 minutes recommended.
- Show all intermediate arithmetic steps, including common denominators and reciprocal multiplication.
- Simplify all final fractions to lowest terms; express mixed numbers where appropriate.
- No calculator usage: calculate all decimal conversions and unit rates by hand.



Assessment Purpose

Designed for students, parents, and tutors to identify conceptual gaps in rational number operations and ratio problem-solving.



Question 1: Fraction Addition

Calculate $\frac{3}{8} + \frac{5}{12}$. State the least common denominator.

Workspace & Final Answer:



Common Mistake Alert

Remember that denominators never add directly. Always find the least common multiple before adding or subtracting.



Question 2: Fraction Subtraction

Calculate $2\frac{1}{4} - \frac{5}{6}$. Express your answer as a fully simplified fraction or mixed number.

Workspace & Final Answer:



Common Mistake Alert

Remember that denominators never add directly. Always find the least common multiple before adding or subtracting.



Question 3: Fraction Multiplication

Calculate $\frac{7}{10} \times \frac{15}{14}$. Simplify before or after multiplying.

Workspace & Final Answer:



Common Mistake Alert

Remember that denominators never add directly. Always find the least common multiple before adding or subtracting.



Question 4: Fraction Division

Solve $\frac{9}{16} \div \frac{3}{8}$. Show the reciprocal multiplication.

Workspace & Final Answer:



Common Mistake Alert

Remember that denominators never add directly. Always find the least common multiple before adding or subtracting.



Practice Test 2: Questions 5 to 8



Solve the remaining problems involving decimal conversions, decimal arithmetic, and proportional reasoning.

- **Question 5 (Fraction to Decimal):** Convert $\frac{7}{20}$ into an exact terminating decimal using long division or equivalent place-value fractions.
- **Question 6 (Decimal to Simplified Fraction):** Convert the decimal 0.375 into a fraction in lowest terms.
- **Question 7 (Decimal Operations):** Evaluate $14.6 - 3.85 + 2.04$. Maintain strict vertical decimal alignment.
- **Question 8 (Proportional Reasoning):** A vehicle travels 180 miles on 6 gallons of fuel. At this uniform rate, how many miles can it travel on 11 gallons?

Question 5 (Fraction to Decimal)

Convert $\frac{7}{20}$ into an exact terminating decimal using long division or equivalent place-value fractions.

Question 5 Workspace & Final Answer

Question 6 (Decimal to Simplified Fraction)

Convert the decimal 0.375 into a fraction in lowest terms.

Question 6 Workspace & Final Answer

Question 7 (Decimal Operations)

Evaluate $14.6 - 3.85 + 2.04$. Maintain strict vertical decimal alignment.

Question 7 Workspace & Final Answer

Question 8 (Proportional Reasoning)

A vehicle travels 180 miles on 6 gallons of fuel. At this uniform rate, how many miles can it travel on 11 gallons?

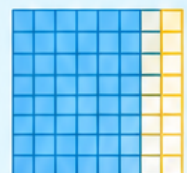
Question 8 Workspace & Final Answer



Decimal Alignment Tip

When adding or subtracting decimals, pad trailing decimal places with zero to avoid misaligning tenths and hundredths.

$$\begin{array}{r} 2.60 \\ + 1.35 \\ \hline 3.95 \end{array}$$





Step-by-Step Solutions, Diagnostic Guide & Score Tracker



Complete Answer Key & Step-by-Step Solutions

Review these fully worked mathematical solutions to evaluate student answers and diagnose exact error points.

1 Solution 1: $\frac{3}{8} + \frac{5}{12}$

The least common multiple of 8 and 12 is 24.
Rewrite fractions: $(\frac{3}{8} \times \frac{3}{3}) / (\frac{8}{8} \times \frac{3}{3}) = \frac{9}{24}$;
 $(\frac{5}{12} \times \frac{2}{2}) / (\frac{12}{12} \times \frac{2}{2}) = \frac{10}{24}$. Add numerators:
 $\frac{9}{24} + \frac{10}{24} = \frac{19}{24}$.

$$\begin{array}{r} \frac{3}{8} + \frac{5}{12} \\ \hline \frac{9}{24} + \frac{10}{24} \\ \hline \frac{19}{24} \end{array}$$

Result: $\frac{19}{24}$

2 Solution 2: $2\frac{1}{4} - \frac{5}{6}$

Convert mixed number to improper fraction:
 $2\frac{1}{4} = \frac{9}{4}$. Common denominator for 4 and 6 is 12. Convert: $\frac{9}{4} = \frac{27}{12}$; $\frac{5}{6} = \frac{10}{12}$.
Subtract: $(\frac{27}{12} - \frac{10}{12}) / 12 = \frac{17}{12} = 1\frac{5}{12}$.

$$\begin{array}{r} 2\frac{1}{4} - \frac{5}{6} \\ \hline \frac{9}{4} - \frac{5}{6} \\ \hline \frac{27}{12} - \frac{10}{12} \\ \hline \frac{17}{12} = 1\frac{5}{12} \end{array}$$

Result: $1\frac{5}{12}$

3 Solution 3: $(\frac{7}{10}) \times (\frac{15}{14})$

Cross-simplify common factors before multiplying: 7 and 14 divide by 7 (yielding 1 and 2); 15 and 10 divide by 5 (yielding 3 and 2).
Multiply: $(1 \times 3) / (2 \times 2) = \frac{3}{4}$.

$$\begin{array}{r} \frac{7}{10} \times \frac{15}{14} \\ \hline \frac{1}{2} \times \frac{3}{2} \\ \hline \frac{3}{4} \end{array}$$

Result: $\frac{3}{4}$

4 Solution 4: $(\frac{9}{16}) \div (\frac{3}{8})$

Multiply by reciprocal of divisor: $(\frac{9}{16}) \times (\frac{8}{3})$.
Simplify cross factors: $\frac{9}{3} = 3$; $\frac{8}{16} = \frac{1}{2}$.
Multiply remaining factors: $(3 \times 1) / (2 \times 1) = \frac{3}{2} = 1\frac{1}{2}$.

$$\begin{array}{r} \frac{9}{16} \div \frac{3}{8} \\ \hline \frac{9}{16} \times \frac{8}{3} \\ \hline \frac{3}{2} = 1\frac{1}{2} \end{array}$$

Result: $1\frac{1}{2}$

5 Solution 5: $\frac{7}{20}$ to Decimal

Multiply numerator and denominator by 5 to obtain a base of 100: $(\frac{7}{20} \times \frac{5}{5}) / (\frac{20}{20} \times \frac{5}{5}) = \frac{35}{100} = 0.35$.
Alternatively, divide 7 by 20 directly to yield 0.35.

$$\begin{array}{r} \frac{7}{20} \\ \hline 0.35 \end{array}$$

Result: 0.35

6 Solution 6: 0.375 to Fraction

Express place value: $\frac{375}{1000}$. Greatest common divisor is 125. Divide numerator and denominator by 125: $(\frac{375}{125}) / (\frac{1000}{125}) = \frac{3}{8}$.

$$\begin{array}{r} 0.375 \\ \hline \frac{3}{8} \end{array}$$

Result: $\frac{3}{8}$

7 Solution 7: $14.6 - 3.85 + 2.04$

Step 1: $14.60 - 3.85 = 10.75$.
Step 2: $10.75 + 2.04 = 12.79$.
Ensure exact column alignment at the decimal point.

$$\begin{array}{r} 14.6 - 3.85 + 2.04 \\ \hline 10.75 + 2.04 \\ \hline 12.79 \end{array}$$

Result: 12.79

8 Solution 8: Unit Rate & Proportion

Calculate unit rate: 180 miles / 6 gallons = 30 miles per gallon. Multiply unit rate by target volume: 30 miles/gallon * 11 gallons = 330 miles.

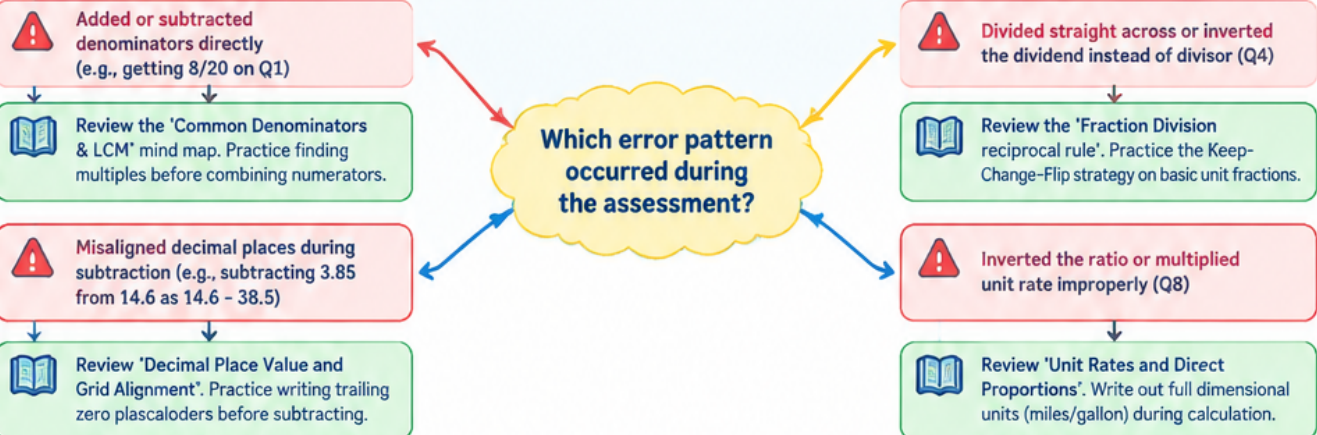
$$\begin{array}{r} 180 \div 6 = 30 \\ \hline 30 \times 11 \\ \hline 330 \text{ miles} \end{array}$$

Result: 330 miles



Diagnostic Error Analysis & Targeted Remediation

Identify systematic procedural missteps using the diagnostic routing rules below to assign targeted review mind maps.



Score Calculation & Performance Tracker

Record item results below to compute the final percentage score and track domain mastery.



Scoring Guidance

Award 1 point per completely correct and simplified answer. Partial credit (0.5) may be awarded if arithmetic process was correct but simplification was omitted.

- Score Range: 7-8 correct (88%-100%) = **Advanced Mastery**.
- Score Range: 5-6 correct (63%-75%) = **Proficient**; review minor calculation slips.
- Score Range: 0-4 correct (0%-50%) = **Needs Review**; revisit core fraction/decimal visual mind maps.

Total Correct (out of 8)

Calculated Percentage Score (%)

Primary Focus Domain for Next Review

Tutor or Evaluator Signature & Date



Practice Test 3: Examination Paper



Student Name: _____

Test Date: _____

Start Time & End Time: _____



Test Administration Guidelines & Timing Benchmarks

This practice test evaluates student proficiency across eight foundational topics: percent increase and decrease, simple interest calculation, laws of positive exponents, negative and zero exponents, evaluating principal square roots, operations with radicals and signed exponent conversion, and arithmetic in scientific notation. To replicate standard test conditions, set a timer for 25 minutes (an average benchmark of roughly 3 minutes per question).

- **Time benchmark:** 25 minutes recommended total testing duration.
- **Tools required:** Sharpened pencil, eraser, and scratch paper. Calculators should be avoided unless verifying answers afterward.
- **Practitioner Tip:** Have the student complete all eight questions independently before checking answers against the full solution key.



Timing Benchmark

Target pacing is 2 to 3 minutes per problem. If stuck on an exponent or scientific notation problem for more than 4 minutes, make an educated estimate and return after completing Question 8.



Practice Test 3: Examination Questions (Q1 - Q8)

Solve each problem carefully. Write your final answer in the designated answer box alongside each question.

1 Percent Increase

A jacket originally priced at \$80 is marked up to \$104. What is the percentage increase in the price of the jacket?

Workspace / Notes:

Answer: %

2 Percent Decrease & Sale Price

A mountain bike retailing for \$350 is placed on clearance with a 24% discount. Determine the sale price before sales tax.

Workspace / Notes:

Answer: \$

3 Simple Interest Calculation

Maria deposits \$2,400 into a savings certificate earning 4.5% annual simple interest. Calculate the total interest earned after 3 years using $I = P \cdot r \cdot t$.

Workspace / Notes:

Answer: \$

4 Exponent Product & Power Rules

Simplify the expression completely, expressing your final answer with positive exponents only: $(3x^3 \cdot y^4)^2 \cdot (2x^2 \cdot y)$.

Workspace / Notes:

Answer:

5 Negative & Zero Exponent Laws

Evaluate and simplify the numerical fraction without using a calculator: $\frac{5^{-2} \cdot 4^0}{10^{-3}}$.

Workspace / Notes:

Answer:

6 Principal Square Roots & Radical Simplification

Simplify the radical expression completely into the form $a \cdot \sqrt{b}$: $\sqrt{72} + 5 \cdot \sqrt{18} - 2 \cdot \sqrt{50}$.

Workspace / Notes:

Answer:

7 Standard to Scientific Notation Conversion

The diameter of a microscopic organism is 0.0000408 meters, and the distance to an orbital satellite is 36,000,000 meters. Convert both measurements into standard scientific notation ($a \cdot 10^n$, where $1 \leq |a| < 10$).

Workspace / Notes:

Organism: m

Satellite: m

8 Scientific Notation Multiplication & Division

Perform the calculation and express the final result in proper scientific notation: $(1.2 \cdot 10^7) \cdot (7.5 \cdot 10^{-2}) (2.5 \cdot 10^2)$.

Workspace / Notes:

Answer: $\times 10^{\text{$



Practice Test 3: Step-by-Step Solutions



Step-by-Step Worked Solutions & Explanations (Q1 - Q4)

Detailed pedagogical breakdowns for each problem.
Review every algebraic step to understand the underlying mechanics.



Common Mistake in Percent Change

Always divide the difference by the **original base** amount, never the new modified amount. For Question 1, divide \$24 by \$80, not by \$104.

Solution 1: Percent Increase

- Find absolute increase:
 $\$104 - \$80 = \$24$.
- Form ratio of change over original:
 $\$24 / \$80 = 0.30$.
- Convert decimal to percent:
 $0.30 * 100\% = 30\%$ **increase**.



Final Answer: 30% increase

Solution 2: Percent Decrease & Sale Price

Method A: Discount amount = $\$350 * 0.24 = \84 .
Sale price = $\$350 - \$84 = \$266$.
Method B (Direct Multiplier):
 $100\% - 24\% = 76\%$ remaining.
 $\$350 * 0.76 = \266 .



Final Answer: \$266

Solution 3: Simple Interest Calculation

Use formula $I = P * r * t$.
Given: Principal $P = \$2,400$, rate $r = 4.5\% = 0.045$,
time $t = 3$ years.
Interest $I = 2,400 * 0.045 * 3 = 108 * 3 = \324 .
Total interest earned is \$324.



Final Answer: \$324

Solution 4: Exponent Product & Power Rules

- Apply power of a product rule:
 $(3x^3 * y^4)^2 = 3^2 * (x^3)^2 * (y^4)^2$
 $= 9 * x^{3*2} * y^{4*2} = 9x^6 * y^8$.
- Multiply by $(2x^2 * y^1)$:
Group coefficients and like bases:
 $(9 * 2) * (x^6 * x^2) * (y^8 * y^1) = 18 * x^{6+2} * y^{8+1}$
 $= 18x^8 * y^9$.

Final Answer: $18x^8 * y^9$



Step-by-Step Worked Solutions & Explanations (Q5 - Q8)

Detailed algebraic explanations for questions covering
negative powers, radicals, and scientific notation.



Scientific Notation Base Check

Ensure the leading coefficient 'a' satisfies $1 \leq |a| < 10$.
If an operation yields $36 * 10^1$, it must be rewritten
as $3.6 * 10^2$ to be mathematically valid.

Solution 5: Negative & Zero Exponents

Recall rules: $a^0 = 1$ and $a^{-n} = 1 / a^n$.

Numerator: $5^{-2} * 4^0 = (1/25) * 1 = 1/25$.

Denominator: $10^{-3} = 1/1000$.

Quotient: $(1/25) / (1/1000) = (1/25) * (1000/1)$
 $= 1000/25 = 40$.

$$\begin{array}{r} 5^{-2} * 4^0 \\ 10^{-3} \\ \hline \downarrow \\ \frac{1}{25} \\ \frac{1000}{1} \\ \hline \downarrow \\ 40 \end{array}$$

Final Answer: 40

Solution 6: Radicals Simplification

Factor out largest perfect squares:

$$\sqrt{72} = \sqrt{36 * 2} = 6\sqrt{2}$$

$$5 * \sqrt{18} = 5 * \sqrt{9 * 2} = 5 * 3\sqrt{2} = 15\sqrt{2}$$

$$-2 * \sqrt{50} = -2 * \sqrt{25 * 2} = -2 * 5\sqrt{2} = -10\sqrt{2}$$

Combine like radicals:

$$(6 + 15 - 10) * \sqrt{2} = 11\sqrt{2}$$

$$\begin{array}{r} \sqrt{72} \\ \swarrow \quad \searrow \\ \sqrt{36} \quad \sqrt{2} \\ \downarrow \\ 6\sqrt{2} \end{array}$$

Final Answer: $11\sqrt{2}$

Solution 7: Standard to Scientific Notation

Part A: 0.0000408.

Shift decimal point 5 places to the right to place
after first non-zero digit (4):

$$4.08 * 10^{-5}$$

Part B: 36,000,000.

Shift decimal point 7 places to the left:
 $3.6 * 10^7$.

$$\begin{array}{r} 0.0000408 \\ \downarrow \\ 4.08 * 10^{-5} \\ \hline 36,000,000 \\ \downarrow \\ 3.6 * 10^7 \end{array}$$

Final Answer: A) $4.08 * 10^{-5}$ B) $3.6 * 10^7$

Solution 8: Arithmetic in Scientific Notation

Group coefficients and powers of 10:

$$\text{Numerator: } (1.2 * 7.5) * (10^2 * 10^{-2})$$

$$= 9.0 * 10^{2+(-2)} = 9.0 * 10^0$$

$$\text{Divide by denominator: } (9.0 / 2.5) * (10^2 / 10^2)$$

$$= 3.6 * 10^{(4-2)} = 3.6 * 10^2$$

(or 360 in standard form).

$$\begin{array}{r} (1.2 * 7.5) * 10^2 * 10^{-2} \\ \downarrow \\ 9.0 * 10^0 \\ \div (2.5 * 10^2) \\ \downarrow \\ 3.6 * 10^2 \end{array}$$

Final Answer: $3.6 * 10^2$ (or 360)

Practice Test 3: Score Tracker & Mastery Decision



Diagnostic Score Calculation & Mastery Assessment

Use the table and rubric below to tally test results, calculate the final percentage score, and identify specific topics requiring review.



- **Score Range 88% - 100% (7-8 correct):** Demonstrates mastery of basic percentages and exponent rules.
- **Score Range 75% - 87% (6 correct):** Solid working knowledge; review missed sub-topics before progressing.
- **Score Range Below 75% (0-5 correct):** Target foundation skills: re-visit simple interest formulas, radical factoring, or scientific notation shift direction.

Question	Maximum Points	Student Score	Tally
Q1 (Percent Increase: +30%) [1 pt]	1		
Q2 (Sale Price: \$266) [1 pt]	1		
Q3 (Simple Interest: \$324) [1 pt]	1		
Q4 (Exponent Rules: $18x^8y^9$) [1 pt]	1		
Q5 (Negative/Zero Powers: 40) [1 pt]	1		
Q6 (Radicals: $11\sqrt{2}$) [1 pt]	1		
Q7 (Scientific Form: 4.08×10^{-5} & 3.6×10^2) [1 pt]	1		
Q8 (Scientific Calc: 3.6×10^2) [1 pt]	1		
Total Raw Score (/8 Points)	8		
Percentage Grade ((Score / 8) * 100%)	100%		

Review Notes & Target Study Plan



What is the recommended next step based on the diagnostic test percentage?

Score $\geq$ 88%
(7 or 8 points)



Proceed directly to Practice Test 4 (Geometry, Perimeter, Area, and Volume).



Score between 63% and 87%
(5 or 6 points)



Review the specific worked step solutions for missed questions, work 3 practice drills on that sub-skill, then advance.



Score $<$ 63%
(0 to 4 points)



Review the core Mind Maps for Percentages, Exponents, and Scientific Notation thoroughly before re-taking Practice Test 3.

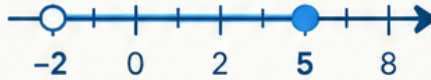




Practice Test 5: Linear Equations & Word Problems

Practice Test 5: Linear Equations & Word Problems (Questions 33–40)

Solve each single-variable equation, inequality, or applied scenario. Write your final simplified answers in the provided spaces before checking the answer key.



Exam Strategy & Negative Division Rule

When solving inequalities, multiplying or dividing both sides by a negative number flips the inequality symbol. Always verify linear equation answers by substituting your final value back into the original expression.

Question 33

Solve for x : $4x - 7 = 21$.

Answer: $x =$ _____

Question 34

Solve for y : $3(2y + 5) - 4 = 29$.

Answer: $y =$ _____

Question 35

Solve for m : $5m + 12 = 2m - 9$.

Answer: $m =$ _____

Question 36

Solve for p : $\frac{p}{4} + 6 = 11$.

Answer: $p =$ _____

Question 37

Solve the inequality for x : $3x - 5 < 16$.

Solution: $x <$ _____

Question 38

Solve the inequality for w : $-2w + 4 \leq 14$. (Remember to reverse the inequality sign when dividing by a negative number).

Solution: $w \geq$ _____

Question 39 (Word Problem)

Maya has \$45. She buys 4 identical notebooks and has \$13 left over. Write an equation and determine the cost of one notebook.

Cost per notebook (\$) _____

Question 40 (Word Problem)

A rental company charges a base fee of \$25 plus \$0.15 per mile driven. If Liam's total bill is \$67, how many miles did he drive?

Miles driven _____



Practice Test 5 Solutions & Master Score Tally



Step-by-Step Solutions & Scoring Rubric

Follow these worked algebraic steps to verify each answer from Practice Test 5.

- ✓ Q33 Solution: $4x - 7 = 21 \rightarrow 4x = 28 \rightarrow x = 7$.
- ✓ Q34 Solution: Distribute: $6y + 15 - 4 = 29 \rightarrow 6y + 11 = 29 \rightarrow 6y = 18 \rightarrow y = 3$.
- ✓ Q35 Solution: Subtract 2m: $3m + 12 = -9 \rightarrow$ Subtract 12: $3m = -21 \rightarrow m = -7$.
- ✓ Q36 Solution: Subtract 6: $p / 4 = 5 \rightarrow$ Multiply by 4: $p = 20$.
- ✓ Q37 Solution: Add 5: $3x < 21 \rightarrow$ Divide by 3: $x < 7$.
- ✓ Q38 Solution: Subtract 4: $-2w \leq 10 \rightarrow$ Divide by -2 (flip sign): $w \geq -5$.
- ✓ Q39 Solution: Let n = notebook cost. $4n + 13 = 45 \rightarrow 4n = 32 \rightarrow n = \8 per notebook.
- ✓ Q40 Solution: Let m = miles driven: $25 + 0.15m = 67 \rightarrow 0.15m = 42 \rightarrow m = 42 / 0.15 = 280$ miles.



Algebra Verification Step

Substitute $x = 7$ into Q33: $4(7) - 7 = 28 - 7 = 21$.
Both sides match, confirming correctness.



Cumulative 40-Question Performance Tally

Test	Raw Score (out of 8)	Percentage (%)
Test 1 Whole Numbers & Order of Operations		
Test 2 Fractions & Decimals		
Test 3 Percentages & Proportions		
Test 4 Exponents, Radicals & Basic Geometry		
Test 5 Linear Equations & Word Problems		
Total Correct (out of 40)		
Overall Score (%)		



Action Plan & Topics to Re-Practice



Master Score Tally & Performance Analysis (Tests 1 to 5)

Aggregate raw scores across all 5 tests (40 questions total). Calculate subscores, percentage mastery, and diagnose domains needing reinforcement before advancing.

- Test 1: Whole Numbers & Order of Operations (8 Questions)
- Test 2: Fractions & Decimals (8 Questions)
- Test 3: Percentages & Proportions (8 Questions)
- Test 4: Exponents, Radicals & Basic Geometry (8 Questions)
- Test 5: Linear Equations & Word Problems (8 Questions)



Mastery Threshold:

36–40 Correct (90–100%) = Advanced Mastery;
30–35 Correct (75–89%) = Proficient;
Below 30 (<75%) = Targeted Review Recommended.



Calculation Formula

Total Score (%) = (Sum of Test 1 through Test 5 Raw Scores / 40) * 100.
Record strengths and areas for focused re-practice.



Step-by-Step Application

- Step 1: Record Section Raw Scores**
Count the number of correct answers for each individual 8-question exam and record them in the table.
- Step 2: Calculate Overall Percentage**
Sum all correct questions across all five tests (max 40) and multiply by 2.5 to find your total percent score.
- Step 3: Review Error Patterns**
If any topic scored below 6 out of 8, review the step-by-step solution pages and practice parallel problems.



What is the final overall mastery percentage?

90–100%
(36–40 correct)

Proceed to intermediate pre-algebra and advanced problem solving; student exhibits strong foundational fluency.

75–89%
(30–35 correct)

Target the specific sub-tests where 2 or more errors occurred. Review corresponding mind map cheat sheets.

Below 75%
(under 30 correct)

Conduct a comprehensive review of operations, fraction conversions, and linear equations before retesting.