

5.18 Unit Review

Chapter 5: Introduction to Algebra

Name: _____

Date: _____

Class/Period: _____

Problem 5.281 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Evaluate $-14 + 9$.

Problem 5.284 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Evaluate $(-7)(-6)$.

Problem 5.282 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Evaluate $-8 - (-13)$.

Problem 5.285 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Evaluate $-144 \div 12$.

Problem 5.283 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Evaluate $17 - 25 + 6$.

Problem 5.286 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Determine the sign of a product with 11 negative factors.

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Problem 5.287 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Evaluate $-5 + 3(-4)$.

Problem 5.290 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Identify the base and exponent in $(-7)^3$, then read the power aloud.

Problem 5.288 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Evaluate $24 \div (-6) - (-7)$.

Problem 5.291 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Write $4 \cdot 4 \cdot 4 \cdot 4$ as a power.

Problem 5.289 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Explain why $-9 - (-4) = -5$.

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Problem 5.292 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Expand and evaluate 5^3 .

Problem 5.295 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Evaluate $2a^2 - 3a$ for $a = -2$.

Problem 5.293 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Evaluate $\left(\frac{2}{3}\right)^2$.

Problem 5.296 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Evaluate $3m^2 - 2n$ for $m = -3, n = 4$.

Problem 5.294 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Evaluate $9^1 + 9^0$.

Problem 5.297 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Evaluate $36 \div 3^2 + 5$.

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Problem 5.298 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Translate: 7 less than four times x .

Problem 5.301 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Identify the terms, coefficients, bases, and exponents in $4x^2 - 3y + 8$.

Problem 5.299 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Translate: three times the quantity $y + 8$.

Problem 5.302 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Evaluate $3x^2$ and $(3x)^2$ for $x = -2$, then explain why the expressions differ.

Problem 5.300 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Write an expression for a \$20 fee plus \$4 per hour.

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Problem 5.303 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Explain the error in $3x^2 = (3x)^2$, then give a counterexample.

Problem 5.306 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Expand $-3(2y - 5)$.

Problem 5.304 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Simplify $5x^2 + 2x - 3x^2 + 7x$. Then evaluate the result for $x = -2$.

Problem 5.307 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Simplify $4(x - 2) + 3x + 7$.

Problem 5.305 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Expand $6(x + 4)$.

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Problem 5.308 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Simplify $5(2a + 1) - 2(a - 3)$.

Problem 5.310 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Explain why $3x + 3y = 3(x + y)$.

Problem 5.309 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Factor $18x + 30$.

Problem 5.311 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Evaluate $18 - 2(3^2)$.

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Problem 5.312 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

A student writes $(-5)^2 = -25$. Explain the mistake and correct it.

Problem 5.315 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $\frac{x}{-5} = 7$.

Problem 5.313 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Find every integer solution of $2x^2 - 5 = 27$, then check each one.

Problem 5.316 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $\frac{3}{5}x = 21$.

Problem 5.314 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $-8x = 72$.

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Problem 5.317 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $0.7x = 5.6$.

Problem 5.320 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $3x + 8 = 29$.

Problem 5.318 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Write a one-step equation with solution $x = -4$.

Problem 5.321 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $5x - 12 = -2$.

Problem 5.319 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Why treat both sides alike?

Problem 5.322 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $7 - 2x = 19$.

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Problem 5.323 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $\frac{x}{6} + 4 = -1$.

Problem 5.326 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $-9 = 3x + 6$.

Problem 5.324 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $\frac{3}{4}x - 2 = 13$.

Problem 5.327 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Check $x = 5$ in $4x - 7 = 13$.

Problem 5.325 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $1.5x + 0.5 = 8$.

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Problem 5.328 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Explain why $8 - 3x$ has coefficient -3 .

Problem 5.330 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Evaluate $-3^2 + (-3)^2 + 2^4$.

Problem 5.329 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Evaluate $6 + 2^3(5 - 2)$.

Problem 5.331 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

A student writes $2^3 + 2^2 = 2^5$. Explain the error and find the correct sum.

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Problem 5.332 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $3(2^3 + x) = 45$. Check the solution by evaluating the power first.

Problem 5.335 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $\frac{1}{2}(6x + 4) - 5 = 12$.

Problem 5.333 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $2(x + 4) + 3(x - 1) = 25$.

Problem 5.336 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $9(2x + 1) = 63$ by dividing first.

Problem 5.334 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $-4(2x - 3) + 5x = 3$.

Problem 5.337 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

State an efficient first step for $12(x - 4) = 96$.

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Problem 5.338 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $6x + 3 = 4x + 17$.

Problem 5.341 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $4(x + 2) = 3x + 19$.

Problem 5.339 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $9x - 8 = 12x + 7$.

Problem 5.342 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $3(2x - 1) = 2(x + 7)$.

Problem 5.340 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $5 - 3x = 2x + 20$.

Problem 5.343 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $0.8x + 6 = 0.3x + 16$.

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Problem 5.344 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $\frac{1}{2}x - 3 = \frac{1}{4}x + 2$.

Problem 5.347 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Classify $2x + 5 = 7x - 10$.

Problem 5.345 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Solve $2(x + 5) + x = 4(x - 1)$.

Problem 5.348 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Classify $4(x + 3) = 4x + 12$.

Problem 5.346 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Explain why either variable term may be eliminated.

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Problem 5.349 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Classify $5(x - 2) = 5x + 1$.

Problem 5.352 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Find k so $3(x + 2) = 3x + k$ has all solutions.

Problem 5.350 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Classify $3(2x + 4) - 6x = 12$.

Problem 5.353 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Give one value of k for which $4x + k = 4x + 11$ has no solution.

Problem 5.351 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Classify $7x - 9 = 7x - 9$.

Problem 5.354 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Write an equation with no solution.

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Problem 5.355 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Explain what $0 = 0$ means after solving.

Problem 5.357 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Evaluate $2(x + 1)^2 - 3$ for $x = -4$. Show the substituted expression before simplifying.

Problem 5.356 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Evaluate $(0.4)^3$, and write the power as repeated multiplication.

Problem 5.358 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

A square has side length 13 centimeters. Write its area using a power, then find the area with correct units.

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Problem 5.359 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

A cube has edge length 4.5 meters. Write its volume using a power, then find the volume with correct units.

Problem 5.360 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

A triangle's sides are $2x + 1$, $3x - 4$, and $x + 9$. Its perimeter is 60. Find all side lengths and verify that they form a triangle.

Problem 5.361 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

Nora is 4 years older than Eli. Five years from now, the sum of their ages will be 46. Find their present ages.

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Problem 5.362 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

A store has 18 gift cards worth either \$25 or \$40, with total value \$570. Find the number of each card.

Problem 5.363 Directions:

The review moves from integer arithmetic through powers, expression structure, and increasingly complex equations. Show enough work to reveal why each step is valid, and check solutions in the original equation when practical.

A rectangle's length is $2x + 3$ and width is $x - 1$. Another rectangle has length $x + 9$ and width x . Their perimeters are equal. Find x and compare their areas.