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Math Fundamentals 2 (Quickstudy: Academic)

Quick Study ACADEMIC **Math Fundamentals 2** Algebra - exponents, equations, polynomials, factoring & more!

Boost math confidence & test scores!

What is Algebra? Algebra is the branch of mathematics that uses symbols (especially letters) to generate certain arithmetical operations and relationships. **Equations, inequalities, integers, polynomials** and sequences are only some of the parts of algebra.

Arithmetic, which can be thought of as the ABCs of math, deals with computation and calculation that is, non-negative real numbers and the application of basic mathematical operations—addition, subtraction, multiplication, division.

REAL NUMBER SYSTEM

Set of Rational Numbers: Rational Numbers (The ratio of two integers, included):
Fractions: $\frac{1}{2}, \frac{3}{4}, \frac{7}{8}, -23\frac{1}{3}, -\frac{12}{17}$
Decimals:
 Terminating decimals: 2.5, 0.6, -7.3
 Repeating decimals: $0.\overline{7}$, $4.\overline{33}$, $-2.\overline{78}$
Integers (all whole numbers and their opposites):
 ..., -2, -1, 0, 1, 2, 3, ...
Whole Numbers (all the counting numbers plus 0):
 0, 1, 2, 3, 4, ...
Natural Numbers (all the counting numbers):
 1, 2, 3, 4, 5, ...

Real numbers = set of rational numbers + set of irrational numbers

Set of Irrational Numbers: Non-terminating and non-repeating decimals, such as: irrational numbers cannot be written as the ratio of two integers.
 $\pi = 3.141592654...$
 $\sqrt{2} = 1.41421356...$
 56.78432175... (Repeating dots indicate number doesn't terminate)
 All non-perfect square numbers have irrational square roots:
 $\sqrt{3} = 1.7320508...$

BASIC ALGEBRA TERMS

Simplify: Combine any like terms, complete any operations within the problem. **EX:** $3x + 2y + 6x = 9x + 2y$

Evaluate: Solve to evaluate $3x + 2y$ when $x = 4$ and $y = 5$, substitute values for x and y , then solve. **EX:** $3(4) + 2(5) = 12 + 10 = 22$

Simplify Form: All solutions must be in lowest terms. **EX:** $\frac{2}{6} = \frac{1}{3}$
 $3\frac{1}{4} = 4\frac{1}{4}$

One-Step Equations: Solve using one inverse operation to isolate the variable.
 $x + 5 = 10$
 $-5 \quad -5$
 $x = 5$
 $9 = y - 4$
 $+4 \quad +4$
 $13 = y$
 $\frac{4x}{4} = \frac{12}{4}$
 $x = 3$

Two-Step Equations: Solve using two inverse operations to isolate the variable; begin with value farthest from variable (on same side).
 $2x + 10 = 12$
 $-10 \quad -10$
 $2x = -2$
 $\frac{2x}{2} = \frac{-2}{2}$
 $x = -1$
 $16 = 3y + 21$
 $-21 \quad -21$
 $16 - 21 = 3y$
 $-5 = 3y$
 $\frac{-5}{3} = \frac{3y}{3}$
 $x = 1$
 $-1 = y$

Equations with Distributive Property: Distribute the value outside the parentheses to all values inside the parentheses; solve using normal steps.
 $4(5 + 3) = 20$
 $20 + 12 = 30$
 $-12 = -12$
 $20 = 30$
 $-12 = -12$
 $8 = 18$
 $\frac{-8}{8} = \frac{18}{8}$
 $x = \frac{9}{4}$
 $-8x = 4$
 $\frac{-8x}{-8} = \frac{4}{-8}$
 $x = -\frac{1}{2}$

Complex Fractions: Numerator, denominator or both are fractions.
EX: $\frac{2}{\frac{3}{4}}$ means $\frac{2}{3} \times 4 = \frac{8}{3}$
 $\frac{4\frac{1}{2}}{\frac{1}{2}}$ means $4\frac{1}{2} \times \frac{2}{1} = 9$

Expressions: Mathematical phrases that use variables and/or numbers, and operation symbols; expressions do NOT have equal signs; to solve an expression, use substitution and show all steps, each right before the other, simplify.
EX: Evaluate $3x + 20$ when $x = 2$, and $4 + 6$ when $x = -2$, $y = 3$, $z = -9$
 $3(2) + 20 = 6 + 20 = 26$
 $4 + 12 = 16$
 $-9(-2) + 3(3) - 6(-9) = 18 + 9 + 54 = 75$

Equations: Mathematical sentences using equal signs to show both sides of the equation have the same value; to maintain the same value, whatever operation is done on one side must also be done on the other side; to solve, make sure the variable stays on one side of the equal sign and all other numbers are moved to the other side by using inverse operations; simplify and solve.

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Synopsis

This fantastic overview of integers, exponents, equations, polynomials and functions is great for middle and high school students. It will help boost math confidence and test scores.

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Customer Reviews

Another wonderful addition to the fundamental series. If you have used the first in this group you will understand the importance of having the complete set. This has a few tips and reminders that are on the first set but expand formulas and skills for the next level. What a great tool to have on hand for quick study and easy access to formulas and explanations. I love the way the steps are easy to follow, and the examples clearly identify how they should be used. I highly recommend this product.

There are five in this series and each one advances further into elementary and some middle school maths. Very helpful.

great

Extremely useful!

I purchased Math Fundamentals 1-4 for my daughter. Math Fundamentals 2, like the others, is a jam-packed quick reference that she likes to keep in a 3 ring binder in her backpack so it is handy at

school and for homework. I anticipate keeping it for a long time as a study guide for class and standardized tests. I also find it useful for myself when helping her with homework, but because of Math Fundamentals' great examples and thorough, easy to understand instructions, I don't think she will need to come to me for much help at all!

All good thank you

As a homeschooling mom and former teacher, these guides are a great asset to my children/students.

I have a 14yr old that I home school and he is having trouble with Math. These charts are very detailed and self explanatory and I would encourage anyone struggling in Math to try these out. They really do help. The cost is very low and they deliver very very quickly!

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