# Grade 8 » Expressions & Equations

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## Standards in this domain:

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| CCSS.MATH.CONTENT.8.EE.A.1 | CCSS.MATH.CONTENT.8.EE.A.2 | CCSS.MATH.CONTENT.8.EE.A.3 |
| CCSS.MATH.CONTENT.8.EE.A.4 | CCSS.MATH.CONTENT.8.EE.B.5 | CCSS.MATH.CONTENT.8.EE.B.6 |
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### Expressions and Equations Work with radicals and integer exponents.

CCSS.MATH.CONTENT.8.EE.A.1 (HTTP://WWW.CORESTANDARDS.ORG/MATH/CONTENT/8/EE/A/1/)

Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.

CCSS.MATH.CONTENT.8.EE.A.2 (HTTP://WWW.CORESTANDARDS.ORG/MATH/CONTENT/8/EE/A/2/)

Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where $p$ is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.

CCSS.MATH.CONTENT.8.EE.A.3 (HTTP://WWW.CORESTANDARDS.ORG/MATH/CONTENT/8/EE/A/3/)

Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as 3 times $10^8$ and the population of the world as 7 times $10^9$, and determine that the world population is more than 20 times larger.*

CCSS.MATH.CONTENT.8.EE.A.4 (HTTP://WWW.CORESTANDARDS.ORG/MATH/CONTENT/8/EE/A/4/)

Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology

### Understand the connections between proportional relationships, lines, and linear equations.

CCSS.MATH.CONTENT.8.EE.B.5 (HTTP://WWW.CORESTANDARDS.ORG/MATH/CONTENT/8/EE/B/5/)

Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

CCSS.MATH.CONTENT.8.EE.B.6 (HTTP://WWW.CORESTANDARDS.ORG/MATH/CONTENT/8/EE/B/6/)

Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at $b$.

**Analyze and solve linear equations and pairs of simultaneous linear equations.**

CCSS.MATH.CONTENT.8.EE.C.7 (HTTP://WWW.CORESTANDARDS.ORG/MATH/CONTENT/8/EE/C/7/)

Solve linear equations in one variable.

CCSS.MATH.CONTENT.8.EE.C.7.A (HTTP://WWW.CORESTANDARDS.ORG/MATH/CONTENT/8/EE/C/7/A/)

Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where $a$ and $b$ are different numbers).

CCSS.MATH.CONTENT.8.EE.C.7.B (HTTP://WWW.CORESTANDARDS.ORG/MATH/CONTENT/8/EE/C/7/B/)

Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

CCSS.MATH.CONTENT.8.EE.C.8 (HTTP://WWW.CORESTANDARDS.ORG/MATH/CONTENT/8/EE/C/8/)

Analyze and solve pairs of simultaneous linear equations.

CCSS.MATH.CONTENT.8.EE.C.8.A (HTTP://WWW.CORESTANDARDS.ORG/MATH/CONTENT/8/EE/C/8/A/)

Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

CCSS.MATH.CONTENT.8.EE.C.8.B (HTTP://WWW.CORESTANDARDS.ORG/MATH/CONTENT/8/EE/C/8/B/)

Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6.*

CCSS.MATH.CONTENT.8.EE.C.8.C (HTTP://WWW.CORESTANDARDS.ORG/MATH/CONTENT/8/EE/C/8/C/)

Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*