MATHEMATICS PARENT GUIDE

ALGEBRA 1

THE FOLLOWING ARE SPECIFIC SKILLS STUDENTS NEED TO ACQUIRE BY THE END OF ALGEBRA 1:

NUMBER SENSE

▶ Students in Algebra 1 understand irrational numbers. They compute fluently and simplify problems with square roots. They solve for missing sides of a right triangle using the Pythagorean Theorem.

Examples:　$\sqrt{2} + 3\sqrt{2}$

What is the measure of the hypotenuse of a right triangle whose legs measure 3 cm and 5 cm?

PROPORTIONAL RELATIONSHIPS

▶ Students write and graph equations of lines. They identify and analyze the slope of a line.

Examples:　Write an equation for a line going through (3, 10) and (–1, –6).

What is the slope of the line whose equation is $2x - 3y = 7$?

ALGEBRA

▶ Students simplify and evaluate algebraic expressions. They solve equations, systems of equations, inequalities, and proportions. They learn to factor and solve equations by factoring.

Example:　Multiply $2x^2\, y(3x^3 - 4xy + y^4)$
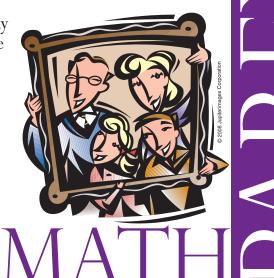Solve $x^2 + 5x - 14 = 0$

PROBABILITY AND STATISTICS

▶ Students collect, record, organize and display data and estimate equations that describe the data.

Example:　Estimate the equation of the line that goes through (0, 2), (1, 6), (2, 8), (3, 11).

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MATH PARENT GUIDE

Number Sense

$\sqrt{2} + 3\sqrt{2} =$

$1\sqrt{2} + 3\sqrt{2} = 4\sqrt{2}$

What is the measure of the hypotenuse of a right triangle whose legs measure 3 cm and 5 cm?

$$3^2 + 5^2 = h^2$$

$$9 + 25 = 34 = h^2$$

$$h = \sqrt{34}$$

Proportional Relationships

Write an equation for a line going through (3, 10) and (−1, −6).

$$m = \frac{-6 - 10}{-1 - 3} = \frac{-16}{-4} = 4$$

$$y - 10 = 4(x - 3)$$

$$y = 4x - 12 + 10$$

$$y = 4x - 2$$

or

$$4x - y = 2$$

What is the slope of the line whose equation is $2x - 3y = 7$?

$$2x - 3y = 7$$

$$-3y = -2x + 7$$

$$y = \frac{-2}{-3}x + \frac{7}{-3}$$

$$m = \frac{2}{3}$$

Algebra

Multiply $2x^2 y(3x^3 - 4xy + y^4)$

$2x^2 y(3x^3 - 4xy + y^4)$

$6x^5 y - 8x^3 y^2 + 2x^2 y^5$

Solve $x^2 + 5x - 14 = 0$

$(x + 7)(x - 2) = 0$

$x = -7$ or 2

Probability and Statistics

Example: Estimate the equation of the line that goes through (0, 2), (1, 6), (2, 8), (3, 11).

x	y
0	2
1	6
2	8
3	11

$$m = \frac{8 - 2}{2 - 0} = \frac{6}{2} = 3$$

$$y - 2 = 3x - 0$$

$$y = 3x + 2$$