

Math Word List

English–Japanese Vocabulary for New York Grades 9–12

Purpose. This list supports Japanese-speaking students and families preparing for high school math in Grades 9–12. It covers algebra, functions, geometry, statistics and probability, and mathematical modeling.

How to use it. Begin with the **Core** terms for solving equations, interpreting functions, and explaining reasoning, then add the Useful terms as students prove results, analyze models, and work with more advanced representations.

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Term count by area

Area	Terms
Algebra	24
Functions	26
Geometry	24
Statistics and Probability	22
Modeling and Mathematical Practices	10
Total	106

Algebra

English	日本語	よみ	Grade	Priority	Student note / use
rational expression	有理式	ゆうりしき	9-12	Core	quotient of two polynomial expressions with a nonzero denominator
degree of a polynomial	多項式の次数	たこうしきのじすう	9-12	Core	greatest exponent sum in any term of a polynomial
leading coefficient	最高次の係数	さいこうじのけいすう	9-12	Core	coefficient of the term with the greatest degree in a polynomial
constant term	定数項	ていすうこう	9-12	Core	term in a polynomial that has no variable factor
parameter	媒介変数	ばいかいへんすう	9-12	Core	symbol treated as fixed within a model but allowed to vary across situations
polynomial	多項式	たこうしき	9-12	Core	expression with one or more terms and whole-number exponents
monomial	単項式	たんこうしき	9-12	Useful	polynomial with one term
binomial	二項式	にこうしき	9-12	Useful	polynomial with two terms
quadratic expression	二次式	にじしき	9-12	Core	expression with highest exponent of two
factor	因数	いんすう	9-12	Core	expression or number multiplied to make a product
expand	展開する	てんかいする	9-12	Core	rewrite a product as a sum or difference
factor completely	完全に因数分解する	かんぜんにいんすうぶんかいする	9-12	Core	rewrite an expression as a full product of factors
identity	恒等式	こうとうしき	9-12	Core	equation true for all values in its domain
inequality	不等式	ふとうしき	9-12	Core	comparison showing values are not equal
extraneous solution	余分な解	よぶんなかい	9-12	Core	apparent solution obtained in solving that does not satisfy the original equation
solve	解く	とく	9-12	Core	find a value or values that satisfy a condition
quadratic inequality	二次不等式	にじふとうしき	9-12	Core	inequality involving a quadratic expression and solved over intervals
quadratic equation	二次方程式	にじほうていしき	9-12	Core	equation involving a squared variable term
system of equations	連立方程式	れんりつほうていしき	9-12	Core	set of equations solved together
substitution	代入法	だいにゅうほう	9-12	Core	method replacing one variable with an equivalent expression
elimination	加減法	かげんほう	9-12	Core	method combining equations to remove a variable
quadratic formula	解の公式	かいのこうしき	9-12	Useful	formula for solving quadratic equations
complete the square	平方完成する	へいほうかんせいする	9-12	Useful	rewrite a quadratic to form a perfect square trinomial

discriminant	判別式	はんべつしき	9-12	Useful	part of the quadratic formula showing number of solutions
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Functions

English	日本語	よみ	Grade	Priority	Student note / use
inverse function	逆関数	ぎゃくかんすう	9-12	Core	function that reverses the effect of another function on its domain
composition of functions	関数の合成	かんすうのごうせい	9-12	Core	operation of applying one function to the output of another
piecewise function	区分的に定義された関数	くぶんてきにていぎされたかんすう	9-12	Core	function defined by different rules on different intervals or conditions
domain	定義域	ていぎいき	9-12	Core	set of allowable input values
end behavior	端の振る舞い	はしのふるまい	9-12	Core	way a function behaves as the input grows very large positively or negatively
function notation	関数記号	かんすうきごう	9-12	Core	way to name a function such as f of x
independent variable	独立変数	どくりつへんすう	9-12	Core	input variable that is chosen or controlled
dependent variable	従属変数	じゅうぞくへんすう	9-12	Core	output variable that depends on the input
sequence formula	数列の一般項	すうれつのいっばんこう	9-12	Core	explicit rule that gives any term of a sequence from its position
parent function	基本関数	きほんかんすう	9-12	Core	simplest function in a family from which related graphs can be transformed
sequence	数列	すうれつ	9-12	Useful	ordered list that follows a rule
recursive rule	漸化式	ぜんかしき	9-12	Useful	rule defining each term from earlier terms
regression equation	回帰方程式	かいぎほうていしき	9-12	Core	equation modeling the relationship between variables based on data
y-intercept	y 切片	わいせつぺん	9-12	Core	point where a graph crosses the y-axis
x-intercept	x 切片	えつくせつぺん	9-12	Useful	point where a graph crosses the x-axis
rate of change	変化の割合	へんかのわりあい	9-12	Core	amount one quantity changes compared with another
linear function	一次関数	いちじかんすう	9-12	Core	function with a constant rate of change
exponential function	指数関数	しすうかんすう	9-12	Core	function with repeated multiplication by a constant factor
quadratic function	二次関数	にじかんすう	9-12	Core	function modeled by a parabola
growth factor	増加率の因子	ぞうかりつのいんし	9-12	Useful	multiplier describing repeated growth

decay factor	減少率の因子	げんしょうりつのいんし	9-12	Useful	multiplier describing repeated decrease
vertex	頂点	ちょうてん	9-12	Core	maximum or minimum point of a parabola
axis of symmetry	対称軸	たいしょうじく	9-12	Useful	line dividing a parabola into mirror images
maximum	最大値	さいだいち	9-12	Core	greatest value in a context or on a graph
minimum	最小値	さいしょうち	9-12	Core	least value in a context or on a graph
average rate of change	平均変化率	へいきんへんかりつ	9-12	Useful	change in output over a given interval of input

Geometry

English	日本語	よみ	Grade	Priority	Student note / use
rigid motion	合同変換	ごうどうへんかん	9-12	Core	transformation preserving distance and angle measure
similarity transformation	相似変換	そうじへんかん	9-12	Core	transformation preserving shape through rigid motions and dilation
proof by contradiction	背理法	はいりほう	9-12	Core	proof method assuming the opposite of a claim and reaching an impossibility
triangle similarity	三角形の相似	さんかくけいのそうじ	9-12	Core	relationship in which corresponding angles match and corresponding side lengths are proportional
circle theorem	円の定理	えんのでいり	9-12	Core	proven relationship involving angles chords tangents or arcs in a circle
inscribed angle	円周角	えんしゅうかく	9-12	Core	angle formed by two chords with vertex on a circle
arc measure	弧の大きさ	このおおきさ	9-12	Core	degree measure associated with a portion of a circle
sector area	扇形の面積	おうぎがたのめんせき	9-12	Core	area of the region bounded by two radii and an arc
proof	証明	しょうめい	9-12	Core	logical argument showing a statement is true
theorem	定理	ていり	9-12	Core	statement proven on the basis of definitions and prior results
corresponding parts	対応する部分	たいおうするぶぶん	9-12	Useful	matching sides or angles in related figures
triangle congruence	三角形の合同	さんかくけいのごうどう	9-12	Useful	condition showing two triangles are congruent
unit circle	単位円	たんいえん	9-12	Core	circle of radius one used to define trigonometric values for all angle measures

distance formula	距離の公式	きよりのこうしき	9-12	Useful	formula for finding distance between two points
midpoint	中点	ちゅうてん	9-12	Core	point halfway between endpoints of a segment
slope formula	傾きの公式	かたむきのこうしき	9-12	Useful	formula for finding slope from two points
radian measure	ラジアン	らじあん	9-12	Core	angle measure based on arc length relative to radius
trigonometric model	三角関数モデル	さんかくかんすうもでる	9-12	Core	function model using periodic behavior such as sine or cosine to represent real situations
trigonometric ratio	三角比	さんかくひ	9-12	Core	ratio of side lengths in a right triangle
sine	正弦	せいげん	9-12	Useful	trigonometric ratio opposite over hypotenuse
cosine	余弦	よげん	9-12	Useful	trigonometric ratio adjacent over hypotenuse
tangent	正接	せいせつ	9-12	Useful	trigonometric ratio opposite over adjacent
angle of elevation	仰角	ぎょうかく	9-12	Useful	angle measured upward from a horizontal line
angle of depression	俯角	ふかく	9-12	Useful	angle measured downward from a horizontal line

Statistics and Probability

English	日本語	よみ	Grade	Priority	Student note / use
residual plot	残差プロット	ざんさぷろっと	9-12	Core	graph of residuals used to evaluate how well a model fits data
normal distribution	正規分布	せいぎぶんぷ	9-12	Core	symmetric bell-shaped distribution used in many statistical models
margin of error	誤差の範囲	ごさのはんい	9-12	Core	amount by which a sample estimate is expected to differ from a population value
sampling distribution	標本分布	ひょうほんぶんぷ	9-12	Core	distribution of a statistic across many possible samples from the same population
standard deviation	標準偏差	ひょうじゅんへんさ	9-12	Useful	measure of typical distance from the mean
least-squares regression	最小二乗回帰	さいしょうにじょうかいき	9-12	Core	method for finding the line that minimizes squared residuals
correlation	相関	そうかん	9-12	Core	association between two variables
positive correlation	正の相関	せいのそうかん	9-12	Useful	relationship in which variables increase together
negative correlation	負の相関	ふのそうかん	9-12	Useful	relationship in which one variable increases as the other decreases

line of best fit	近似直線	きんじちよくせん	9-12	Useful	line modeling the trend of a scatter plot
residual	残差	ざんさ	9-12	Useful	difference between an observed value and a predicted value
causation	因果関係	いんがかんけい	9-12	Core	relationship in which change in one variable produces change in another rather than merely accompanying it
expected value	期待値	きたいち	9-12	Core	long-run average outcome of a random process weighted by probabilities
random variable	確率変数	かくりつへんすう	9-12	Core	variable whose value depends on outcomes of a random process
binomial distribution	二項分布	にこうぶんぷ	9-12	Core	probability distribution for a fixed number of independent success-failure trials
conditional independence	条件付き独立	じょうけんつきどくりつ	9-12	Useful	relationship in which events become independent once another event is known
independent events	独立な事象	どくりつなじしょう	9-12	Useful	events whose probabilities do not affect each other
conditional probability	条件付き確率	じょうけんつきかくりつ	9-12	Useful	probability of an event given that another has occurred
inference from sample	標本からの推測	ひょうほんからのすいそく	9-12	Core	using data from a sample to estimate or test claims about a population
two-way table	二元表	にげんひょう	9-12	Core	table organizing counts for two categories
inference	推測	すいそく	9-12	Useful	conclusion drawn from data about a population
simulation	シミュレーション	しみゅれーしょん	9-12	Useful	modeling chance with repeated trials

Modeling and Mathematical Practices

English	日本語	よみ	Grade	Priority	Student note / use
optimization model	最適化モデル	さいてきかもでる	9-12	Core	mathematical model used to find the best value under stated conditions or constraints
validate	妥当性を検証する	だとうせいをけんしょうする	9-12	Core	check whether a model or conclusion fits the situation data and assumptions
critique reasoning	推論を吟味する	すいるんをぎんみする	9-12	Core	analyze whether an argument method or conclusion is logically sound and sufficiently supported

sensitivity analysis	感度分析	かんどぶんせき	9-12	Core	study of how changes in inputs or assumptions affect the output of a model
approximate	近似する	きんじする	9-12	Core	use a close value rather than an exact one
constraint	制約	せいやく	9-12	Useful	limit or condition affecting a model or solution
assumption	仮定	かてい	9-12	Useful	condition accepted as true when building a model
attend to precision	精密さに注意する	せいみつさにちゅういする	9-12	Core	use definitions notation units and calculation carefully so arguments and results remain mathematically exact and clear
units	単位	たんい	9-12	Core	measurement labels attached to quantities
contextual constraint	文脈上の制約	ぶんみやくじょうのせいやく	9-12	Core	real-world limit that restricts possible values interpretations or solutions in a model

Algebra (sorted)

English	日本語	よみ	Grade	Priority	Student note / use
binomial	二項式	にこうしき	9-12	Useful	polynomial with two terms
constant term	定数項	ていすうこう	9-12	Core	term in a polynomial that has no variable factor
degree of a polynomial	多項式の次数	たこうしきのじすう	9-12	Core	greatest exponent sum in any term of a polynomial
expand	展開する	てんかいする	9-12	Core	rewrite a product as a sum or difference
factor	因数	いんすう	9-12	Core	expression or number multiplied to make a product
factor completely	完全に因数分解する	かんぜんにいんすうぶんかいする	9-12	Core	rewrite an expression as a full product of factors
leading coefficient	最高次の係数	さいこうじのけいすう	9-12	Core	coefficient of the term with the greatest degree in a polynomial
monomial	単項式	たんこうしき	9-12	Useful	polynomial with one term
parameter	媒介変数	ばいまいへんすう	9-12	Core	symbol treated as fixed within a model but allowed to vary across situations
polynomial	多項式	たこうしき	9-12	Core	expression with one or more terms and whole-number exponents
quadratic expression	二次式	にじしき	9-12	Core	expression with highest exponent of two
rational expression	有理式	ゆうりしき	9-12	Core	quotient of two polynomial expressions with a nonzero denominator
complete the square	平方完成する	へいほうかんせいする	9-12	Useful	rewrite a quadratic to form a perfect square trinomial
discriminant	判別式	はんべつしき	9-12	Useful	part of the quadratic formula showing number of solutions
elimination	加減法	かげんほう	9-12	Core	method combining equations to remove a variable
extraneous solution	余分な解	よぶんなかい	9-12	Core	apparent solution obtained in solving that does not satisfy the original equation
identity	恒等式	こうとうしき	9-12	Core	equation true for all values in its domain
inequality	不等式	ふとうしき	9-12	Core	comparison showing values are not equal
quadratic equation	二次方程式	にじほうていしき	9-12	Core	equation involving a squared variable term
quadratic formula	解の公式	かいのこうしき	9-12	Useful	formula for solving quadratic equations
quadratic inequality	二次不等式	にじふとうしき	9-12	Core	inequality involving a quadratic expression and solved over intervals
solve	解く	とく	9-12	Core	find a value or values that satisfy a condition
substitution	代入法	だいにゅうほう	9-12	Core	method replacing one variable with an equivalent expression

system of equations	連立方程式	れんりつほうていしき	9-12	Core	set of equations solved together
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Functions (sorted)

English	日本語	よみ	Grade	Priority	Student note / use
composition of functions	関数の合成	かんすうのごうせい	9-12	Core	operation of applying one function to the output of another
dependent variable	従属変数	じゅうぞくへんすう	9-12	Core	output variable that depends on the input
domain	定義域	ていぎいき	9-12	Core	set of allowable input values
end behavior	端の振る舞い	はしのふるまい	9-12	Core	way a function behaves as the input grows very large positively or negatively
function notation	関数記号	かんすうきごう	9-12	Core	way to name a function such as f of x
independent variable	独立変数	どくりつへんすう	9-12	Core	input variable that is chosen or controlled
inverse function	逆関数	ぎやくかんすう	9-12	Core	function that reverses the effect of another function on its domain
parent function	基本関数	きほんかんすう	9-12	Core	simplest function in a family from which related graphs can be transformed
piecewise function	区分的に定義された関数	くぶんてきにていぎされたかんすう	9-12	Core	function defined by different rules on different intervals or conditions
recursive rule	漸化式	ぜんかしき	9-12	Useful	rule defining each term from earlier terms
sequence	数列	すうれつ	9-12	Useful	ordered list that follows a rule
sequence formula	数列の一般項	すうれつのいっばんこう	9-12	Core	explicit rule that gives any term of a sequence from its position
average rate of change	平均変化率	へいきんへんかりつ	9-12	Useful	change in output over a given interval of input
axis of symmetry	対称軸	たいしょうじく	9-12	Useful	line dividing a parabola into mirror images
decay factor	減少率の因子	げんしょうりつのいんし	9-12	Useful	multiplier describing repeated decrease
exponential function	指数関数	しすうかんすう	9-12	Core	function with repeated multiplication by a constant factor
growth factor	増加率の因子	ぞうかりつのいんし	9-12	Useful	multiplier describing repeated growth
linear function	一次関数	いちじかんすう	9-12	Core	function with a constant rate of change
maximum	最大値	さいだいち	9-12	Core	greatest value in a context or on a graph
minimum	最小値	さいしょうち	9-12	Core	least value in a context or on a graph
quadratic function	二次関数	にじかんすう	9-12	Core	function modeled by a parabola

rate of change	変化の割合	へんかのわりあい	9-12	Core	amount one quantity changes compared with another
regression equation	回帰方程式	かいぎほうていしき	9-12	Core	equation modeling the relationship between variables based on data
vertex	頂点	ちょうてん	9-12	Core	maximum or minimum point of a parabola
x-intercept	x 切片	えっくすせっぺん	9-12	Useful	point where a graph crosses the x-axis
y-intercept	y 切片	わいせっぺん	9-12	Core	point where a graph crosses the y-axis

Geometry (sorted)

English	日本語	よみ	Grade	Priority	Student note / use
arc measure	弧の大きさ	このおおきさ	9-12	Core	degree measure associated with a portion of a circle
circle theorem	円の定理	えんのでいり	9-12	Core	proven relationship involving angles chords tangents or arcs in a circle
corresponding parts	対応する部分	たいおうするぶぶん	9-12	Useful	matching sides or angles in related figures
inscribed angle	円周角	えんしゅうかく	9-12	Core	angle formed by two chords with vertex on a circle
proof	証明	しょうめい	9-12	Core	logical argument showing a statement is true
proof by contradiction	背理法	はいりほう	9-12	Core	proof method assuming the opposite of a claim and reaching an impossibility
rigid motion	合同変換	ごうどうへんかん	9-12	Core	transformation preserving distance and angle measure
sector area	扇形の面積	おうぎがたのめんせき	9-12	Core	area of the region bounded by two radii and an arc
similarity transformation	相似変換	そうじへんかん	9-12	Core	transformation preserving shape through rigid motions and dilation
theorem	定理	ていり	9-12	Core	statement proven on the basis of definitions and prior results
triangle congruence	三角形の合同	さんかくけいのごうどう	9-12	Useful	condition showing two triangles are congruent
triangle similarity	三角形の相似	さんかくけいのそうじ	9-12	Core	relationship in which corresponding angles match and corresponding side lengths are proportional
angle of depression	俯角	ふかく	9-12	Useful	angle measured downward from a horizontal line
angle of elevation	仰角	ぎょうかく	9-12	Useful	angle measured upward from a horizontal line

cosine	余弦	よげん	9-12	Useful	trigonometric ratio adjacent over hypotenuse
distance formula	距離の公式	きよりのこうしき	9-12	Useful	formula for finding distance between two points
midpoint	中点	ちゅうてん	9-12	Core	point halfway between endpoints of a segment
radian measure	ラジアン	らじあん	9-12	Core	angle measure based on arc length relative to radius
sine	正弦	せいげん	9-12	Useful	trigonometric ratio opposite over hypotenuse
slope formula	傾きの公式	かたむきのこうしき	9-12	Useful	formula for finding slope from two points
tangent	正接	せいせつ	9-12	Useful	trigonometric ratio opposite over adjacent
trigonometric model	三角関数モデル	さんかくかんすうもでる	9-12	Core	function model using periodic behavior such as sine or cosine to represent real situations
trigonometric ratio	三角比	さんかくひ	9-12	Core	ratio of side lengths in a right triangle
unit circle	単位円	たんいえん	9-12	Core	circle of radius one used to define trigonometric values for all angle measures

Modeling and Mathematical Practices (sorted)

English	日本語	よみ	Grade	Priority	Student note / use
approximate	近似する	きんじする	9-12	Core	use a close value rather than an exact one
assumption	仮定	かてい	9-12	Useful	condition accepted as true when building a model
attend to precision	精密さに注意する	せいみつさにちゅういする	9-12	Core	use definitions notation units and calculation carefully so arguments and results remain mathematically exact and clear
constraint	制約	せいやく	9-12	Useful	limit or condition affecting a model or solution
contextual constraint	文脈上の制約	ぶんみやくじょうのせいやく	9-12	Core	real-world limit that restricts possible values interpretations or solutions in a model
critique reasoning	推論を吟味する	すいるんをぎんみする	9-12	Core	analyze whether an argument method or conclusion is logically sound and sufficiently supported
optimization model	最適化モデル	さいてきかもでる	9-12	Core	mathematical model used to find the best value under stated conditions or constraints

sensitivity analysis	感度分析	かんどぶんせき	9-12	Core	study of how changes in inputs or assumptions affect the output of a model
units	単位	たんい	9-12	Core	measurement labels attached to quantities
validate	妥当性を検証する	だとうせいをけんしょうする	9-12	Core	check whether a model or conclusion fits the situation data and assumptions

Statistics and Probability (sorted)

English	日本語	よみ	Grade	Priority	Student note / use
causation	因果関係	いんがかんけい	9-12	Core	relationship in which change in one variable produces change in another rather than merely accompanying it
correlation	相関	そうかん	9-12	Core	association between two variables
least-squares regression	最小二乗回帰	さいしょうにじょうかいぎ	9-12	Core	method for finding the line that minimizes squared residuals
line of best fit	近似直線	きんじちよくせん	9-12	Useful	line modeling the trend of a scatter plot
margin of error	誤差の範囲	ごさのはんい	9-12	Core	amount by which a sample estimate is expected to differ from a population value
negative correlation	負の相関	ふのそうかん	9-12	Useful	relationship in which one variable increases as the other decreases
normal distribution	正規分布	せいぎぶんぷ	9-12	Core	symmetric bell-shaped distribution used in many statistical models
positive correlation	正の相関	せいのそうかん	9-12	Useful	relationship in which variables increase together
residual	残差	ざんさ	9-12	Useful	difference between an observed value and a predicted value
residual plot	残差プロット	ざんさぷろっと	9-12	Core	graph of residuals used to evaluate how well a model fits data
sampling distribution	標本分布	ひょうほんぶんぷ	9-12	Core	distribution of a statistic across many possible samples from the same population
standard deviation	標準偏差	ひょうじゅんへんさ	9-12	Useful	measure of typical distance from the mean
binomial distribution	二項分布	にこうぶんぷ	9-12	Core	probability distribution for a fixed number of independent success-failure trials
conditional independence	条件付き独立	じょうけんつきどくりつ	9-12	Useful	relationship in which events become independent once another event is known

conditional probability	条件付き確率	じょうけんつきかくりつ	9-12	Useful	probability of an event given that another has occurred
expected value	期待値	ぎたいち	9-12	Core	long-run average outcome of a random process weighted by probabilities
independent events	独立な事象	どくりつなじしょう	9-12	Useful	events whose probabilities do not affect each other
inference	推測	すいそく	9-12	Useful	conclusion drawn from data about a population
inference from sample	標本からの推測	ひょうほんからのすいそく	9-12	Core	using data from a sample to estimate or test claims about a population
random variable	確率変数	かくりつへんすう	9-12	Core	variable whose value depends on outcomes of a random process
simulation	シミュレーション	しみゅれーしょん	9-12	Useful	modeling chance with repeated trials
two-way table	二元表	にげんひょう	9-12	Core	table organizing counts for two categories