

## Mathematics Resource Guide for Secondary Educators School Year 2020-2021

### Florida's B.E.S.T. Standards in Mathematics

New Mathematics Standards for Florida to be implemented in 2022-2023 School Year

For entire document see:

<http://www.fldoe.org/core/fileparse.php/18736/urlt/StandardsMathematics.pdf>

B.E.S.T. Standards Focus Areas by Grade 7-12 (These skills will be taught in Florida schools starting in 2022-2023 school year.)

- Grade 7 Focus

In grade 7, instructional time will emphasize five areas: (1) recognizing that fractions, decimals and percentages are different representations of rational numbers and performing all four operations with rational numbers with procedural fluency; (2) creating equivalent expressions and solving equations and inequalities; (3) developing understanding of and applying proportional relationships in two variables; (4) extending analysis of two- and three-dimensional figures to include circles and cylinders and (5) representing and comparing categorical and numerical data and developing understanding of probability.

- Grade 8 Focus

In grade 8, instructional time will emphasize six areas: (1) representing numbers in scientific notation and extending the set of numbers to the system of real numbers, which includes irrational numbers; (2) generate equivalent numeric and algebraic expressions including using the Laws of Exponents; (3) creating and reasoning about linear relationships including modeling an association in bivariate data with a linear equation; (4) solving linear equations, inequalities and systems of linear equations; (5) developing an understanding of the concept of a function and (6) analyzing two-dimensional figures, particularly triangles, using distance, angle and applying the Pythagorean Theorem.

- 9-12 Course Overview

This section consists of courses developed from Florida's B.E.S.T. Standards for Mathematics 9-12. In the state of Florida, high school students are expected to earn credits in Algebra 1, Geometry and two additional mathematics courses for a high school diploma per Section 1003.4282, Florida Statutes (F.S.). With the development of Florida's B.E.S.T. Standards for Mathematics 9-12, the courses Algebra 1 and Geometry were developed based on the importance of high school graduation requirements. Since these courses were developed from a greater set

of 9-12 standards and benchmarks, benchmark numbering in these courses may not be consistent or in numerical order as is the case in Kindergarten to grade eight.

- Algebra 1 Focus

In Algebra 1, instructional time will emphasize five areas: (1) performing operations with polynomials and radicals, and extending the Laws of Exponents to include rational exponents; (2) extending understanding of functions to linear, quadratic and exponential functions and using them to model and analyze real-world relationships; (3) solving quadratic equations in one variable and systems of linear equations and inequalities in two variables; (4) building functions, identifying their key features and representing them in various ways and (5) representing and interpreting categorical and numerical data with one and two variables.

- Geometry Focus

In Geometry, instructional time will emphasize five areas: (1) proving and applying relationships and theorems involving two-dimensional figures using Euclidean geometry and coordinate geometry; (2) establishing congruence and similarity using criteria from Euclidean geometry and using rigid transformations; (3) extending knowledge of geometric measurement to two-dimensional figures and three-dimensional figures; (4) creating and applying equations of circles in the coordinate plane and (5) developing an understanding of right triangle trigonometry.

## Algebra

### CPALMS Curriculum Plan

<https://www.cpalms.org/Public/PreviewResourceUrl/Preview/185889>

### Operations with Polynomials

[https://www.djuhsd.org/cms/lib/CA02208718/Centricity/Domain/461/10.1\\_A%20Classifying%20Polynomials\\_E\\_Preferred%20-%20Copy.pdf](https://www.djuhsd.org/cms/lib/CA02208718/Centricity/Domain/461/10.1_A%20Classifying%20Polynomials_E_Preferred%20-%20Copy.pdf) (Classifying types of polynomials)

[http://testprepshsat.com/wp-content/uploads/2017/02/L2\\_Binomials\\_Polynomials.pdf](http://testprepshsat.com/wp-content/uploads/2017/02/L2_Binomials_Polynomials.pdf) (Classifying types of polynomials)

<https://cdn.effortlessmath.com/wp-content/uploads/2019/09/Writing-Polynomials-in-Standard-Form.pdf> (Writing in standard form)

[https://www.google.com/search?sa=X&rlz=1C1GCEA\\_enUS845US845&sxsrf=ALeKk01g0\\_3hyT-kyj7LSgm2c2QfFRAz2g:1587737189196&q=vocabulary+with+polynomials+works](https://www.google.com/search?sa=X&rlz=1C1GCEA_enUS845US845&sxsrf=ALeKk01g0_3hyT-kyj7LSgm2c2QfFRAz2g:1587737189196&q=vocabulary+with+polynomials+works) (Vocabulary)

<http://www.mathguide.com/lessons/Polynomials.html#add>

<https://www.ipracticemath.com/learn/algebra/poly-operations>

[https://mcckc.edu/tutoring/docs/br/math/functions/Polynomial\\_Operations.pdf](https://mcckc.edu/tutoring/docs/br/math/functions/Polynomial_Operations.pdf)

[https://mcckc.edu/tutoring/docs/br/math/functions/Polynomial\\_Operations.pdf](https://mcckc.edu/tutoring/docs/br/math/functions/Polynomial_Operations.pdf) (worksheet images)

<https://www.mathworksheets4kids.com/recognizing-polynomials.php>

## Videos

<https://www.khanacademy.org/math/algebra-home/alg-polynomials/alg-introduction-to-polynomials/v/simply-a-polynomial>

<https://www.khanacademy.org/math/algebra-home/alg-polynomials/alg-introduction-to-polynomials/v/polynomials-intro>

<https://www.khanacademy.org/math/algebra-home/alg-polynomials/alg-introduction-to-polynomials/e/polynomials-intro>

<https://www.khanacademy.org/math/algebra-home/alg-polynomials/alg-introduction-to-polynomials/v/evaluating-a-polynomial-at-a-given-value>

<https://www.khanacademy.org/math/algebra-home/alg-polynomials/alg-introduction-to-polynomials/v/simply-a-polynomial>

<https://www.youtube.com/watch?v=wgyXLRP7hxc>

<https://www.youtube.com/watch?v=1vXjTNGuOE>

## Laws of Exponents

<https://www.mathsisfun.com/algebra/exponent-laws.html>

<http://www.math.com/school/subject2/lessons/S2U2L2DP.html>

[https://mcckc.edu/tutoring/docs/bt/exp\\_rad\\_log/Exponent\\_Rules\\_&\\_Practice.pdf](https://mcckc.edu/tutoring/docs/bt/exp_rad_log/Exponent_Rules_&_Practice.pdf)

<https://www.purplemath.com/modules/simpexpo.htm>

<http://hawaii.hawaii.edu/math/Courses/Math110/Notes/Math110cPs3.pdf>

<https://www.purplemath.com/modules/exponent5.htm>

<https://mathbitsnotebook.com/Algebra1/Exponents/EXFractional.html>

## Videos

<https://www.youtube.com/watch?v=g4bKGsC2IoY>

<https://www.youtube.com/watch?v=wsaH5CARIHl>

[https://www.youtube.com/watch?v=Hn\\_rbQ2zSAU](https://www.youtube.com/watch?v=Hn_rbQ2zSAU)

<https://www.khanacademy.org/math/algebra2/x2ec2f6f830c9fb89:exp/x2ec2f6f830c9fb89:rational-exp/v/basic-fractional-exponents>

<https://www.khanacademy.org/math/algebra2/x2ec2f6f830c9fb89:exp/x2ec2f6f830c9fb89:rational-exp/e/understanding-fractional-exponents>

<https://www.khanacademy.org/math/algebra2/x2ec2f6f830c9fb89:exp/x2ec2f6f830c9fb89:rational-exp/v/rewriting-roots-as-rational-exponents>

[https://www.khanacademy.org/math/algebra2/x2ec2f6f830c9fb89:exp/x2ec2f6f830c9fb89:rational-exp/e/exponents\\_3](https://www.khanacademy.org/math/algebra2/x2ec2f6f830c9fb89:exp/x2ec2f6f830c9fb89:rational-exp/e/exponents_3)

<https://www.khanacademy.org/math/algebra2/x2ec2f6f830c9fb89:exp/x2ec2f6f830c9fb89:rational-exp/e/manipulating-fractional-exponents>

<https://www.khanacademy.org/math/algebra2/x2ec2f6f830c9fb89:exp/x2ec2f6f830c9fb89:rational-exp/v/solving-for-a-fractional-exponent>

<https://www.youtube.com/watch?v=OxsAVC5Hq4E>

<https://www.khanacademy.org/test-prep/sat/sat-math-practice/new-sat-passport-advanced-mathematics/v/sat-math-p3-easier>

## Solving Quadratic Equations

### Factoring

<https://www.purplemath.com/modules/solvquad.htm>

<https://www.mathsisfun.com/algebra/factoring-quadratics.html>

[https://www.google.com/search?rlz=1C1GCEA\\_enUS845US845&sxsrf=ALeKk01iAEcP7oy9GnAOkO9tUbnYwXs6w:1587738533765&q=solving+quadratic+equations+by+factoring+examples&sa=X&ved=2ahUKEwi5gLT6ooHpAhXnRd8KHcjqAccQ1QloAXoECAoQAg&biw=1280&bih=610](https://www.google.com/search?rlz=1C1GCEA_enUS845US845&sxsrf=ALeKk01iAEcP7oy9GnAOkO9tUbnYwXs6w:1587738533765&q=solving+quadratic+equations+by+factoring+examples&sa=X&ved=2ahUKEwi5gLT6ooHpAhXnRd8KHcjqAccQ1QloAXoECAoQAg&biw=1280&bih=610)

[http://www.mesacc.edu/~scotz47781/mat120/notes/factoring/solving\\_by/quadratics/quadratics.html](http://www.mesacc.edu/~scotz47781/mat120/notes/factoring/solving_by/quadratics/quadratics.html)

[https://www.varsitytutors.com/hotmath/hotmath\\_help/topics/solving-quadratic-equations-using-factoring](https://www.varsitytutors.com/hotmath/hotmath_help/topics/solving-quadratic-equations-using-factoring)

<https://www.chilimath.com/lessons/intermediate-algebra/solving-quadratic-equations-factoring-method/>

<https://www.wyzant.com/resources/lessons/math/algebra/factoring-completely>

### Completing the Square

[https://www.google.com/search?sa=X&rlz=1C1GCEA\\_enUS845US845&sxsrf=ALeKk02KK6aYx2DHXf-Wy6fIVJ9OPNxtgrg%3A1587738730086&lei=aviiXrHoBOqyggfBnYqAAw&q=completing%20the%20square](https://www.google.com/search?sa=X&rlz=1C1GCEA_enUS845US845&sxsrf=ALeKk02KK6aYx2DHXf-Wy6fIVJ9OPNxtgrg%3A1587738730086&lei=aviiXrHoBOqyggfBnYqAAw&q=completing%20the%20square)

[%20method&ved=2ahUKewiWqMfYo4HpAhWNmOAKHYcTD7EQsKwBKAR6BAgEEAU&biw=1280&bih=610](#)

## Three Ways to Solve

<https://www.wikihow.com/Solve-Quadratic-Equations>

## Lesson Plans/Worksheets

[https://www.lessonplanet.com/lesson-plans/quadratic-equation/all?gclid=CjwKCAjwnlr1BRAWEiwA6GpwNZ\\_ZZf\\_ul2XY2bTokDKZqr8LrnMk7sQ1jeMpVROVpg5UnGBAof2hhoC2DoQAvD\\_BwE](https://www.lessonplanet.com/lesson-plans/quadratic-equation/all?gclid=CjwKCAjwnlr1BRAWEiwA6GpwNZ_ZZf_ul2XY2bTokDKZqr8LrnMk7sQ1jeMpVROVpg5UnGBAof2hhoC2DoQAvD_BwE)

[https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:quadratic-functions-equations/x2f8bb11595b61c86:quadratics-solve-factoring/e/solving\\_quadratics\\_by\\_factoring](https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:quadratic-functions-equations/x2f8bb11595b61c86:quadratics-solve-factoring/e/solving_quadratics_by_factoring)

## Solving Quadratic Equations Using the Quadratic Formula

<https://www.purplemath.com/modules/solvquad4.htm>

<https://sites.google.com/site/msbpebblebrookhs/home/unit-5b>

<http://www.cabrillo.edu/~mbuchanan/Math%20154B%20Webfolder/Math%20154B%20Quadratic%20ormula%20Wksht.pdf>

[https://www.khanacademy.org/math/algebra-home/alg-quadratics/alg-solving-quadratics-using-the-quadratic-formula/e/quadratic\\_equation](https://www.khanacademy.org/math/algebra-home/alg-quadratics/alg-solving-quadratics-using-the-quadratic-formula/e/quadratic_equation)

## Videos

<https://www.youtube.com/watch?v=qeByhTF8WEw>

<https://www.youtube.com/watch?v=x3o2WJ5rHhU>

<https://www.youtube.com/watch?v=ZFeHOMzsClc>

<https://www.youtube.com/watch?v=1T-rsltsWnM>

<https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:quadratic-functions-equations/x2f8bb11595b61c86:quadratics-solve-factoring/v/example-1-solving-a-quadratic-equation-by-factoring>

<https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:quadratic-functions-equations/x2f8bb11595b61c86:quadratics-solve-factoring/v/solving-quadratics-by-dividing-and-factoring>

<https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:quadratic-functions-equations/x2f8bb11595b61c86:quadratics-solve-factoring/v/example-3-solving-a-quadratic-equation-by-factoring>

<https://www.youtube.com/watch?v=3ayhvAI3leY>

<https://www.khanacademy.org/math/algebra-home/alg-quadratics/alg-solving-quadratics-using-the-quadratic-formula/a/quadratic-formula-explained-article>

<https://www.khanacademy.org/math/algebra-home/alg-quadratics/alg-solving-quadratics-using-the-quadratic-formula/v/quadratic-formula-1>

<https://www.khanacademy.org/math/algebra-home/alg-quadratics/alg-solving-quadratics-using-the-quadratic-formula/v/quadratic-formula-3>

## Systems of Linear Equations

[https://www.varsitytutors.com/hotmath/hotmath\\_help/topics/solving-systems-of-linear-equations](https://www.varsitytutors.com/hotmath/hotmath_help/topics/solving-systems-of-linear-equations)

<https://www.purplemath.com/modules/systlin1.htm>

<http://tutorial.math.lamar.edu/Classes/Alg/SystemsTwoVrble.aspx>

<https://www.mathplanet.com/education/algebra-1/systems-of-linear-equations-and-inequalities/the-substitution-method-for-solving-linear-systems>

<https://www.mathplanet.com/education/algebra-1/systems-of-linear-equations-and-inequalities/the-substitution-method-for-solving-linear-systems>

[https://www.varsitytutors.com/hotmath/hotmath\\_help/topics/writing-systems-of-linear-equations-from-word-problems](https://www.varsitytutors.com/hotmath/hotmath_help/topics/writing-systems-of-linear-equations-from-word-problems)

<https://www.purplemath.com/modules/systprob.htm>

## Videos

<https://www.youtube.com/watch?v=9MPUSWUyaYU>

<https://www.youtube.com/watch?v=75m60SxFfJg>

<https://www.khanacademy.org/math/algebra-home/alg-system-of-equations/alg-equivalent-systems-of-equations/v/solving-systems-of-equations-by-elimination>

<https://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-systems-topic/cc-8th-systems-graphically/v/solving-linear-systems-by-graphing>

<https://www.khanacademy.org/math/algebra-home/alg-system-of-equations/alg-solving-systems-of-equations-with-substitution/v/solving-linear-systems-by-substitution>

<https://www.khanacademy.org/test-prep/sat/sat-math-practice/new-sat-heart-of-algebra/v/sat-math-h7-harder>

<https://www.brightstorm.com/math/algebra-2/systems-of-linear-equations/solving-a-system-of-linear-equations-in-two-variables/>

## Functions

<http://tutorial.math.lamar.edu/Classes/Alg/FunctionDefn.aspx>

<https://www.mathplanet.com/education/algebra-2/how-to-graph-functions-and-linear-equations/functions-and-linear-equations>

<https://www.algebra-class.com/algebra-functions.html>

<https://www.mathsisfun.com/sets/function.html>

[https://www.google.com/search?rlz=1C1GCEA\\_enUS845US845&sxsrf=ALeKk00KdOUt\\_8Cqa-Xukd9wiDmrNfHksg:1587741753212&q=solving+functions&sa=X&ved=2ahUKewjOysf5roHpAhVhkuAKHbZPDCwQ1QloAHoECAkQAQ&biw=1280&bih=610](https://www.google.com/search?rlz=1C1GCEA_enUS845US845&sxsrf=ALeKk00KdOUt_8Cqa-Xukd9wiDmrNfHksg:1587741753212&q=solving+functions&sa=X&ved=2ahUKewjOysf5roHpAhVhkuAKHbZPDCwQ1QloAHoECAkQAQ&biw=1280&bih=610)

<https://www.toppr.com/guides/maths/relations-and-functions/types-of-functions/>

## Videos

<https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:functions/x2f8bb11595b61c86:functions-and-equations/v/difference-between-equations-and-functions>

<https://study.com/academy/lesson/graphs-types-examples-functions.html>

[https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:functions/x2f8bb11595b61c86:evaluating-functions/e/functions\\_1](https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:functions/x2f8bb11595b61c86:evaluating-functions/e/functions_1)

<https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:functions/x2f8bb11595b61c86:evaluating-functions/v/what-is-a-function>

<https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:functions/x2f8bb11595b61c86:evaluating-functions/v/understanding-function-notation-example-2uating-functions/v/understanding-function-notation-example-1>

<https://www.youtube.com/watch?v=52tpYl2tTqk>

## Data

<http://www.corestandards.org/Math/Content/HSS/ID/>

<https://www.dummies.com/education/math/statistics/types-of-statistical-data-numerical-categorical-and-ordinal/>

<https://virtualnerd.com/common-core/hss-statistics-probability/HSS-ID-interpreting-categorical-quantitative-data/B> (includes videos))

<https://courses.lumenlearning.com/wmopen-concepts-statistics/chapter/what-is-data/>

[https://www.bellevonarea.net/cms/lib07/PA01001262/Centricity/domain/546/algebra%201/keystone%20reviews/Keystone\\_-\\_Unit\\_6\\_Review\\_-\\_Online.pdf](https://www.bellevonarea.net/cms/lib07/PA01001262/Centricity/domain/546/algebra%201/keystone%20reviews/Keystone_-_Unit_6_Review_-_Online.pdf)

## Videos

<https://www.khanacademy.org/math/ap-statistics/analyzing-categorical-ap/analyzing-one-categorical-variable/v/identifying-individuals-variables-and-categorical-variables-in-a-data-set>

<https://www.khanacademy.org/math/ap-statistics/analyzing-categorical-ap/analyzing-one-categorical-variable/e/individuals-variables-categorical-quantitative-data> (Practice)

<https://www.khanacademy.org/math/pre-algebra/pre-algebra-math-reasoning/pre-algebra-representing-data/v/ways-to-represent-data>

<https://www.khanacademy.org/math/statistics-probability/analyzing-categorical-data/two-way-tables-for-categorical-data/v/video-games-and-violence-bivariate-data>

<https://study.com/academy/lesson/what-is-numerical-data-definition-examples-quiz.html>

## Geometry

### Points, Lines, and Planes

#### Symbols

[https://www.khanacademy.org/math/geometry/hs-geo-foundations/hs-geo-intro-euclid/e/recognizing\\_rays\\_lines\\_and\\_line\\_segments](https://www.khanacademy.org/math/geometry/hs-geo-foundations/hs-geo-intro-euclid/e/recognizing_rays_lines_and_line_segments)

<https://www.khanacademy.org/math/geometry/hs-geo-foundations/hs-geo-intro-euclid/e/drawing-lines>

[https://www.khanacademy.org/math/geometry/hs-geo-foundations/hs-geo-intro-euclid/e/points\\_lines\\_and\\_planes](https://www.khanacademy.org/math/geometry/hs-geo-foundations/hs-geo-intro-euclid/e/points_lines_and_planes)

<https://www.cliffsnotes.com/study-guides/geometry/fundamental-ideas/points-lines-and-planes>

### Parallel Lines Cut by a Transversal

<https://calcworkshop.com/reasoning-proof/parallel-lines-cut-transversal/>

<https://quizizz.com/admin/quiz/56b80b70c16598411b034a80/parallel-lines-and-transversals>

<https://www.tanqueverdeschools.org/Downloads/Unit%203%20for%2020163.pdf>

<https://www.mathworksheets4kids.com/transversal.php>

<https://www.ncps-k12.org/cms/lib/CT01903077/Centricity/Domain/670/Worksheet%20Section%2032%20Angles%20and%20Parallel%20Lines.pdf>

### Parallel and Perpendicular Lines

<https://virtualnerd.com/geometry/parallel-perpendicular-lines>

<https://www.mathsisfun.com/algebra/line-parallel-perpendicular.html>

### Angles

<https://www.education.com/worksheet/article/geometry-basics-angles/>

<https://www.ixl.com/math/geometry/identify-complementary-supplementary-vertical-adjacent-and-congruent-angles>

[https://www.education.com/worksheets/measuring-angles/?gclid=Cj0KCQjwhZr1BRCLARIsALjRVQOYdbLkOEIGFeHB\\_hBIsaPsCmoWIfYJsz68wvI3p5GXlcoWk\\_kidngaAsdbEALw\\_wcB](https://www.education.com/worksheets/measuring-angles/?gclid=Cj0KCQjwhZr1BRCLARIsALjRVQOYdbLkOEIGFeHB_hBIsaPsCmoWIfYJsz68wvI3p5GXlcoWk_kidngaAsdbEALw_wcB)



## Reasoning and Proof

<https://www.onlinemathlearning.com/two-column-proofs.html>

<https://www.ixl.com/math/geometry/proofs-involving-parallel-lines>

<https://www.ixl.com/math/geometry/proofs-involving-angles>

<https://mathbitsnotebook.com/Geometry/CongruentTriangles/CTbeginning.html>

<https://www.dummies.com/education/math/geometry/proof-strategies-in-geometry/>

## Videos

<https://www.khanacademy.org/math/geometry-home/geometry-miscellaneous/geometry-worked-examples/v/ca-geometry-proof-by-contradiction>

<https://www.khanacademy.org/math/geometry-home/geometry-miscellaneous/geometry-worked-examples/v/ca-geometry-more-proofs>

<https://www.khanacademy.org/math/geometry-home/geometry-miscellaneous/geometry-worked-examples/v/ca-geometry-similar-triangles-1>

<https://www.khanacademy.org/math/geometry-home/geometry-miscellaneous/geometry-worked-examples/v/ca-geometry-more-on-congruent-and-similar-triangles>

<https://www.khanacademy.org/math/geometry-home/geometry-miscellaneous/geometry-worked-examples/v/ca-geometry-triangles-and-parallelograms>

## Transformations

<http://www.emathematics.net/transformations.php/trackback/geometry.php>

[https://www.google.com/search?q=geometry+transformations+rules&rlz=1C1GCEA\\_enUS845US845&og=Geometry+Transformations&ags=chrome.6.017j69i60.17728i0j7&sourceid=chrome&ie=UTF-8](https://www.google.com/search?q=geometry+transformations+rules&rlz=1C1GCEA_enUS845US845&og=Geometry+Transformations&ags=chrome.6.017j69i60.17728i0j7&sourceid=chrome&ie=UTF-8)

<https://study.com/academy/lesson/transformations-in-math-definition-graph-quiz.html>

<https://www.khanacademy.org/math/8th-engage-ny/engage-8th-module-2/8th-module-2-topic-a/e/identify-transformations>

<https://www.khanacademy.org/math/8th-engage-ny/engage-8th-module-2/8th-module-2-topic-a/e/performing-translations-on-the-coordinate-plane>

<https://www.khanacademy.org/math/8th-engage-ny/engage-8th-module-2/8th-module-2-topic-a/a/translating-shapes>

<https://www.khanacademy.org/math/8th-engage-ny/engage-8th-module-2/8th-module-2-topic-a/e/defining-translations>

<https://study.com/academy/lesson/transformations-in-math-definition-graph-quiz.html>

## Videos

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