Beast Academy Level 5

CCSS Alignment

The content covered in Beast Academy Level 5 is loosely based on the standards created by the Common Core State Standards Initiative.

For more information on the Common Core State Standards, visit www.corestandards.org.

Beast Academy Level 5 Chapters 1-12:

1. 3D Solids
2. Integers
3. Expressions & Equations
4. Statistics
5. Factors & Multiples
6. Fractions
7. Sequences
8. Ratios & Rates
9. Decimals
10. Percents
11. Square Roots
12. Exponents

Grade 5 Common Core Standards	5A			5B			5C			5D		
Operations & Algebraic Thinking	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
5.OA.A.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. [1]			✓									
5.OA.A.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. [2]			✓	✓								
5.OA.B.3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.	Patterns are introduced in Chapter 7 of Level 3, and more complex arithmetic sequences are examined in Chapter 7 of Level 5. Beast Academy does not include graphing on the coordinate plane.											
Number & Operations in Base Ten	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
5.NBT.A.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. [3]									✓			
5.NBT.A.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.									✓			

[1] Parentheses are introduced in Chapter 5 of Beast Academy Level 2. Brackets and braces are not used in Beast Academy.
[2] Introduced in Chapter 6 of Beast Academy Level 3.
[3] Introduced in Chapter 11 of Beast Academy Level 4.

5.NBT.A.3 Read, write, and compare decimals to thousandths. [4]									✓			
5.NBT.A.4 Use place value understanding to round decimals to any place. [5]									✓			
5.NBT.B.5 Fluently multiply multi-digit whole numbers using the standard algorithm.	Included in Chapter 2 of Beast Academy Level 4.											
5.NBT.B.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. [6]	Included in Chapter 5 of Beast Academy Level 4.											
5.NBT.B.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.									✓			
Number & Operations – Fractions	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
5.NF.A.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.						✓						
5.NF.A.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.						✓						
5.NF.B.3 Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. [7]						✓						

[4] Introduced in Chapter 11 of Beast Academy Level 4.
[5] Introduced in Chapter 11 of Beast Academy Level 4.
[6] Introduced in Chapter 5 of Beast Academy Level 4.
[7] Introduced in Chapter 10 of Beast Academy Level 4.

5.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. [8]						✓						
5.NF.B.5 Interpret multiplication as scaling (resizing).	Included in Chapter 10 of Beast Academy Level 4.											
5.NF.B.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.						✓						
5.NF.B.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.						✓						
Measurement & Data	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.								✓				
5.MD.B.2 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots.	Beast Academy does not include line plots.											
5.MD.C.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement.	✓											
5.MD.C.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.	✓											
5.MD.C.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.	✓											

[8] Introduced in Chapter 10 of Beast Academy Level 4.

Geometry	1	2	3	4	5	6	7	8	9	10	11	12
5.G.A.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).	Beast Academy does not include graphing in the coordinate plane.											
5.G.A.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.	Beast Academy does not include graphing in the coordinate plane.											
5.G.B.3 Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles. [9]	✓											
5.G.B.4 Classify two-dimensional figures in a hierarchy based on properties.	Included in Chapter 1 of Beast Academy Level 3.											

Other Grades

The following Grade 4 goals of the Common Core State Standards are included in the content of Beast Academy Level 5.

Grade 4 Common Core Standards	5A			5B			5C			5D		
Operations & Algebraic Thinking	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
4.OA.B.4 Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.					✓							

[9] Introduced in Chapter 1 of Beast Academy Level 3.

4.OA.C.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.							✓					
Measurement & Data	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
4.MD.A.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems.	✓											

The following Grade 6 goals of the Common Core State Standards are included in the content of Beast Academy Level 5.

Grade 6 Common Core Standards	**5A**			**5B**			**5C**			**5D**		
Ratios & Proportional Relationships	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.								✓				
6.RP.A.2 Understand the concept of a unit rate a/b associated with a ratio a:b with b âĽă 0, and use rate language in the context of a ratio relationship.								✓				
6.RP.A.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.								✓		✓		
The Number System	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6.NS.A.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.						✓						
6.NS.B.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.						✓						

6.NS.B.4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor.					✓							
6.NS.C.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.		✓										
6.NS.C.7 Understand ordering and absolute value of rational numbers.		✓										
Expressions & Equations	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6.EE.A.1 Write and evaluate numerical expressions involving whole-number exponents.		✓									✓	✓
6.EE.A.2 Write, read, and evaluate expressions in which letters stand for numbers.			✓				✓					
6.EE.A.3 Apply the properties of operations to generate equivalent expressions.			✓									
6.EE.A.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).			✓									
6.EE.B.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.			✓									
6.EE.B.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.			✓									

6.EE.B.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.			✓									
Geometry	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6.G.A.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	✓											
6.G.A.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.	✓											
Statistics & Probability	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6.SP.A.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.				✓								
6.SP.A.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.				✓								
6.SP.B.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.				✓								
6.SP.B.5 Summarize numerical data sets in relation to their context.				✓								

The following Grade 7 goals of the Common Core State Standards are included in the content of Beast Academy Level 5.

Grade 7 Common Core Standards	**5A**			**5B**			**5C**			**5D**		
Ratios & Proportional Relationships	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7.RP.A.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.								✓				
7.RP.A.2 Recognize and represent proportional relationships between quantities.								✓		✓		

7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.								✓		✓		
The Number System	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7.NS.A.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.		✓										
7.NS.A.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.		✓							✓			
7.NS.A.3 Solve real-world and mathematical problems involving the four operations with rational numbers.		✓										
Expressions & Equations	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7.EE.A.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.										✓		
7.EE.B.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.		✓								✓		
Geometry	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7.G.B.6 Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	✓											

The following Grade 8 goals of the Common Core State Standards are included in the content of Beast Academy Level 5.

Grade 8 Common Core Standards	5A			5B			5C			5D		
The Number System	1	2	3	4	5	6	7	8	9	10	11	12
8.NS.A.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π).											✓	
Expressions & Equations	1	2	3	4	5	6	7	8	9	10	11	12
8.EE.A.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.												✓
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.											✓	
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.												✓
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.												✓
Geometry	1	2	3	4	5	6	7	8	9	10	11	12
8.G.B.6 Explain a proof of the Pythagorean Theorem and its converse.											✓	
8.G.B.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.											✓	
8.G.B.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.											✓	