

## Algebra

1 – 4 - Foundations for functions. → Use the provided worksheet in the Curriculum Guide to solve functions. Plot the coordinates on a graph to draw a stage. While on site at School Days, visit the stage and see how close the graph drawing was to the actual stage.

5.c. – Use, translate, and make connections among algebraic, tabular, graphical, or verbal descriptions of linear functions. → Use the provided worksheet in the Curriculum Guide to solve functions. Plot the coordinates on a graph to draw a stage. While on site at School Days, visit the stage and see how close the graph drawing was to the actual stage.

7 – Linear functions. The student formulates equations and inequalities based on linear functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation. → Use the provided worksheet in the Curriculum Guide to solve functions. Plot the coordinates on a graph to draw a stage. While on site at School Days, visit the stage and see how close the graph drawing was to the actual stage.

8 – Linear functions. The student formulates systems of linear equations from problem situations, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation. → Use the provided worksheet in the Curriculum Guide to solve functions. Plot the coordinates on a graph to draw a stage. While on site at School Days, visit the stage and see how close the graph drawing was to the actual stage.

9 – Quadratic and other nonlinear functions. The student understands that graphs of quadratic functions are affected by the parameters of the function and can interpret and describe the effects of changes in the parameters of quadratic functions. → Use the provided worksheet in the Curriculum Guide to solve functions. Plot the coordinates on a graph to draw a stage. While on site at School Days, visit the stage and see how close the graph drawing was to the actual stage.

10 – Quadratic and other nonlinear functions. The student understands there is more than one way to solve a quadratic equation and solves them using appropriate methods. → Use the provided worksheet in the Curriculum Guide to solve functions. Plot the coordinates on a graph to draw a stage. While on site at School Days, visit the stage and see how close the graph drawing was to the actual stage.

11 – Quadratic and other nonlinear functions. The student understands there are situations modeled by functions that are neither linear nor quadratic and models the situations. → Use the provided worksheet in the Curriculum Guide to solve functions. Plot the coordinates on a graph to draw a stage. While on site at School Days, visit the stage and see how close the graph drawing was to the actual stage.

## Algebra II

1-3 – Foundations for functions. → Use the provided worksheet in the Curriculum Guide to solve functions. Plot the coordinates on a graph to draw a stage. While on site at School Days, visit the stage and see how close the graph drawing was to the actual stage.

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4 – Algebra and geometry. The student connects algebraic and geometric representations of functions. → Use the provided worksheet in the Curriculum Guide to solve functions. Plot the coordinates on a graph to draw a stage. While on site at School Days, visit the stage and see how close the graph drawing was to the actual stage.

7 – Quadratic and square root functions. The student interprets and describes the effects of changes in the parameters of quadratic functions in applied and mathematical situations → Use the provided worksheet in the Curriculum Guide to solve functions. Plot the coordinates on a graph to draw a stage. While on site at School Days, visit the stage and see how close the graph drawing was to the actual stage.

8 – Quadratic and square root functions. The student formulates equations and inequalities based on quadratic functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation. → Use the provided worksheet in the Curriculum Guide to solve functions. Plot the coordinates on a graph to draw a stage. While on site at School Days, visit the stage and see how close the graph drawing was to the actual stage.

9 – Quadratic and square root functions. The student formulates equations and inequalities based on square root functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation. → Use the provided worksheet in the Curriculum Guide to solve functions. Plot the coordinates on a graph to draw a stage. While on site at School Days, visit the stage and see how close the graph drawing was to the actual stage.

10 – Rational functions. The student formulates equations and inequalities based on rational functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation. → Use the provided worksheet in the Curriculum Guide to solve functions. Plot the coordinates on a graph to draw a stage. While on site at School Days, visit the stage and see how close the graph drawing was to the actual stage.

### **Geometry**

3 – Geometric structure. The student applies logical reasoning to justify and prove mathematical statements. → Use provided worksheets in the Curriculum Guide about the Geometry of the Tower Stage. While on site, visit the Tower Stage to see how the math came together to make the structure.

5 – Geometric patterns. The student uses a variety of representations to describe geometric relationships and solve problems. → Use provided worksheets in the Curriculum Guide about the Geometry of the Tower Stage. While on site, visit the Tower Stage to see how the math came together to make the structure.

7b- Use slopes and equations of lines to investigate geometric relationships, including parallel lines, perpendicular lines, and special segments of triangles and other polygons. → Use provided worksheets in the Curriculum Guide about the Geometry of the Tower Stage. While on site, visit the Tower Stage to see how the math came together to make the structure.

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8-10 – Congruence and the geometry of size. → Use provided worksheets in the Curriculum Guide about the Geometry of the Tower Stage. While on site, visit the Tower Stage to see how the math came together to make the structure.

8-10 – Congruence and the geometry of size. → Have the students participate in the Trebuchet contest. Students must use mathematical equations to solve counterweight equations and to design a machine the students build. At School Days, the students launch their machines for prizes.

11 – Similarity and the geometry of shape. The student applies the concepts of similarity to justify properties of figures and solve problems. → Use provided worksheets in the Curriculum Guide about the Geometry of the Tower Stage. While on site, visit the Tower Stage to see how the math came together to make the structure.

### **Precalculus**

1. The student defines functions, describes characteristics of functions, and translates among verbal, numerical, graphical, and symbolic representations of functions, including polynomial, rational, power (including radical), exponential, logarithmic, trigonometric, and piecewise-defined functions. . → Use the provided worksheet in the Curriculum Guide to review and solve algebra functions. Plot the coordinates on a graph to draw a stage. While on site at School Days, visit the stage and see how close the graph drawing was to the actual stage.

3 – The student uses functions and their properties, tools, and technology, to model and solve meaningful problems. → Have the students participate in the Trebuchet contest. Students must use mathematical equations to solve counterweight equations and to design a machine the students build. At School Days, the students launch their machines for prizes.

4 – The student uses sequences and series as well as tools and technology to represent, analyze, and solve real-life problems. → Have the students participate in the Trebuchet contest. Students must use mathematical equations to solve counterweight equations and to design a machine the students build. At School Days, the students launch their machines for prizes.

### **Mathematical Models with Applications**

2 – The student uses graphical and numerical techniques to study patterns and analyze data. . → Use the provided worksheet in the Curriculum Guide to review and solve mathematical problems. Plot the coordinates on a graph to draw a stage. While on site at School Days, visit the stage and see how close the graph drawing was to the actual stage.

3 – The student develops and implements a plan for collecting and analyzing data (qualitative and quantitative) in order to make decisions. → Have the students participate in the Trebuchet contest. Students must use mathematical equations to solve counterweight equations and to design a machine the students build. At School Days, the students launch their machines for prizes.

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8 – The student uses algebraic and geometric models to describe situations and solve problems. → Have the students participate in the Trebuchet contest. Students must use mathematical equations to solve counterweight equations and to design a machine the students build. At School Days, the students launch their machines for prizes.

9 – The student uses algebraic and geometric models to represent patterns and structures. → Have the students participate in the Trebuchet contest. Students must use mathematical equations to solve counterweight equations and to design a machine the students build. At School Days, the students launch their machines for prizes.

### **Advanced Quantitative Reasoning**

1 – The student develops applies skills used in college and careers, including reasoning, planning, and communication, to make decisions and solve problems in applied situations involving numerical reasoning, probability, statistical analysis, finance, mathematical selection, and modeling with algebra, geometry, trigonometry, and discrete mathematics. → Have the students participate in the Trebuchet contest. Students must use mathematical equations to solve counterweight equations and to design a machine the students build. At School Days, the students launch their machines for prizes.

3.a – Determine and interpret conditional probabilities and probabilities of compound events by constructing and analyzing representations, including tree diagrams, Venn diagrams, and area models, to make decisions in problem situations. → Have the students participate in the Trebuchet contest. Students must use mathematical equations to solve counterweight equations and to design a machine the students build. At School Days, the students launch their machines for prizes.

8 – The student models data, makes predictions, and judges the validity of a prediction. → Have the students participate in the Trebuchet contest. Students must use mathematical equations to solve counterweight equations and to design a machine the students build. At School Days, the students launch their machines for prizes.

12 – The student uses a variety of tools and methods to represent and solve problems involving static and dynamic situations. → Have the students participate in the Trebuchet contest. Students must use mathematical equations to solve counterweight equations and to design a machine the students build. At School Days, the students launch their machines for prizes.