

# Mission Pack: Shark Tank

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Can you get investors for your new business?



GRADE



MATH



WEEKS

Topics include: statistics, linear models,  
equation systems



**“Who wouldn’t eat southern-fried sushi?” asks one student. “Me,” says another student. The teacher, Sophie, observes the exchange and asks the class to pause for a moment. “Lara is thinking about selling southern-fried sushi out of her food truck. First of all, I would definitely eat that. Nice idea, Lara. But how do we know if other people will want to eat it, and buy it?” says Sophie. “Ask them!” yells one student. “Ask who?” replies Alex, Sophie’s co-teacher. “The people!” says Freddie. “Who are the people?” probes Alex. Freddie waits a moment, then replies, “The people who might buy it. But I don’t know who they are.” “I guess you’d need to figure that out,” says Sophie. She continues, “does anyone have any ideas on how to do that? And what about figuring out how much people would pay for your food truck menu items? For the next five minutes, please brainstorm possibilities with your team. Your potential investors will care a lot about the answer.”**

**Visit [Quest Learning in Action](#) to see more.**

# About this curriculum

**At Quest schools, our curriculum and instruction is grounded in game-like learning. Game-like learning is a research-based theory of learning that draws from what we know games do best: drop players into inquiry-based complex problem spaces in which challenges are leveled to deliver just-in-time learning.**

Games also use data-driven feedback to help players understand how they are doing, what they need to work on, and where they need to go next. Lastly, games provide engaging contexts for students to build content knowledge along with 21st century skills, such as systems thinking, design thinking, communication, collaboration, creativity, and innovation.

Game-like learning frames the way we plan units. At the high school level, all learning units are organized into “discovery missions.” When a discovery mission is introduced, students are faced with an immediate “need to know” that engages them in solving a mission’s complex challenge. Sometimes these missions are organized around narratives; sometimes not. Students are also often given roles to play during missions, such as being designers, entrepreneurs, or journalists.

At the beginning, students don’t know how to solve the discovery mission’s complex challenge; they must solve a series of “problem sets” that help them build essential knowledge and skills needed to complete the discovery mission challenge. During problem sets, students use games and other project-based learning experiences to build their understanding of content and practice new skills. At Quest schools, teachers also creatively evaluate student learning through assessments that are technology-based, game-based, and/or have a connection to the real world.

This curriculum resource is designed to give you an idea of how Institute of Play and Quest teachers transform the learning of content and skills into game-like experiences that engage and excite students. Even though Quest teachers actively engage in the role of designer and innovator during curriculum development, it is important to note that Quest teachers use more well-known activities and assessments in addition to game-like experiences. This curriculum resource does not include those types of learning activities and assessments because we know that they can be found in other web-based resources or textbooks. Institute of Play designed this resource to share the unique approaches that Quest students experience and provide you with ideas and materials to bring game-like learning into your classroom.

**Curriculum at Quest schools empowers students to become active problem-solvers and innovators in the 21st century.**

We design opportunities for students to build 21st century skills, such systems thinking, design thinking, and social-emotional skills. As systems thinkers, students identify parts and relationships within systems, discover patterns and feedback loops, and find possible leverage points for systemic change. As designers, students brainstorm, prototype, test, and iterate ideas and solutions to challenges. As community members and citizens, students work on listening, communicating, collaborating, leading, and mediating.

## The sections of this resource include:

### DISCOVERY MISSION SUMMARY

A summary of the narrative of the mission and the challenge(s) posed to students, as well as essential questions and enduring understandings for the content of the mission.

### DISCOVERY MISSION OVERVIEW

A list of quests in the mission with the length and summary for each one.

### FINAL ASSESSMENT OF DISCOVERY MISSION

A description of the final assessment that students complete at the end of the mission.

### PROBLEM SET DETAILS

The collection of quests in the mission with more information about learning goals, game-like learning experiences, and other assessments used in each quest.

### APPENDIX

Includes helpful resources, such as:

- Differentiation strategies
- Final assessment support materials and rubric
- Additional resources
- Lists of standards aligned to the discovery mission

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*Since collaboration and iteration are important to our work at Institute of Play, we want to hear your feedback about this resource and its impact on your teaching. To share your thoughts and ideas, please join our Google+ community by clicking on this link: [Institute of Play Google+ Community](#).*

#### TEACHER COLLABORATOR BIO



Alex Kahn is a Learning Strategist excited to be teaching Algebra at [Quest to Learn](#). He is passionate about creating opportunities for students to see their math skills at work in authentic contexts, and about creating performance tasks that show his students' best work.

#### TEACHER COLLABORATOR BIO



Sophie Lampiasi is the Integrated Algebra teacher at [Quest to Learn](#) and is in her second year of teaching in New York City. She received her BA in Psychology from Binghamton University and moved to Manhattan immediately after graduation to begin training in the New York City Teaching Fellows math program. Sophie is in her first year at Quest to Learn, enjoying the challenge of engaging students in game-like learning while meeting the mandates of the Common Core. She recently graduated from St. John's University with her Master's of Science in Secondary Mathematics Education and looks forward to continuing her teaching career at Quest to Learn.

# Discovery Mission Summary



A student group's poster shows some of the work involved in developing their food truck business pitch.

**During the semester, students become aspiring startup business owners and menu planners.** Student teams first brainstorm possibilities for a new New York City food truck business. Next, they evaluate the desirability and profitability of their business ideas by conducting surveys and constructing business models, based on researched price points and relevant linear functions. Throughout the discovery mission, students learn how to construct, develop, and propose mathematically sound arguments by meshing statistics with representations and intersections of relevant linear functions to create convincing business plans, tempting infographics, and investor pitches. The mission culminates in the presentation of their business pitches at the “Quest Shark Tank”, a formal student and parent event, where students have the opportunity to share much of their exemplary math work done over the semester.

## Essential Questions

- How can I convince someone to trust me with their money?
- How do we decide which data sources are appropriate for what we want to find out?
- How can visualizations of functional relationships help us make decisions?

## Enduring Understandings

- Function visualization produces meaningful intersection points, regions, maximums, and minimums.
- As the functional relationship (or the representation method) changes, the appearance changes.
- Collecting survey data requires careful consideration of bias and samples, but can powerfully influence decision-making.
- Appearances can persuade, as well as mislead.

*I found that the food truck idea for this discovery mission got the students so much more engaged. They were really excited to design their own business and focus on food. We kept the shark tank event secret until the last week. I had this one student who comes late to class every day but when we started preparing for the shark tank event, he was at my door at 9am ready to go. This type of teaching gets kids, who aren't always engaged, super interested in what you are teaching. They rose to the occasion – they were super professional at the event.*

*- Sophie, 9th grade teacher,  
Quest to Learn, New York, NY*

# Discovery Mission Overview

QUEST TITLE	LENGTH*	DESCRIPTION
<b>Suiting Up</b>	3 weeks	Students are introduced to the discovery mission and the need for them to collect and analysis data. Students collect, analyze and present data and statistics to inform the future direction of their food truck business prototypes.
<b>Eye Test</b>	2 weeks	Students generate appealing infographics that combine informative survey data with branding and menu ideas for their food truck.
<b>Testing the Waters</b>	5 weeks	Students investigate various aspects of business plans, such as price-points and models of income and expenses. They then begin to draft initial business plans and get feedback from teachers, peers, and experts from the business world.
<b>Diving In</b>	4 weeks	Students generate various iterations of income/expense functions. Teams use these functions to calculate business costs, break-even points, and loan asks. Intersections of systems form the crucial mathematical concept that informs decision-making.
<b>Shark Tank</b>	2 weeks	The time has come for students to pitch their business ideas. Before pitching their business ideas, teams come up with a final loan ask amount by experimenting with various iterations of linear profit functions and exponential loan interest models. Then teams prepare their presentations for the Shark Tank event.

\* Based on an assumption of 50-minute classes that meet 5 days a week.

# Final Assessment of Discovery Mission



Students listen to each others' business pitches during Shark Tank.

**For the discovery mission's final assessment, students combine and iterate upon all previous information, infographics, visuals, and decisions from the semester to design a final presentation to pitch their food truck business ideas to possible investors.**

Students must present their concept for a food truck, use descriptive statistics about their menu items, and share profit projections using linear functions, inequalities, and systems of equations to determine rates of income yield, break-even points, as well as an appropriate amount of seed funding.

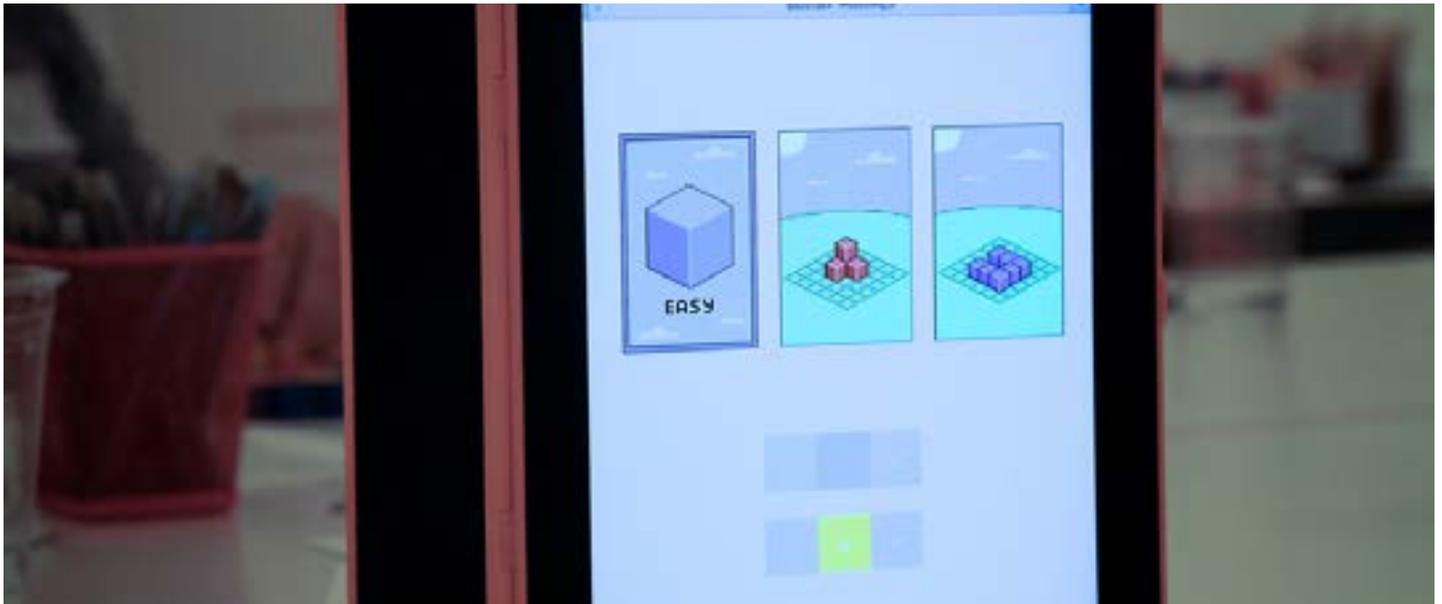
At a public event called the Shark Tank, based on a reality show by the same name, students pitch their food truck business ideas to a panel of expert potential investors in related fields, such as venture capitalists, NYC food truck owners, and other business owners. Investors are given a set amount of imaginary money to use to invest in one or more of the food truck businesses. At the end of the event, investors decide which businesses they want to invest in and explain why they made their choices.

# Problem Set Details

This section provides more detailed information about each problem set to help you develop and design your own version of this mission for your students.

Within each problem set, we describe its game-like learning experiences and list the types of assessments produced by students as evidence of their learning.

***Note that all games designed by Institute of Play are italicized.***



An iPad is used as part of game play for Block Talk, an Institute of Play game designed to encourage communication, collaboration, and spatial reasoning.

**All assessments used at Quest schools evaluate not only subject matter knowledge and skills of students (aligned to national and state Standards), but also assess 21st century skills.** These skills include collaboration, empathy, problem-solving, systems thinking and design thinking. Quest assessments range from embedded and formative (happening while students are learning to help teachers guide instruction) to traditional (quizzes/tests) to performance-based (tasks similar to those in the real world) to self-assessments. We want to prepare students to be successful in college, career, and life in the 21st century, and

we believe students need support in building knowledge and skills beyond those measured on standardized tests.

Additionally, when Quest students play games to learn, there are numerous ways that teachers assess learning through game play. Some examples are:

- Circulate around the room to check for student understanding by observing student game choices, listening to student conversations, and asking questions to students.
- Ask students to create a strategy to help new players win the game.

- Ask students to change the game to help players learn different content and/or skills.
- Create game play scenarios and ask students about possible next game moves.

It is important to note that all of the resources **bolded in blue** in the rest of the document are active weblinks. Check out the example below:

Read our **Games and Learning Design Pack** for more information about using games in your classroom.

# Problem Set 1: Suiting Up

3  
WEEKS

Students are introduced to the mission and to the need for them to learn about data collection. In order to begin developing food truck business proposals, they are supported in identifying types of data and data sources and sampling techniques needed to determine whether their business idea is feasible and potentially profitable. Possible data sources include

finding out how many people in NYC buy lunch every day, the cost of certain food items in bulk, and lunch foot traffic in specific locations in the city. The problem set ends when students designed and administered a survey to collect data on whether the school and neighborhood communities are interested in their food truck menu items.

## TOPICS & SKILLS COVERED

- Measures of central tendency
- Data collection, analysis, and representation
- Data supported predictions
- Research-based reasonings/arguments
- Survey design, administration, and analysis
- Calculate percentages of populations for real numbers

GAME-LIKE LEARNING EXPERIENCES	ASSESSMENT TYPE	DESCRIPTION
<b>Discovery Mission Rollout</b>	Video analysis	Students watch a video that shows their teachers feeling very hungry at work, grabbing lunch, then having the idea for the Shark Tank mission. Students then analyze the video to gather data in order to answer the question “Who’s weirder, Sophie or Alex?”.
<b>Block Talk</b>	Card and physical game	Students play Block Talk, an Institute of Play game designed to encourage communication and collaboration within a procedural framework.
<b>PEMDAS</b>	Board game	Students play PEMDAS, an Institute of Play board game designed to reinforce student skill with the Order of Operations. In the context of Shark Tank, the game is used to gather baseline data about student algebraic readiness and future differentiation.
<b>Food Truck Tour</b>	Field trip	Students visit or do research on the Internet about an area in a city with lots of food trucks at lunch time. Students take notes about potential variables to study when they prototype their own food truck ideas. If possible, students interview truck owners, workers, and customers.
<b>Sampling Activities</b>	Writing (short responses)	Students investigate different sampling techniques and frequency analyses used in statistics. They examine different cases, such as: <ul style="list-style-type: none"> <li>– “Fish in the Pond” from <a href="#">Figure This</a></li> <li>– Real-Time Letter Frequency Analysis from <a href="#">Rumkin</a></li> <li>– <a href="#">Google ngram investigations</a></li> </ul>
<b>IXL</b>	Online assessment	Students complete periodic assignments on <a href="#">IXL</a> as a tool for fundamental skill building and incremental review of new topics.

# Problem Set 2: Eye Test



Students examine various methods of representing data, as well as goal-oriented methods used by visual artists and advertisers to engage and persuade their audiences, including misleading graphics and usage of statistics. Students also begin to graphically

track their own confidence in their business ideas. The problem set is complete when students have generated appealing infographic posters that combine informative survey data with branding and menu ideas.

## TOPICS & SKILLS COVERED

- Data collection, analysis, and representation
- Data supported predictions
- Research-based reasonings/arguments
- Design thinking
- Design techniques
- Behavior over time graphs and systems thinking

GAME-LIKE LEARNING EXPERIENCES	ASSESSMENT TYPE	DESCRIPTION
<b>Infographics</b>	Infographics	Students produce various representations of survey data, using hand-drawn visualizations and graphs, as well as google spreadsheets and <a href="https://www.infogr.am">infogr.am</a> .
<b>Confidence Graph</b>	Graph and reflection	Students begin long-term Behavior Over Time Graphs* that track their confidence levels in the practicality and profitability of their food truck business idea.

\* See Institute of Play's [Q Systems Thinking Design Pack](#) to learn more about Behavior Over Time Graphs.

# Problem Set 3: Testing the Waters

**5**  
WEEKS

Students use data collected in Problem Sets 1 and 2 to create functions that model the costs of running their food truck businesses. Students investigate various price-points for business expenses, such as ingredients, wages, leases, and packaging. Teams also model quantitative aspects of customer predictions in order to estimate both income and expenses. Throughout, students explore the concepts

of function modeling, slope, axis intercepts, and transitioning between various forms of linear equations. The problem set is complete when students have drafted an initial food truck business plan. Students then gather feedback on their business plans from teachers, peers, and real-world experts to help them with the next iteration of the plan.

## TOPICS & SKILLS COVERED

- Functions, both linear and nonlinear
- Representations of functions
- Manipulate binomials and like terms
- Solve and check 2-, 3-, and 4-step linear equations
- Slope, intercepts, and standard form
- Use functions to create projections.
- Cost analysis

GAME-LIKE LEARNING EXPERIENCES	ASSESSMENT TYPE	DESCRIPTION
<b>Tower Problems</b>	Writing (short responses)	Students build and analyze progressively difficult cube towers. They clarify functional relationships between stories of height and visible block planes by expressing counting patterns, making t-charts (tables of value), and exploring their patterns.
<b>Input-Output</b>	Digital spreadsheet game	Students play Input-Output, an Institute of Play game designed to give immediate feedback and hints to students as they solve progressively more difficult t-charts.
<b>Equation Talk</b>	Card game	Students play Equation Talk, an Institute of Play game modeled on Block Talk, a game played earlier in the mission. Students competitively give and follow instructions in small groups while solving and checking equations.
<b>qR Grapher</b>	Blended game	Students design and play a schoolwide graphing scavenger hunt. They find graphs posted in hallways, snap associated qRcodes, then take on the equation/graphing challenges that the qR codes reveal. The game is then modded by students, who place their own graphs and qR code tasks around the school.
<b>Dragonbox</b>	Digital game (tablet)	Students play <b>Dragonbox</b> , a commercial videogame that leverages already existing game-like mechanics of equation-solving, such as matching, flipping, dragging, eliminating, etc. Students also complete other assignments based on the game to expand hands-on scenarios and skill-building.
<b>Power Forward</b>	Card game	Students play Power Forward, an Institute of Play game designed to help students manipulate binomial expressions.

# Problem Set 4: Diving In



During this problem set, students generate various iterations of income/expense functions. Teams use these functions to calculate business costs, break-even points, and potential loan asks. Students find the points at which they expect to break even, make profits, and pay back loans by finding

intersection points and regions of the systems. The problem set is complete when students decide upon their final loan ask amount by combining linear profit functions and exponential loan interest models with the solution sets from their systems.

## TOPICS & SKILLS COVERED

- Simple and compound interest models.
- Rationale of loans, interest, stock, and bonds.
- Contextualized graphical solution sets
- Solve and graph a system of linear and nonlinear (compound interest) equations.
- Use spreadsheets to model linear and nonlinear functions.

GAME-LIKE LEARNING EXPERIENCES	ASSESSMENT TYPE	DESCRIPTION
<b>Money and Me</b>	Card game	Students play Money and Me, an Institute of Play game designed to introduce students to concepts and mechanics, such as competitively taking and making loans, buying stocks, bonds, and businesses, and tracking accounts over time. (Money and Me is later expanded and played again in the next semester).
<b>Graphix</b>	Blended game	Students play Graphix, an Institute of Play game designed for students to compete in making equations and graphs based on the previous player's graphing choices. Students use cards and graphing software, such as OS X Grapher, or <a href="#">Google charts</a> .
<b>Spreadsheet Design and Analysis</b>	Spreadsheet	Students are introduced to the feedback loop nature of exponential functions by modeling compound interest growth. Students first do this on paper, and then are introduced to the augmented capability that a spreadsheet provides.

# Problem Set 5: Shark Tank



The sharks/investors are coming! Teams prepare for the shark tank by combining and refining all previous information, decisions, and infographic prototypes into a final presentation for panel of expert potential investors and an audience of parents, teachers, and peers. After students pitch their food truck businesses to a panel of investors, the investors decide how much of their imaginary money they want to invest in one or more businesses.

After the investments are complete, investors explain why they invested in their chosen food truck businesses. And, finally, the investment dollars for each food truck business are tallied up. The food truck business with the most investment wins Shark Tank.

## TOPICS & SKILLS COVERED

- Persuasion with mathematics and rhetoric
- Creation of a convincing sales pitch based on data analysis and formulated functions
- Development of a coherent and clear business plan
- Presenting, communicating and conducting oneself in a convincing, appealing and professional manner

GAME-LIKE LEARNING EXPERIENCES	ASSESSMENT TYPE	DESCRIPTION
<b>Socratic Smackdown</b>	Discussion game	Students play <b>Socratic Smackdown</b> , an Institute of Play game designed to help students learn how to discuss and use evidence to make connections and ask thought-provoking questions. In the game, students debate the merits of each team's Food Truck business pitch. Students receive peer feedback on their pitches and their discussion skills.
<b>Shark Tank</b>	Presentation	Students present business pitches to invited potential investors, who give feedback to students based on teacher-created rubrics, to see which teams receive "investments". Parents and others in the school community attend.

# Appendix

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## DIFFERENTIATION STRATEGIES

- Graphic organizers and guided handouts
- Specific guidelines for projects
- Heterogeneous groupings to support all students
- Student role assignments for group projects
- Exemplars of student projects from previous years
- Word wall of vocabulary and definitions (with visuals when appropriate)
- Student choice about ways to show learning (e.g. physical vs. digital model)
- Peer feedback and time for iteration
- Use of kinesthetic experiences (Block Talk and the field trip)

# Final Assessment Supporting Materials

## SHARK TANK PITCH PREP

Our food truck business idea is: \_\_\_\_\_

## WHAT YOU NEED

## WHAT YOU WANT TO USE IN YOUR PITCH PRESENTATION

1 Statistic

1 Visual aid

1 Prediction

1 Promise

# Final Assessment Rubric

Below are categories used by Quest teachers to evaluate student knowledge, skills and 21st century skills for the final assessment in the mission. Please feel free to expand the rubric to include different degrees of understanding and mastery (e.g. novice, apprentice, senior and master).

CRITERIA	DESCRIPTION
<b>Use of Mathematical Evidence</b>	Presents three pieces of accurate mathematical evidence (statistical, visual, and predictive) to clearly support an argument.
<b>Pitch: Completion and Delivery</b>	Effective delivery of a business pitch by explaining the idea, presenting evidence supporting the idea, and answering questions about the idea.
<b>Pitch: Visual Aids</b>	Clearly explains their charts/graphs and incorporates it into the pitch.
<b>Pitch: Confidence</b>	Makes eye contact, is assertive, and has a clear and concise delivery.
<b>Pitch: Professionalism</b>	Dressed appropriately, participates in the presentation, and are polite to the panel.
<b>Teamwork</b>	Works together as a team to plan and coordinate work towards a mutual goal. Demonstrates leadership skills, including the ability to persuade and guide others; and resolve conflicts cooperatively.

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# Website Resources

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## Tools

Source Name [IXL Math](#)

URL <http://www.ixl.com/>

Source Name [Google Spreadsheets](#)

URL <https://docs.google.com/spreadsheets/>

Source Name [“Should You Join the Food Truck Revolution?” - Deborah Moss](#)

URL <http://www.specialtyfood.com/news-trends/featured-articles/article/foodtruckrevolution>

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## Statistics and Data Representation

Site Name [Infogr.am](#)

URL <http://infogr.am/>

Site Name [Google Ngrams](#)

URL <https://books.google.com/ngrams>

Site Name [Figure This: Fish in the Pond](#)

URL [www.figurethis.org/challenges/c52/challenge.htm](http://www.figurethis.org/challenges/c52/challenge.htm)

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## Letter Frequency

Site Name [Rumkin Real-Time Letter Frequency Analysis](#)

URL <http://rumkin.com/tools/cipher/frequency.php>

Site Name [Discovery Education Cryptogram Maker](#)

URL <http://puzzlemaker.discoveryeducation.com/cryptogramSetUpForm.html>

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## Games

Site Name [Dragonbox](#)

URL <http://www.dragonboxapp.com/>

Site Name [Algebra Touch \(iPad\)](#)

URL <http://www.regularberry.com/algebra-touch>

# Standards Alignment

## Common Core Standards: Mathematics Standards

### Creating Equations that describe relationships.

#### CCSS.Math.Content.HSA-CED.A.1

Create equations and inequalities in one variable and use them to solve problems.

#### CCSS.Math.Content.HSA-CED.A.2

Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

#### CCSS.Math.Content.HSA-CED.A.3

Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.

#### CCSS.Math.Content.HSA-CED.A.4

Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

### Solving Equations and Inequalities.

#### CCSS.Math.Content.HSA-CED.A.1

Create equations and inequalities in one variable and use them to solve problems.

#### CCSS.Math.Content.HSA-CED.A.2

Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

#### CCSS.Math.Content.HSA-CED.A.3

Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and

interpret solutions as viable or nonviable options in a modeling context.

#### CCSS.Math.Content.HSA-CED.A.4

Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

### Represent and Solve Systems of Equations and Inequalities algebraically and graphically.

#### CCSS.Math.Content.HSA-REI.C.5

Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.

#### CCSS.Math.Content.HSA-REI.C.6

Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

#### CCSS.Math.Content.HSA-REI.D.10

Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).

#### CCSS.Math.Content.HSA-REI.D.11

Explain why the x-coordinates of the points where the graphs of the equations  $y = f(x)$  and  $y = g(x)$  intersect are the solutions of the equation  $f(x) = g(x)$ ; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations.

#### CCSS.Math.Content.HSA-REI.D.12

Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

### Summarize, represent, and interpret data on a single count or measurement variable.

#### CCSS.Math.Content.HSS-ID.A.2

Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.

#### CCSS.Math.Content.HSS-ID.A.3

Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).

### Understand and evaluate random processes that underly statistical experiments.

#### CCSS.Math.Content.HSS-IC.A.1

Understand statistics as a process for making inferences about population parameters based on a random sample from that population.

# Standards Alignment

## 21st Century Skills

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At Quest schools, we integrate 21st century skills in all discovery missions and problem sets.

### **Systems Thinking**

A systems thinker takes a dynamic systems perspective, demonstrating understanding of part-to-whole feedback dynamics (including time factors); using visual mapping tools, writing, and physical models to learn about how systems work, and to represent, invent, and communicate about systems.

### **Communication**

Use of oral, written, performative, and visual forms of language to formulate, exchange, present, and reflect on ideas: shared understanding is the aim of communication.

### **Teamwork**

Students plan and coordinate work towards a mutual goal; understand and regulate themselves as a team member; demonstrate leadership skills, including the ability to persuade and guide others; and resolve conflicts cooperatively.

### **Time Management**

Time management is the ability to achieve an effective use of time while performing goal-directed activities. It encompasses the ability to complete tasks within an expected time frame while maintaining outcome quality, through mechanisms such as planning, organizing, prioritizing, or multitasking.

# Continued Learning

Now that you've explored this mission pack, we hope you are inspired to learn more about game-like learning. Below is additional information to support you in continuing to build and share your learning.

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## We want to hear from you

We want to hear from you about your experience with this mission pack.

**What did you like about this mission pack?**

**What might you use in your teaching?**

**What do you want to learn more about?**

Please join the [Institute of Play Google+ community](#) to share your thoughts and ideas!

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## We want you to learn more

If you are interested in learning more, please visit these following websites:

[Institute of Play](#)

[Quest to Learn, NYC](#)

[CICS ChicagoQuest](#)

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## We also offer other educator resources

### [Q School Design Pack](#)

This pack highlights ten innovative components of the Quest school model.

### [Q Curriculum Design Pack](#)

This pack provides tools and methods for you to use to design game-like curriculum for your classroom.

### [Q Systems Thinking Design Pack](#)

This pack provides tools and methods for you to use to integrate systems thinking into your teaching.

### [Print and Play Games](#)

These Institute of Play games are designed with support from Quest teachers and played by Quest students.

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## We want you to share these resources

This resource is free and we want you to share it with others. When you do use and share it, please know this resource is licensed under a Creative Commons license.

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## We want to thank our partners

This mission pack is a result of collaborative work done over the past years between Institute of Play, Quest to Learn, and CICS ChicagoQuest. These resources are made possible through the generous support of the John D. and Catherine T. MacArthur Foundation.

# About Institute of Play

## We design experiences that make learning irresistible.

The Institute pioneers new models of learning and engagement. We are a not-for-profit design studio, founded in 2007 by a group of game designers in New York City. We are now home to an interdisciplinary team of designers, strategists and learning practitioners. Our first project was the design and implementation of an innovative New York City public school, called Quest to Learn.

## At the core of the experiences we design are games, play and the principles that underlie them.

Using these principles, we have created institutions, games, programs, events, digital platforms and products. Our work unlocks the transformative power of people as seekers and solvers of complex problems, risk takers, inventors and visionaries. We work wherever people are: in communities, businesses, schools, cultural and civic institutions.

## We empower people to thrive as active citizens in a connected world.

We are not preparing for a distant future. We are about meeting people where they are and igniting their potential now. We work with a diverse set of partners to make it happen, such as Electronic Arts, Intel, Educational Testing Service, the Mozilla Foundation, the Smithsonian, Parsons the New School for Design, Chicago International Charter Schools, DePaul University, E-Line Media and others.

# A Selection of Our Work

## GlassLab

An unprecedented collaboration between leaders in the commercial games industry and experts in learning and assessment, GlassLab aims to leverage digital games as powerful, data-rich learning environments that improve the process of learning with formative assessments teachers can trust.

## Play@Your Org

With a hands-on exploration of games and design, Play@ Your Org workshops are designed to help businesses, cultural institutions and other organizations integrate the power of play-based learning in their work to maximize participation and engagement.

## Playtime Online

A live hour-long webinar series, Playtime Online explores the work of leading organizations in the field of games and learning, the people who do it and why it matters in the world today. The series also offer a live forum to share learning within the Playtime community.

For more information, please visit [www.instituteofplay.org](http://www.instituteofplay.org)