

**Belvidere Cluster Wide
Mathematics Curriculum
6th grade
Updated Fall 2018**

All Belvidere Cluster curriculum and instruction areas are aligned to the New Jersey Student Learning Standards (NJSLS) in accordance with the NJ Department of Education's curriculum implementation requirements.

Interdisciplinary Connections

English Language Arts
Science and Scientific Inquiry (Next Generation)
Social Studies
Technology
Visual and Performing Arts

Technology Standards and Integration
iPads/Chromebooks
iXL
Interactive SmartBoard activities

NJSLA Technology

8.1.2.A.2

Create a document using a word processing application.

8.1.2.A.4

Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).

8.1.P.B.1

Create a story about a picture taken by the student on a digital camera or mobile device.

8.1.P.C.1

Collaborate with peers by participating in interactive digital games or activities.

8.1.2.E.1

Use digital tools and online resources to explore a problem or issue.

**CAREER EDUCATION
(NJDOE CTE Clusters)**

Education & Training
Finance
Information Technology
Science, Technology, Engineering & Mathematics (STEM)

21st Century Skills/ Themes

Financial, Economic, Business and Entrepreneurial Literacy
Creativity and Innovation
Critical Thinking
Problem Solving
Communication
Collaboration

Information Literacy

- CRP1. Act as a responsible and contributing citizen and employee.
- CRP2. Apply appropriate academic and technical skills.
- CRP3. Attend to personal health and financial well-being.
- CRP4. Communicate clearly and effectively and with reason.
- CRP5. Consider the environmental, social and economic impacts of decisions.
- CRP6. Demonstrate creativity and innovation.
- CRP7. Employ valid and reliable research strategies.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP9. Model integrity, ethical leadership and effective management.
- CRP10. Plan education and career paths aligned to personal goals.
- CRP11. Use technology to enhance productivity.
- CRP12. Work productively in teams while using cultural global competence.

Integrated Accommodations and Modifications

Special Education

- Printed copy of board work/notes provided
- Additional time for skill mastery
- Assistive technology
- Behavior management plan
- Center-Based Instruction
- Check work frequently for understanding
- Computer or electronic device utilization
- Extended time on tests/ quizzes
- Have student repeat directions to check for understanding
- Highlighted text visual presentation
- Modified assignment format
- Modified test content
- Modified test format
- Modified test length
- Multiple test sessions
- Multi-sensory presentation
- Preferential seating
- Preview of content, concepts, and vocabulary
- Reduced/shortened written assignments
- Secure attention before giving instruction/directions
- Shortened assignments
- Student working with an assigned partner
- Teacher initiated weekly assignment sheet
- Use open book, study guides, test prototypes
- Cubing activities
- Exploration by interest
- Flexible grouping
- Goal setting with students
- Jigsaw
- Mini workshops to re-teach or extend skills
- Open-ended activities
- Think-Pair-Share
- Varied supplemental materials

ELL

- Allowing students to correct errors (looking for understanding)
- Teaching key aspects of a topic
- Eliminate nonessential information
- Using videos,

illustrations, pictures, and drawings to explain or clarify
allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slideshows, videos, etc.) to demonstrate student's learning
Allowing students to correct errors (looking for understanding)
Allowing the use of note cards or open-book during testing
Decreasing the amount of work presented or required
Having peers take notes or providing a copy of the teacher's notes
Modifying tests to reflect selected objectives
Providing study guides
Reducing the number of answer choices on a multiple choice test
Tutoring by peers
Explain/clarify key vocabulary terms

At Risk

Allowing students to correct errors (looking for understanding)
Teaching key aspects of a topic Eliminate nonessential information allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slideshows, videos, etc.) to demonstrate student's learning
Allowing students to select from given choices .
Allowing the use of note cards or open-book during testing
Collaborating (general education teacher and specialist) to modify vocabulary, omit or modify items to reflect objectives for the student, eliminate sections of the test, and determine how the grade will be determined prior to giving the test
decreasing the amount of work presented or required .
Having peers take notes or providing a copy of the teacher's notes
Marking students' correct and acceptable work, not the mistakes
Modifying tests to reflect selected objectives
Providing study guides
Reducing the number of answer choices on a multiple choice test
Tutoring by peers
Using authentic assessments with real-life problem-solving
Using true/false, matching, or fill in the blank tests in lieu of essay tests
using videos, illustrations, pictures, and drawings to explain or clarify
Flexible grouping
Goal setting with students
Jigsaw
Mini workshops to re-teach or extend skills Open-ended activities
Think-Pair-Share
Varied supplemental materials

Gifted and Talented

Alternative formative and summative assessments
Choice boards
Games and tournaments
Group investigations
Independent research and projects Interest groups for real world application
Learning contracts
Leveled rubrics
Multiple intelligence options
Personal agendas

Project-based learning
Problem-based learning
Stations/centers
Think-Tac-Toes
Tiered activities/assignments
Tiered products

504

Printed copy of board work/notes provided
Additional time for skill mastery
Assistive technology
Behavior management plan
Center-Based Instruction
Check work frequently for understanding
Computer or electronic device utilization
Extended time on tests/ quizzes
Have student repeat directions to check for understanding
Highlighted text visual presentation
Modified assignment format
Modified test content
Modified test format
Modified test length
Multiple test sessions
Multi-sensory presentation
Preferential seating
Preview of content, concepts, and vocabulary
Reduced/shortened written assignments
Secure attention before giving instruction/directions
Shortened assignments
Student working with an assigned partner
Teacher initiated weekly assignment sheet
Use open book, study guides, test prototype
Exploration by interest
Flexible grouping
Goal setting with students
Mini workshops to re-teach or extend skills
Open-ended activities
Think-Pair-Share
Varied supplemental materials

Unit Plan 1	
Title: Numbers and Operations	
Grade Level: 6	Approximate Time: 2.5 weeks
Chapter Summary: This chapter extends previous knowledge of integers students have to the system of rational numbers. Students will be exploring absolute value, comparing and ordering integers, and evaluate exponential form.	
Learning Targets	
PARCC ■ Major Clusters; ■ Supporting Clusters; ● Additional Clusters	
Domain: The Number System	
Cluster: Apply and extend previous understandings of numbers to the system of rational numbers.	
Standard #:	Standard:
6.NS.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.6	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.
6.NS.7	Understand ordering and absolute value of rational numbers.
Domain: Expressions & Equations	
Cluster: Apply and extend previous understandings of arithmetic to algebraic expressions.	
Standard #:	Standard:
6.EE.1	Write and evaluate numerical expressions involving whole-number exponents.
Domain: Standards for Math Practice	
Standard #:	Standard:
MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.
Chapter Essential Question: <ul style="list-style-type: none"> ● How are opposite and negative numbers used in real-world contexts? ● What is the difference between an integer and a rational number? ● How do powers affect numbers? 	Chapter Enduring Understandings: <ul style="list-style-type: none"> ● More than integers are necessary to solve real-world applications. ie. negative, opposite, and rational numbers. ● Powers can simplify numbers.
Chapter Objectives: <ul style="list-style-type: none"> ● <i>Students will become secure in the concepts of opposite numbers, negative numbers, and absolute value.</i> ● <i>Students will be able to compare and order integers and rational numbers.</i> ● <i>Students will practice and learn different powers.</i> 	
Evidence of Learning	
Possible Formative Assessments: <ul style="list-style-type: none"> ● SMART Response questions used throughout the chapter. 	

- Quizzes
- Homework/classwork
- Q and A
- Labs/Projects
- IXL.com
- TenMarks.com
- Firstinmath.com

Summative Assessment:

- Chapter Test

Possible Benchmark Assessments:

- Unit Assessment

Possible Alternative Assessments:

- Choice boards - projects
- Skit
- Demonstration
- Journaling
- Conferencing

Suggested Lesson Plan

Topics	Approximate Timeframe
Topic #1: Addition, Natural Numbers & Whole Numbers	0.5 day
Topic #2 Addition Subtraction and Integers	1.5 days
Topic #3: Multiplication, Division and Rational Numbers	0.5 day
Topic #4: Absolute Value	1.5 days
Topic #5: Comparing Integers	1 day
Topic #6: Comparing and Ordering Rational Numbers Lab: RAFT – Hi-Ho, Hi-Low	3 days
Topic #7: Exponents	2 days
Topic #8: Real Numbers	0.5 day
Review and Chapter Test	2 days

Curriculum Development Resources:

- <https://njctl.org/courses/math/6th-grade-math/numbers-and-operations-6th-grade/>
- <http://www.raftbayarea.org/ideas/Hi%20Ho%20Hi%20Low.pdf>
- <https://www.khanacademy.org/>
- Approved classroom textbooks

Lesson Components

21st Century Skills

- Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Themes

- Critical Thinking and Problem Solving
- Communication and Collaboration
- Life and Career Skills

**Belvidere Cluster Wide
Mathematics Curriculum
6th Grade
Unit Plan 2**

Title: Factors and Multiples	
Grade Level: 6	Approximate Time: 2 weeks
Chapter Summary: This chapter will explore factors and multiples allowing students to solve real world problems using factors and multiples.	
Learning Targets	
PARCC ■ Major Clusters; ■ Supporting Clusters; ● Additional Clusters	
Domain: The Number System	
Cluster: Compute fluently with multi-digit numbers and find common factors and multiples.	
Standard #:	Standard:
6.NS.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.
Domain: Standards for Math Practice	
Standard #:	Standard:
MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
Chapter Essential Question: <ul style="list-style-type: none"> ● How do operations affect numbers? ● How do we solve real world application problems? 	Chapter Enduring Understanding: <ul style="list-style-type: none"> ● Factors and multiples can be used to solve real world problems.
Chapter Objectives: <ul style="list-style-type: none"> ● Students will explore even and odd numbers. ● Students will review disability rules. ● Students will use factors and multiples to find both GCFs and LCMs. 	
Evidence of Learning	
Possible Formative Assessments: <ul style="list-style-type: none"> ● SMART Response questions used throughout the chapter. ● Quizzes ● Homework/classwork ● Q and A ● Labs/Projects ● IXL.com ● TenMarks.com ● Firstinmath.com 	
Summative Assessment: <ul style="list-style-type: none"> ● Chapter Test 	
Possible Benchmark Assessments: <ul style="list-style-type: none"> ● Unit Assessment 	
Possible Alternative Assessments: <ul style="list-style-type: none"> ● Choice boards - projects ● Skit ● Demonstration ● Journaling ● Conferencing 	

Suggested Lesson Plan	
Topics	Approximate Timeframe
Topic #1: Even and Odd Numbers	1 day
Topic #2: Divisibility Rules for 3 and 9	1 day
Topic #3: Greatest Common Factor	2 days
Topic #4: Least Common Multiple	2 days
Topic #5: GCF and LCM Word Problems	2 days
Review and Chapter Test	2 days
Curriculum Development Resources: <ul style="list-style-type: none"> • https://njctl.org/courses/math/6th-grade-math/factors-and-multiples/ • https://www.khanacademy.org/ • Approved classroom textbooks 	
Lesson Components	
21st Century Skills <ul style="list-style-type: none"> • Financial, Economic, Business, and Entrepreneurial Literacy 21st Century Themes <ul style="list-style-type: none"> • Critical Thinking and Problem Solving • Communication and Collaboration • Life and Career Skills 	

Belvidere Cluster Wide Mathematics Curriculum 6th Grade Unit Plan 3	
Title: Fraction and Decimal Computation	
Grade Level: 6	Approximate Time: 3 weeks
Chapter Summary: This chapter will help students to further their understanding of fractions. They will fully understand the concept of division of fractions. They will model fraction problems and solve problems	

involving real world situations. This chapter will review long division, as well as make sure students have a strong understanding of decimal computation.

Learning Targets

PARCC ■ Major Clusters; ■ Supporting Clusters; ● Additional Clusters

Domain: The Number System

Cluster: Apply and extend previous understandings of multiplication and division to divide fractions by fractions

Standard #:

Standard:

6.NS.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.

Cluster: Compute fluently with multi-digit numbers and find common factors and multiples.

Standard #:

Standard:

6.NS.2

Fluently divide multi-digit numbers using the standard algorithm.

6.NS.3

Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

Domain: Standards for Math Practice

Standard #:

Standard:

MP1

Making sense of problems and persevere in solving them.

MP2

Reason abstractly and quantitatively.

MP3

Construct viable arguments and critique the reasoning of others.

MP4

Model with mathematics.

MP5

Use appropriate tools strategically.

MP6

Attend to precision.

MP7

Look for and make use of structure.

Chapter Essential Question:

- How do operations affect numbers?
- How do we solve real world application problems?
- What are the standard algorithms for long division and decimal computation?

Chapter Enduring Understanding:

- Decimal computation is necessary to solve real world application problems.

Chapter Objectives:

- Students will model and solve division of fractions.
- Students will review long division.
- Students will practice and learn the standard algorithms for decimal computation.
- Students will solve real world application problems with decimals.

Evidence of Learning

Possible Formative Assessments:

- SMART Response questions used throughout the chapter.
- Quizzes
- Homework/classwork
- Q and A
- Labs/Projects
- IXL.com
- TenMarks.com
- Firstinmath.com

Summative Assessment:

- Chapter Test

Possible Benchmark Assessments:

- Unit Assessment

Possible Alternative Assessments:	
<ul style="list-style-type: none"> • Choice boards - projects • Skit • Demonstration • Journaling • Conferencing 	
Suggested Lesson Plan	
Topics	Approximate Timeframe
Topic #1: Fraction Division	3 days
Topic #2: Long Division Review	2 days
Topic #3: Adding Decimals	1 day
Topic #4: Subtracting Decimals	1 day
Topic #5: Distributive Property & Product of Decimals	1 day
Topic #6: Multiplying Decimals Lab: RAFT – Dizzy Decimals & More	2 days
Topic #7: Dividing Decimals (Terminating)	1 day
Topic #8: Dividing Decimals (Repeating)	1 day
Lab: RAFT – The Money You Will Save	1 day
Review and Chapter Test	2 days
Curriculum Development Resources:	
<ul style="list-style-type: none"> • https://njctl.org/courses/math/6th-grade-math/fraction-and-decimal-computation/http://www.raftbayarea.org/ideas/Dizzy%20Decimals%20and%20More.pdf • http://www.raftbayarea.org/ideas/Money%20You%20Will%20Save.pdf • https://www.khanacademy.org/ • Approved classroom textbooks 	
Lesson Components	
21st Century Skills <ul style="list-style-type: none"> • Financial, Economic, Business, and Entrepreneurial Literacy 21st Century Themes <ul style="list-style-type: none"> • Critical Thinking and Problem Solving • Communication and Collaboration • ICT Literacy • Life and Career Skills 	

Belvidere Cluster Wide Mathematics Curriculum 6th Grade Unit Plan 4	
Title: Ratios, Proportions & Percents	
Grade Level: 6	Approximate Time: 6 weeks
Chapter Summary: This chapter will introduce formally the concepts of ratios, proportions, and percent problems. They will review definitions about ratios, develop a sense of converting between different measurements, and work with unit rate problems. They will then be able to solve problems involving percents and use that knowledge in real-world situations involving them.	
Learning Targets	

Domain: Ratios and Proportional Relationships

Cluster: Understand ratio concepts and use ratio reasoning to solve problems.

Standard #:	Standard:
6.RP.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak.” “For every vote candidate A received, candidate C received nearly three votes.”
6.RP.2	Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. For example, “This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar.” “We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger.”
6.RP.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. <ol style="list-style-type: none"> a. Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios. b. Solve unit rate problems including those involving unit pricing and constant speed. For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed? c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means $30/100$ times the quantity); solve problems involving finding the whole, given a part and the percent. d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities

Domain: Standards for Math Practice

Standard #:	Standard:
MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.

Chapter Essential Question:

- Is it important to know how to solve for unit rates?
- What is the connection between a ratio and a fraction/decimal?
- How are ratios used in the real world?
- Where can examples of ratios and rates be found?
- What does a percent represent?
- How can knowledge about percents aid me in real-world situations?

Chapter Enduring Understanding:

- Reasoning about ratios and proportions will help solve real-world situations.
- The relationships between fractions, decimals, and percents are critical and needed to solve problems.

Chapter Objectives:

- *Students will be able to use ratios to describe proportional situations.*
- *Students will be able to represent ratios and percents with concrete models, fractions, and decimals.*
- *Students will be able to apply their knowledge of ratios and proportions to percent problems.*
- *Students will be able to solve problems involving percents.*
- *Students will be able to make conversions between different measurements and unit ratios.*

Evidence of Learning

Possible Formative Assessments:

- SMART Response questions used throughout the chapter.
- Quizzes
- Homework/classwork
- Q and A
- Labs/Projects
- IXL.com
- TenMarks.com
- Firstinmath.com
- Chapter Project

Summative Assessment:

- Chapter Test

Possible Benchmark Assessments:

- Unit Assessment

Possible Alternative Assessments:

- Choice boards - projects
- Skit
- Demonstration
- Journaling
- Conferencing

Suggested Lesson Plan

Topics	Approximate Timeframe
Topic #1: Writing Ratios Lab: RAFT – Salmon You Can Count On	2 days
Topic #2: Equivalent Ratios Lab: PhET Proportion Playground	3 days
Topic #3: Rates & Unit Rates <i>Select one of the labs below:</i> Lab: RAFT – Happy Trails Mix Lab: PhET Unit Rate	3 days
Lab: Design on a Dime Project	2 days
Topic #4: Using Ratios to Convert Measurements	3 days
Topic #5: Converting Unit Ratios	3 days
Topic #6: Percents & Fractions	3 days
Topic #7: Percents & Decimals	2 days
Topic #8: Using Percents	4 days
Lab: Orange Soda Experiment	3 days
Review and Chapter Test	2 days

Curriculum Development Resources:

- <https://njctl.org/courses/math/6th-grade-math/ratios-proportions-percents/>
- <http://www.raftbayarea.org/ideas/Salmon%20You%20Can%20Count%20On.pdf>
- <https://phet.colorado.edu/en/simulation/proportion-playground>
- <http://www.raftbayarea.org/ideas/Happy%20Trails%20Mix.pdf>
- <https://phet.colorado.edu/en/simulation/unit-rates>
- <https://www.khanacademy.org/>
- Approved classroom textbooks

Lesson Components**21st Century Skills**

- Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Themes

- Critical Thinking and Problem Solving
- Communication and Collaboration
- Life and Career Skills

**Belvidere Cluster Wide
Mathematics Curriculum
6th Grade
Unit Plan 5**

Title: Expressions**Grade Level:** 6**Approximate Time:** 3 weeks

Chapter Summary: This chapter will introduce students to the concepts of powers and order of operations. Students will explore algebraic expressions, as well the use of the distributive property and to combine like terms.

Learning TargetsPARCC ■ Major Clusters; ■ Supporting Clusters; ● Additional Clusters

Domain: Expressions & Equations	
Cluster: Apply and extend previous understandings of arithmetic to algebraic expressions.	
Standard #:	Standard:
6.EE.1	Write and evaluate numerical expressions involving whole-number exponents.
6.EE.2	Write, read, and evaluate expressions in which letters stand for numbers.
6.EE.3	Apply the properties of operations to generate equivalent expressions.
6.EE.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).
Cluster: Reason about and solve one-variable equations and inequalities.	
Standard #:	Standard:
6.EE.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.
Domain: Standards for Math Practice	
Standard #:	Standard:
MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.
Chapter Essential Question: <ul style="list-style-type: none"> How do powers affect numbers? How can order of operations, the distributive property, and combining like terms help solve an algebraic equation? How can an algebraic expression help me solve a real-world application problem? 	Chapter Enduring Understanding: <ul style="list-style-type: none"> Powers can simplify computation. Algebraic expressions and equations can help solve real-world application problems.
Chapter Objectives: <ul style="list-style-type: none"> <i>Students will practice and learn different powers.</i> <i>Students will solve problems using order of operations.</i> <i>Students will differentiate between an algebraic expression and equation.</i> <i>Students will translate between words and expressions.</i> <i>Students will be able to evaluate expressions.</i> <i>Students will use the distributive property to combine like terms.</i> 	
Evidence of Learning	
Possible Formative Assessments: <ul style="list-style-type: none"> SMART Response questions used throughout the chapter. Quizzes Homework/classwork Q and A Labs/Projects IXL.com TenMarks.com Firstinmath.com 	

Summative Assessment:	
<ul style="list-style-type: none"> Chapter Test 	
Possible Benchmark Assessments:	
<ul style="list-style-type: none"> Unit Assessment 	
Possible Alternative Assessments:	
<ul style="list-style-type: none"> Choice boards - projects Skit Demonstration Journaling Conferencing 	
Suggested Lesson Plans	
Topics	Approximate Timeframe
Topic #1: Mathematical Expressions	0.5 day
Topic #2: Order of Operations Lab: RAFT – Algebraic Horse	2.5 days
Topic #3: The Distributive Property Lab: RAFT – Simple Expressions Bingo	2 days
Topic #4: Combining Like Terms Lab: RAFT – Algebra Rummy	2 days
Topic #5: Translating between Words and Expressions	2.5 days
Topic #6: Evaluating Expressions	2.5 days
Review and Chapter Test	2 days
Curriculum Development Resources:	
<ul style="list-style-type: none"> https://njctl.org/courses/math/6th-grade-math/equations-inequalities/ http://www.raftbayarea.org/ideas/Algebraic%20Horse.pdf http://www.raftbayarea.org/ideas/Simple%20Expressions%20Bingo.pdf http://www.raftbayarea.org/ideas/Algebra%20Rummy.pdf https://www.khanacademy.org/ Approved classroom textbooks 	
Lesson Components	
21st Century Skills	
<ul style="list-style-type: none"> Financial, Economic, Business, and Entrepreneurial Literacy 	
21st Century Themes	
<ul style="list-style-type: none"> Critical Thinking and Problem Solving Communication and Collaboration Life and Career Skills 	

**Belvidere Cluster Wide
Mathematics Curriculum
6th Grade
Unit Plan 6**

Title: Equations and Inequalities

Grade Level: 6

Approximate Time: 3 weeks

Chapter Summary: This chapter will allow students to learn about inequalities. They will solve inequalities and equations using different operations. They will discover how to write, solve, and graph simple inequalities themselves.

Learning Targets

PARCC ■ Major Clusters; ■ Supporting Clusters; ● Additional Clusters

Domain: Expressions & Equations

Cluster: Reason about and solve one-variable equations and inequalities.

Standard #:	Standards:
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6.EE.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.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.
6.EE.8	Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

Domain: Standards for Math Practice	
Standard #:	Standard:
MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.

Chapter Essential Question:

- How are inequalities different than equality equations?
- How will inequalities help model real world problems?

Chapter Enduring Understanding:

- Inequalities are used in real world problems.
- Inequalities can be modeled using number lines and solved using different operations
- Inequalities are manipulated similarly to equality equations.

Chapter Objectives:

- *Students will be able to determine solutions to different types of equations.*
- *Students will identify and manipulate inverse equations using different operations.*
- *Students will solve one step addition, subtraction, multiplication, and division equations.*
- *Students will write and solve simple inequalities.*
- *Students will develop the knowledge of how to graph solution sets to simple inequalities.*

Evidence of Learning

Possible Formative Assessments:

- SMART Response questions used throughout the chapter.
- Quizzes
- Homework/classwork
- Q and A
- Labs/Projects
- IXL.com
- TenMarks.com
- Firstinmath.com

Summative Assessment:

- Chapter Test

Possible Benchmark Assessments:

- Unit Assessment
-

Possible Alternative Assessments:

- Choice boards - projects
- Skit
- Demonstration
- Journaling
- Conferencing

Suggested Lesson Plan	
Topics	Approximate Timeframe
Topic #1: Equations and Identities	0.25 day
Topic #2: Tables	0.25 day
Topic #3: Determining Solutions to Equations	0.5 day
Topic #4: Solving an Equation for a Variable	2 days
Topic #5: Solving One Step Addition & Subtraction Equations	2 days
Topic #6: Solving One Step Multiplication & Division Equations Lab: RAFT – Occasions for an Equation	2 days
Topic #7: Writing Equations	2 days
Topic #8: Writing Simple Inequalities	1 day
Topic #9: Solutions to Simple Inequalities	1 days
Topic #10: Graphing Solution Sets to Simple Inequalities	2 days
Review and Chapter Test	2 days
Curriculum Development Resources: <ul style="list-style-type: none">• https://njctl.org/courses/math/6th-grade-math/equations-inequalities/• http://www.raftbayarea.org/ideas/Occasions%20for%20an%20Equation.pdf• https://www.khanacademy.org/• Approved classroom textbooks	
Lesson Components	
21st Century Skills <ul style="list-style-type: none">● Financial, Economic, Business, and Entrepreneurial Literacy 21st Century Themes <ul style="list-style-type: none">● Critical Thinking and Problem Solving● Communication and Collaboration● Life and Career Skills	

**Belvidere Cluster Wide
Mathematics Curriculum
6th Grade
Unit Plan 7**

Title: Applications of Equations

Grade Level: 6

Approximate Time: 3 weeks

Chapter Summary: This chapter focuses on number fluency and facility with what numbers represent, It explores how numbers are related to each other and how each can best be used to describe a particular situation. The chapter will also explore factors and multiples as well as the distributive property.

Learning Targets

PARCC ■ Major Clusters; ■ Supporting Clusters; ● Additional Clusters

Domain: The Number System

Cluster: Represent and analyze quantitative relationships between dependent and independent variables.

Standard #:

Standard:

6.EE.9

Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.

Domain: Standards for Math Practice	
Standard #:	Standard:
MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.
Chapter Essential Questions: <ul style="list-style-type: none"> How can equations, tables, and graphs be used to represent real-life scenarios? 	Chapter Enduring Understandings: <ul style="list-style-type: none"> When the value of one variable depends on the value of another, it is called a dependent variable; when the value of one variable does not depend on the value of the other, it is called an independent variable. A table can show the relationship between a dependent and independent variable.
Chapter Objectives: <ul style="list-style-type: none"> <i>Students will differentiate between dependent and independent variables.</i> <i>Students will represent the relationship between dependent and independent variables, found in real-life scenarios, with equations, tables, and graphs.</i> 	
Evidence of Learning	
Possible Formative Assessments: <ul style="list-style-type: none"> SMART Response questions used throughout the chapter. Quizzes Homework/classwork Q and A Labs/Projects IXL.com TenMarks.com Firstinmath.com 	
Summative Assessment: <ul style="list-style-type: none"> Chapter Test 	
Possible Benchmark Assessments: <ul style="list-style-type: none"> Unit Assessment 	
Possible Alternative Assessments: <ul style="list-style-type: none"> Choice boards - projects Skit Demonstration Journaling Conferencing 	
Suggested Lesson Plan	
Topics	Approximate Timeframe
Topic #1: Translating to Equations Lab: RAFT – Meet my Function Machine	1 day
Topic #2: Dependent and Independent Variables	4 days
Topic #3: Equations and Tables	4 days
Topic #4: Graphing Equations	4 days

Review and Chapter Test	2 days
Curriculum Development Resources: <ul style="list-style-type: none"> • https://njctl.org/courses/math/6th-grade-math/dependent/ • http://www.raftbayarea.org/ideas/Meet%20My%20Function%20Machine.pdf • https://www.khanacademy.org/ • Approved classroom textbooks 	
Lesson Components	
21st Century Skills <ul style="list-style-type: none"> • Financial, Economic, Business, and Entrepreneurial Literacy 21st Century Themes <ul style="list-style-type: none"> • Critical Thinking and Problem Solving • Communication and Collaboration • Life and Career Skills 	

Belvidere Cluster Wide Mathematics Curriculum 6th Grade Unit Plan 8	
Title: Graphing	
Grade Level: 6	Approximate Time: 1.5 weeks
Chapter Summary: This chapter introduces all four quadrants of the Cartesian plane and ordered pairs. Polygons will also be displayed on coordinate planes.	
Learning Targets	
PARCC ■ Major Clusters; ■ Supporting Clusters; ● Additional Clusters	
Domain: The Number System	
Cluster: Apply and extend previous understandings of numbers to the system of rational numbers.	
Standard #:	Standards:
6.NS.8	Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.
Domain: Geometry	
Cluster: Solve real-world and mathematical problems involving area, surface area, and volume.	
6.G.3	Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.

Domain: Standards for Math Practice	
Standard#:	Standard:
MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.
Chapter Essential Question: <ul style="list-style-type: none"> • What is the Cartesian plane and what does an ordered pair represent? 	
Chapter Enduring Understanding: <ul style="list-style-type: none"> • The Cartesian plane and ordered pairs can be utilized to represent real world application problems. 	
Chapter Objectives: <ul style="list-style-type: none"> • <i>Students will recognize the different parts of the Cartesian plane.</i> • <i>Students will practice and learn how to graph an ordered pair.</i> • <i>Students will examine polygons in the coordinate plane.</i> • <i>Students will solve problems involving distance between two points.</i> 	
Evidence of Learning	
Possible Formative Assessments: <ul style="list-style-type: none"> • SMART Response questions used throughout the chapter. • Quizzes • Homework/classwork • Q and A • Labs/Projects • IXL.com • TenMarks.com • Firstinmath.com 	
Summative Assessment: <ul style="list-style-type: none"> • Unit Test 	
Possible Benchmark Assessments: <ul style="list-style-type: none"> • Unit Assessment 	
Possible Alternative Assessments: <ul style="list-style-type: none"> • Choice boards - projects • Skit • Demonstration • Journaling • Conferencing 	

Suggested Lesson Plan	
Topics	Approximate Timeframe
Topic #1: Cartesian Plane	1 day
Topic #2: Graphing Ordered Pairs Lab: RAFT – Graphing Race to the Edge	3 days
Topic #3: Polygons in the Coordinate Plane	1 day
Topic #4: Cartesian Plane Applications	1.5 days
Review, Chapter Test	1.5 days

Curriculum Development Resources:

- <https://njctl.org/courses/math/6th-grade-math/graphing-6th-grade/>
- <http://www.raftbayarea.org/ideas/Graphing%20Race%20to%20the%20Edge.pdf>
- <https://www.khanacademy.org/>
- Approved class textbooks

Lesson Components**21st Century Skills**

- Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Themes

- Critical Thinking and Problem Solving
- Communication and Collaboration
- Life and Career Skills

**Belvidere Cluster Wide
Mathematics Curriculum
6th Grade
Unit Plan 9**

Title: Geometry/Measurement**Grade Level:** 6**Approximate Time:**
4 weeks

Chapter Summary: This chapter will allow students to explore how to find the area of different figures. They will be introduced to 3-Dimensional figures, as well as learn to calculate their surface area and volume. Polygons will also be displayed on coordinate planes and irregular figures will be examined.

Learning TargetsPARCC ■ Major Clusters; ■ Supporting Clusters; ● Additional Clusters**Domain: Geometry****Cluster: Solve real-world and mathematical problems involving area, surface area, and volume.****Standard #s:****Standards:****6.G.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.2Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l w h$

	and $V = b h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
6.G.3	Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.
6.G.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.

Domain: Standards for Math Practice	
Standard#:	Standard:
MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.
Chapter Essential Question: <ul style="list-style-type: none"> How is the area of a figure calculated? How do irregular figures and shaded region affect the area of the figure? What is a 3-Dimensional figure compared to a 2-Dimensional figure? Are surface area and volume the same as area? 	Chapter Enduring Understanding: <ul style="list-style-type: none"> The area of different figures can be calculated using different, yet similar formulas. 3-Dimensional solids have unique properties and characteristics. Surface area and volume can be calculated using formulas. Polygons can be represented in a coordinate plane.
Chapter Objectives: <ul style="list-style-type: none"> Students will calculate the area of rectangles, parallelograms, triangles, and trapezoids. Students will solve for the area of irregular figures and shaded regions. Students will be introduced to 3-Dimensional solids. Students will determine the surface area and volume of different solids. Students will examine polygons in the coordinate plane . 	
Evidence of Learning	

Possible Formative Assessments:

- SMART Response questions used throughout the chapter.
- Quizzes
- Homework/classwork
- Q and A
- Labs/Projects
- IXL.com
- TenMarks.com
- Firstinmath.com

Summative Assessment:

- Chapter Test

Possible Benchmark Assessments:

- Unit Assessment

Possible Alternative Assessments:

- Choice boards - projects
- Skit
- Demonstration
- Journaling
- Conferencing

Suggested Lesson Plan	
Topics	Approximate Timeframe
Topic #1: Area of Rectangles Lab (to review): RAFT – Polygon Pursuit	1 day
Topic #2: Area of Parallelograms	1.5 days
Topic #3: Area of Right Triangles Lab: Area of Right Triangles Exploratory Challenge	1 day
Topic #4: Area of Acute and Obtuse Triangles Lab: Area of Acute and Obtuse Exploratory Challenge	
Topic #5: Area of Trapezoids	1 day
Topic #6: Mixed Review: Area	2 days
Topic #7: Area of Irregular Figures	1 day
Topic #8: Area of Shaded Regions	1.5 days
Topic #9: 3-Dimensional Solids Lab: RAFT – Shape Skeletons	1 day
Topic #10: Nets Lab: Nets Exploratory Challenge Lab	1 day
Topic #11: Surface Area	2 days
Topic #12: Volume Lab: RAFT – Chewed Food	2 days
Topic #13: Surface Area & Volume Application Problems	2 days
Topic #14: More Polygons in the Coordinate Plane	3 days
Review and Chapter Test	2 days

Curriculum Development Resources:

- <https://njctl.org/courses/math/6th-grade-math/>
- <http://www.raftbayarea.org/ideas/Polygon%20Pursuit.pdf>
- <http://www.raftbayarea.org/ideas/Shape%20Skeletons.pdf>
- <http://www.raftbayarea.org/ideas/Chewed%20Food.pdf>
- <http://www.engageny.org/sites/default/files/resource/attachments/math-g6-m5-teacher-materials.pdf>
- <https://www.khanacademy.org/>
- Approved classroom text books

Lesson Components**21st Century Skills**

- Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Themes

- Critical Thinking and Problem Solving
- Communication and Collaboration
- Life and Career Skills

**Belvidere Cluster Wide
Mathematics Curriculum
6th Grade
Unit Plan 10**

Title: Statistical Variability**Grade Level:** 6**Approximate Time:** 2 weeks

Chapter Summary: In this chapter the students will explore and understand mean, median, and mode. The students will then strengthen their understanding by working through some application problems. Then students will review the vocabulary dealing with measurements of variation such as, max, min, range and quartiles.

Learning TargetsPARCC ■ Major Clusters; ■ Supporting Clusters; ● Additional Clusters**Domain:** Statistics and Probability**Cluster:** Develop understanding of statistical variability**Standard #:****Standards:****6.SP.1**

Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.

6.SP.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.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.		
Cluster: Summarize and describe distributions.			
Standards #:	Standards:		
6.SP.5	Summarize numerical data sets in relation to their context, such as by: c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.		
Domain: Standards for Math Practice			
Standard #:	Standard:		
MP1	Making sense of problems and persevere in solving them.		
MP2	Reason abstractly and quantitatively.		
MP3	Construct viable arguments and critique the reasoning of others.		
MP4	Model with mathematics.		
MP5	Use appropriate tools strategically.		
MP6	Attend to precision.		
MP7	Look for and make use of structure.		
MP8	Look for and express regularity in repeated reasoning.		
<table border="1" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> Chapter Essential Question: <ul style="list-style-type: none"> What are the ways to organize, measure, and display data? </td> <td style="width: 50%; vertical-align: top;"> Chapter Enduring Understanding: <ul style="list-style-type: none"> Measurements of center and variation are essential to analyze data. </td> </tr> </table>		Chapter Essential Question: <ul style="list-style-type: none"> What are the ways to organize, measure, and display data? 	Chapter Enduring Understanding: <ul style="list-style-type: none"> Measurements of center and variation are essential to analyze data.
Chapter Essential Question: <ul style="list-style-type: none"> What are the ways to organize, measure, and display data? 	Chapter Enduring Understanding: <ul style="list-style-type: none"> Measurements of center and variation are essential to analyze data. 		
Chapter Objectives: <ul style="list-style-type: none"> Students will review the vocabulary for measurements of center. Students will practice and strengthen their understanding of measurements of center by working through application problems Students will review vocabulary for measurements of variation such as min/max, range, quartiles, Outliers, and mean absolute deviation. 			
Evidence of Learning			
Possible Formative Assessments: <ul style="list-style-type: none"> SMART Response questions used throughout the chapter. Quizzes Homework/classwork Q and A Labs/Projects IXL.com TenMarks.com Firstinmath.com 			
Summative Assessment: <ul style="list-style-type: none"> Chapter Test 			
Possible Benchmark Assessments: <ul style="list-style-type: none"> Unit Assessment 			
Possible Alternative Assessments: <ul style="list-style-type: none"> Choice boards - projects Skit Demonstration 			

<ul style="list-style-type: none"> Journaling Conferencing 	
Suggested Lesson Plan	
Topics	Approximate Timeframe
Chapter Intro: What is Statistics?	0.5 day
Topic #1: Measures of Center (Mean, Median, Mode)	2.5 days
Topic #2: Central Tendency Application Problems	2 day
Topic #3: Measures of Variation (Min-Max, Range, Quartiles, Outliers, Mean Absolute Deviation) Lab: RAFT – Medi, Meany, Midi, Mode Lab: RAFT – Who is the Outlier	4 days
Review and Chapter Test	2 days
Curriculum Development Resources:	
<ul style="list-style-type: none"> https://njctl.org/courses/math/6th-grade-math/statistical-variability/ http://www.raftbayarea.org/ideas/Medi%20Meany%20Midi%20Mode.pdf http://www.raftbayarea.org/ideas/Who%20is%20The%20Outlier.pdf https://www.khanacademy.org/ Approved classroom textbooks 	
Lesson Components	
21st Century Skills <ul style="list-style-type: none"> Financial, Economic, Business, and Entrepreneurial Literacy 21st Century Themes <ul style="list-style-type: none"> Critical Thinking and Problem Solving Communication and Collaboration Life and Career Skills 	

Belvidere Cluster Wide Mathematics Curriculum 6th Grade Unit Plan 11	
Title: Data Displays	
Grade Level: 6	Approximate Time: 2 weeks
Chapter Summary: In this chapter students will explore the different ways to display data, through plots, graphs, and charts.	
Learning Targets	
PARCC ■ Major Clusters; ■ Supporting Clusters; ● Additional Clusters	
Domain: Statistics and Probability	
Cluster: Summarize and describe distributions.	
Standards #:	Standards:
6.SP.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
6.SP.5	Summarize numerical data sets in relation to their context, such as by: <ul style="list-style-type: none"> a. Reporting the number of observations. b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
Domain: Standards for Math Practice	
Standard #:	Standard:

MP1	Making sense of problems and persevere in solving them.		
MP2	Reason abstractly and quantitatively.		
MP3	Construct viable arguments and critique the reasoning of others.		
MP4	Model with mathematics.		
MP5	Use appropriate tools strategically.		
MP6	Attend to precision.		
MP7	Look for and make use of structure.		
MP8	Look for and express regularity in repeated reasoning.		
Chapter Essential Question: <ul style="list-style-type: none"> What are the ways to organize, measure, and display data? 		Chapter Enduring Understanding: <ul style="list-style-type: none"> Measurements of center and variation are Data displays are essential in organizing data. 	
Chapter Objectives: <ul style="list-style-type: none"> Students will practice and strengthen their understanding of measurements of center by working through application problems Students will explore and understand the different ways to display data 			
Evidence of Learning			
Possible Formative Assessments: <ul style="list-style-type: none"> SMART Response questions used throughout the chapter. Quizzes Homework/classwork Q and A Labs/Projects IXL.com TenMarks.com Firstinmath.com 			
Summative Assessment: <ul style="list-style-type: none"> Chapter Test 			
Possible Benchmark Assessments: <ul style="list-style-type: none"> Unit Assessment 			
Possible Alternative Assessments: <ul style="list-style-type: none"> Choice boards - projects Skit Demonstration Journaling Conferencing 			
Suggested Lesson Plan			
Topics		Approximate Timeframe	
Topic #1: Data Displays		0.5 day	
Topic #2: Frequency Tables and Histograms		1.5 days	
Topic #3: Box-and-Whisker Plots		2 days	
Topic #4: Dot Plots		1 days	
Topic #5: Analyzing Data Displays		2 days	
Review and Chapter Test		2 days	
Curriculum Development Resources: <ul style="list-style-type: none"> https://njctl.org/courses/math/6th-grade-math/data-displays/ http://www.raftbayarea.org/ideas/Medi%20Meany%20Midi%20Mode.pdf http://www.raftbayarea.org/ideas/Who%20is%20The%20Outlier.pdf https://www.khanacademy.org/ 			

- Approved classroom textbooks

Lesson Components

21st Century Skills

- **Financial, Economic, Business, and Entrepreneurial Literacy**

21st Century Themes

- **Critical Thinking and Problem Solving**
- **Communication and Collaboration**
- **Life and Career Skills**