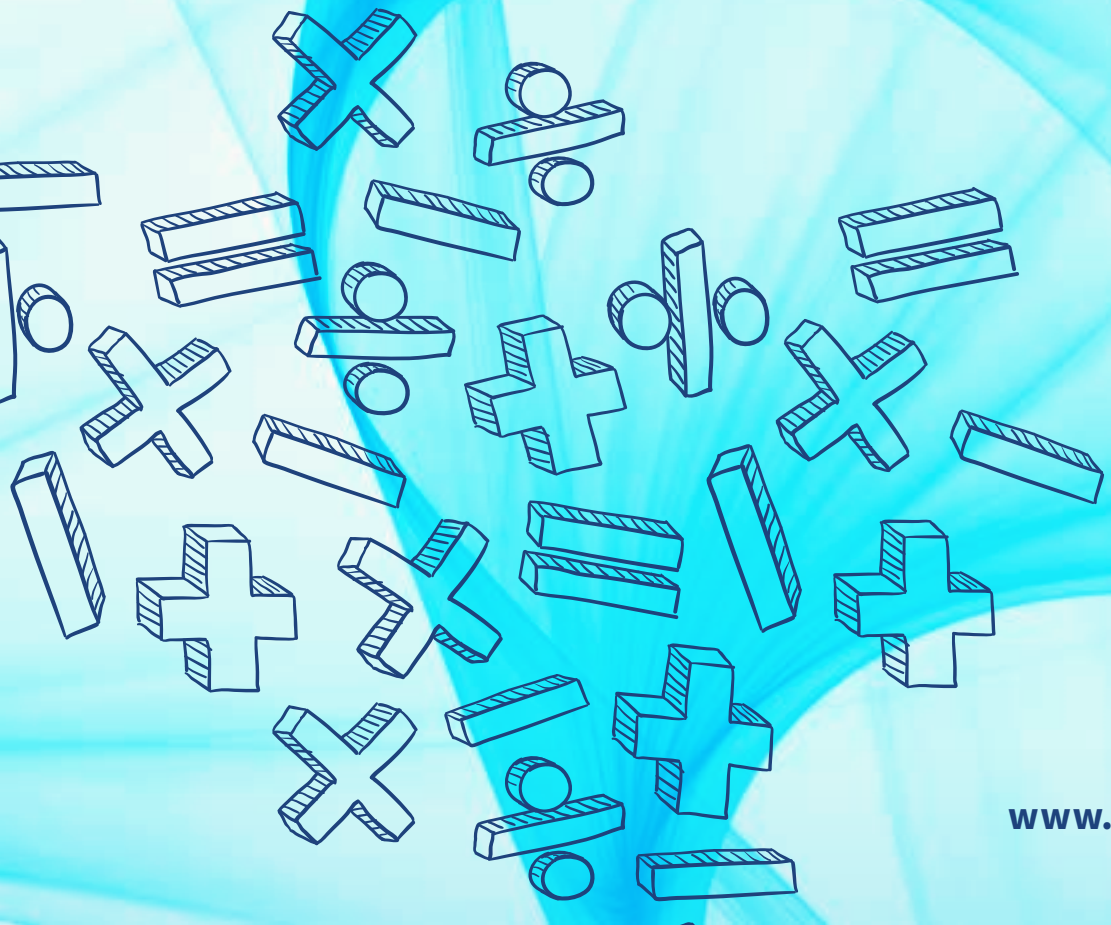
STEMscopes™ MATH

7TH GRADE
TEACHER LESSON SAMPLE

PERCENT APPLICATION



Discover the wonder of mathematics in our everyday world with STEMscopes Math. Built from the ground up by practicing educators using the flexible 5E lesson model, STEMscopes Math provides you with everything you need to create a meaningful learning experience.

LEARNING WITHIN A REAL-WORLD, RELEVANT CONTEXT

Student learning is rooted in real-world scenarios. Real-world connection provides teachers a way to foster an understanding and appreciation for numbers by focusing on the relationship between mathematical concepts and students' experiences and interests. When real-world connection is incorporated into lessons, students can see how math fits into their daily lives.

STEMscopes Math uses the Hook, Explore Activities, and Problem-Based Tasks to engage students in real-world situations where math skill is needed. Life Connections, Career Connections, Math Today! News, and Math Story incorporate math into the everyday experiences and careers that students may encounter outside of the classroom.

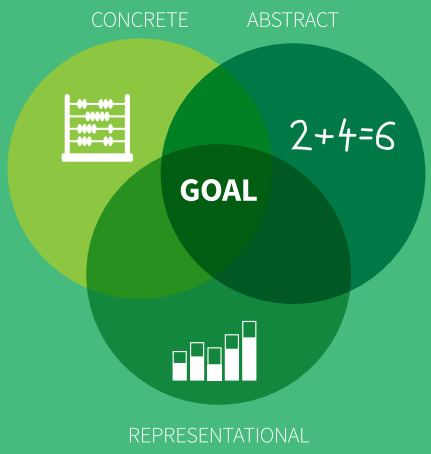
DESIGNED FOR NEW AND VETERAN TEACHERS

Every STEMscopes Math lesson is built to the standards, from the ground up. Chunking information into bite-size pieces, we make our units (called "scopes") digestible and engaging. Whether you're a new or veteran teacher, STEMscopes Math provides everything you need to create a meaningful learning experience.

CONCRETE-REPRESENTATIONAL-ABSTRACT (CRA) APPROACH

The CRA model is a powerful strategy for teaching new math concepts. It is a three-part constructivist process that transitions students from hands-on learning to the math we use as adults. As students progress through the Explore Activities (Lessons), they will transition from hands-on experiences with concrete objects to representational, pictorial models and ultimately arrive at symbolic representations, using only numbers, notations, and mathematical symbols.

Since state assessments often require students to solve problems at all three levels, the CRA model helps students succeed in high-stakes testing. Research-based studies show that students who use concrete materials to learn math develop more precise and comprehensive mental representations, show more motivation and on-task behavior, understand mathematical ideas, and better apply these ideas to life situations.



PROMOTING EQUITY

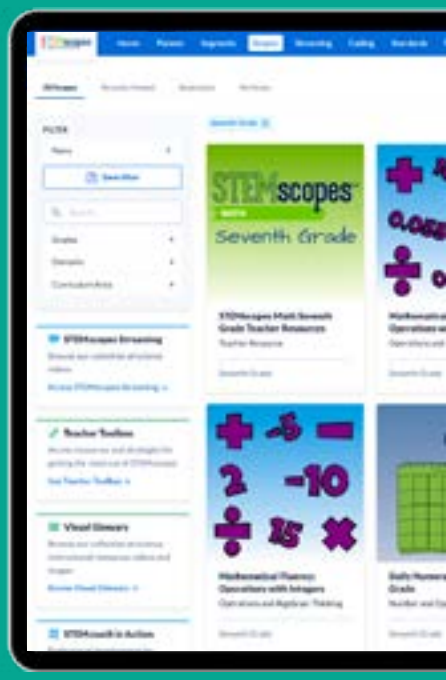
Implementing STEMscopes Math in the classroom provides every student access to high-quality, challenging learning opportunities. The activities within the program are scaffolded and differentiated so that all students find the content accessible, relatable, and challenging. The emphasis on collaborative learning and intentional discourse within the STEMscopes program promotes a sense of community in the classroom where students can learn from each other.

DIGITAL, PRINT, AND KITS

We are committed to delivering flexible, differentiated, student-centered instructional content through our digital platform, and we're all about making life easier for teachers.

DIGITAL CURRICULUM

Our **digital platform** allows you to assign work directly to student accounts, push content to Google Classroom, print materials on demand, and use our lessons in a whole-group or blended learning setting. Find coherent, 5E-based lessons that align with standards and seamlessly flow from one activity to the next.



Print and hands-on kits bring digital learning and real-world instruction together. These supplemental resources establish a concrete connection between school and home, helping teachers make education more equitable.

STUDENT PRINT

HANDS-ON KITS

STANDARDS

Aligning our math program to standards is at the core of what we do. STEMscopes Math fully supports your state standards, no matter where you are.

HOME

This is where you will find your lesson planning materials so you can facilitate fun, purposeful experiences for your students. Build your content knowledge, review the scope's standards, and access parent materials in the Home section.

ENGAGE

The Engage section lays the foundation for learning. You begin by pre-assessing students and filling knowledge gaps. The Hook lays out a storyline narrative to establish a purpose for learning and capture students' attention with real-world connections.

EXPLORE*

This is where students dig into the content. The Explore section includes scaffolded hands-on activities that build toward mastery of the standards. Each Explore prompt encourages rich mathematical discourse and student reasoning, and concludes with an Exit Ticket.

EXPLAIN*

Paired with Explore, the Explain section offers a variety of resources that connect the experiences of the Explore activities to the academic content students need to know. These resources include illustrated vocabulary cards, independent practice, and journal prompts that support the Explore activities and solidify student learning.

ELABORATE*

Workstations are a go! The Elaborate section makes differentiation a cinch with ready-made activities—digital and paper-based games, spiraled review, career connections, literacy connections, and more—perfect for rotations! Students continue learning while you make time for small group interventions and independent projects to support your struggling and advanced learners.

**Instructional elements in STEMscopes Mathematics are intended to work together. The elements in the Explain and Elaborate sections can be used to support student learning and provide opportunities for practice while students explore the concept.*

EVALUATE

Get the data you need from the assessment tools provided in the Evaluate section. From multiple choice-based assessments to an open-ended reasoning prompt, there's an evaluation for every student's learning style. You can also create your own assessments using the assessment builder tool.

INTERVENTION

Useful during Elaborate or as an after-school support, Intervention is a small hands-on activity designed to target students' conceptual misunderstanding while building their math skills. This is also a great re-teach and test prep tool!

ACCELERATION

Are your students ready to go above and beyond with what they've learned? In the Acceleration section, students complete a design challenge and relate learning to current events around the world. The activities prompt them to think more deeply about the content and its applications.

DIGITAL CURRICULUM SAMPLE

To review the lesson resources in the digital Seventh Grade Scope, *Percent Application*, access our digital curriculum sample at **www.stemscopes.com/math/national/curriculum-sample** and choose the Seventh Grade level on the left *Grades* menu bar.

Seventh Grade
SAMPLE LESSON

SCOPE (UNIT) **Percent Application**
EXPLORE (LESSON) **Percent Application with Tax**

The following pages introduce resources to help you get the most out of your STEMscopes Math Grade 7 lesson. You will also notice we've provided supportive unit resources that would allow you to plan lessons throughout the year using STEMscopes Math.

This sample lesson ***does not include*** all the elements and features of our digital and print math curriculum.

RESOURCE LIST

The following resources, as well as additional resources not listed, can be found in the digital curriculum *Grade 7 Scope, Percent Application.*

HOME

- Student Expectations
- Key Concepts
- Scope Overview
- Parent Letter

TEACHER TOOLBOX

- Scope List
- Scope and Sequence
- Lesson Planning Guide for 1-3 Explores
- Lesson Planning Guide for 3-5 Explores

EXPLORE

- Explore 1: Percent Application with Tax*

EXPLAIN

- Vocabulary Cards*

ACCELERATION

- Choice Board
- Would You Rather

DAILY NUMERACY

- Week 3 Activities

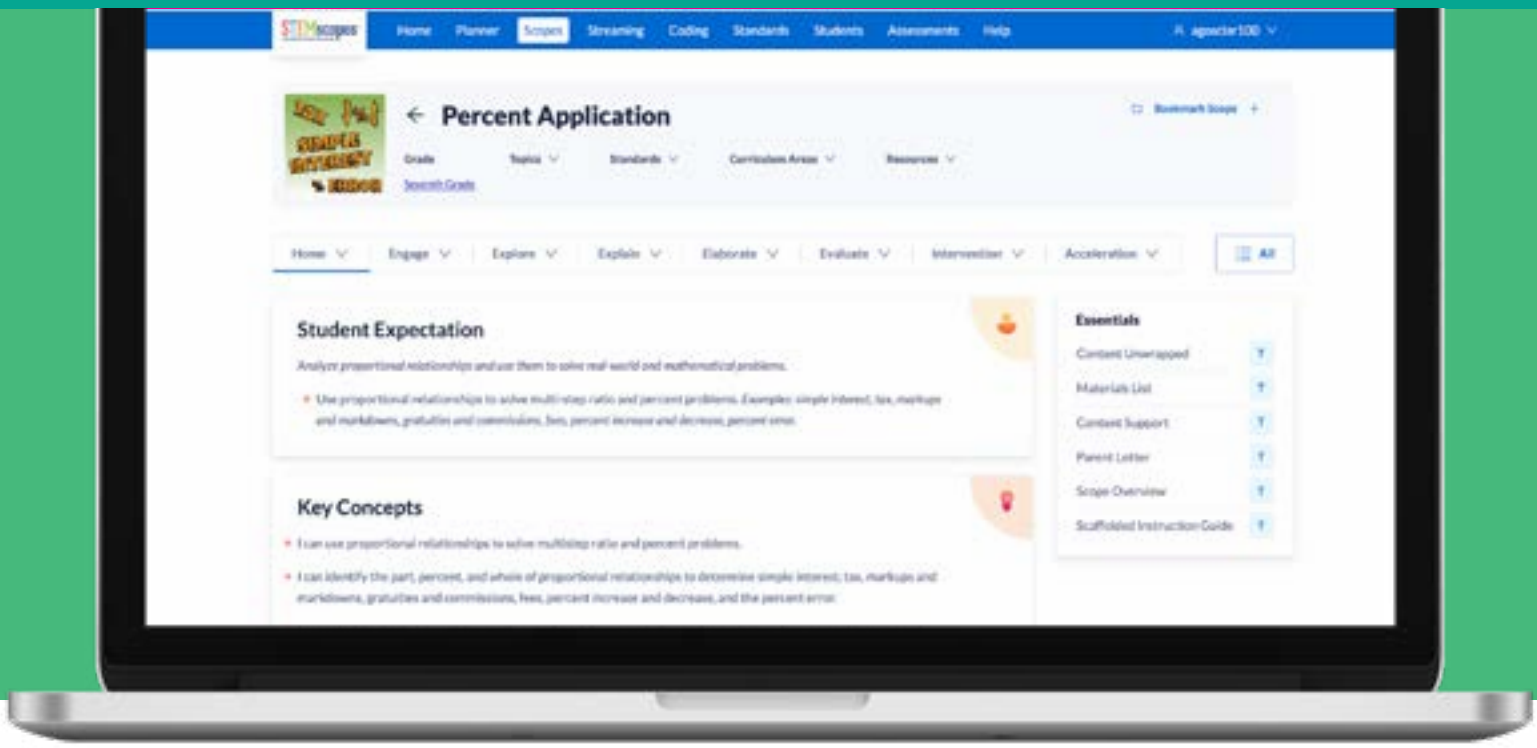
MATHEMATICAL FLUENCY

- "Operations with Integers: Subtracting Different Signs" Activity*

**These activities are samples and do not represent all the activities and resources within our digital and print curriculum.*

Seventh Grade SAMPLE LESSON

SCOPE (UNIT) **Percent Application**



STUDENT EXPECTATIONS

Analyze proportional relationships and use them to solve real-world and mathematical problems.

- Use proportional relationships to solve multi-step ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.

KEY CONCEPTS

- I can use proportional relationships to solve multistep ratio and percent problems.
- I can identify the part, percent, and whole of proportional relationships to determine simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, and the percent error.
- I can calculate simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, and percent error using proportional relationships.
- I can solve multistep, real-world ratio problems involving tax, discount, commissions, simple interest, fees, markups and markdowns, gratuities, percent increase and decrease, and percent error.

Scope Overview: Percent Application

Standards

Analyze proportional relationships and use them to solve real-world and mathematical problems.

- Use proportional relationships to solve multi-step ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error*

If the APK reveals that students are not ready, move to the Foundation Builder!

Engage

- Accessing Prior Knowledge: Find a Percent of a Quantity as a Rate per 100
- Foundation Builder: Find a Percent of a Quantity as a Rate per 100
- Hook: Piece of Cake

Home

- Scope Overview
- Content Support
- Standards Unwrapped
- Parent Letter

Explore

- Explore 1: Tax
  - Exit Ticket
  - Show What You Know: Part I
- Explore 2: Percent Change
  - Exit Ticket
  - Show What You Know: Part II
- Explore 3: Tips and Commissions
  - Exit Ticket
  - Show What You Know: Part III
- Explore 4: Simple Interest
  - Exit Ticket
  - Show What You Know: Part IV
- Explore 5: Percent Error
  - Exit Ticket
  - Show What You Know: Part V

Elaborate

- Fluency Builder
  - Fix the Mistake
  - Bam!
- Spiraled Review
- Data Science
- PhET
  - Area Model Decimals: Decimal Products

Explain

- Picture Vocabulary
- Interactive Vocabulary
- Show What You Know
- Anchor Chart
- Interactive Notebook

Once all of the Explores have been taught, go back to the Hook for students to apply knowledge learned.

Instructional elements in STEMscopes Mathematics are intended to work together. The elements in the Explain and Elaborate sections can be used to support student learning and provide opportunities to practice while the students are exploring the concept.

Evaluate

- Mathematical Modeling Task
- Standards-Based Assessment
- Skills Quiz

Intervention

- Skill Review and Practice

Acceleration

- Choice Board
- Would You Rather

Seventh Grade – Percent Applications

Dear Parents,

In math class, your student is about to explore percent applications. To master this skill, they will build on their knowledge of proportional relationships, ratios, and unit rates from sixth grade and previous lessons in seventh grade. As your student extends their knowledge of this concept throughout seventh grade, they will learn the following concepts:

- Solve problems involving sales tax using proportional relationships.

  Example: Tommy buys a video game for $23.25, a new controller for his gaming system for $15.25, and a memory card for $13.50. The sales tax is 8%. How much will he pay overall?

  Tommy will pay $56.16 overall.

  Students should first add up the total amount prior to adding the tax. $23.25 + 12.25 + 13.50 = 52$. They then need to find 8% of 52. They can do this by setting up a proportion to solve for 8% of $52, which is $4.16. Once they add this to the original amount of 52, they will get a total cost of $56.16.

$$23.25 + 12.25 + 13.50 = 52.00$$

$$\frac{x}{52} \cdot \frac{8}{100}$$

$$52 \cdot 8 = 100x$$

$$\frac{416}{100} = x$$

$$4.16 = x$$

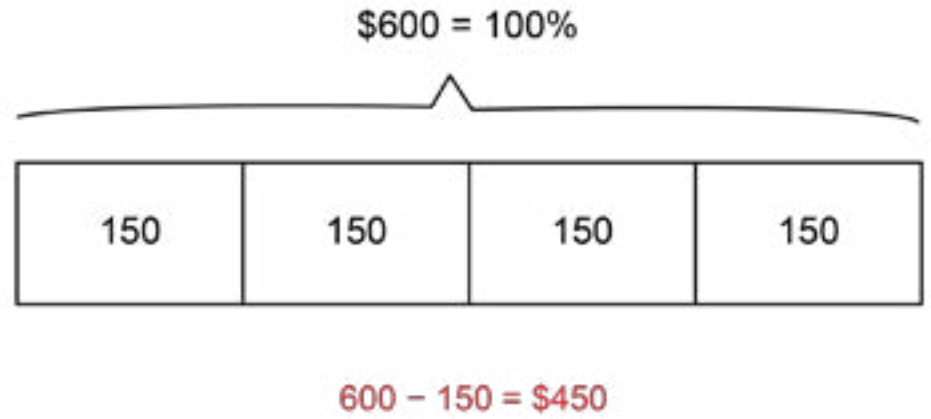
$$52.00 + 4.16 = \$56.16$$

- Solve percent problems involving percent increase (markup) and percent decrease (markdown) using proportional relationships.

Example: Kendra wants to save money on a new tablet. At her local electronics store, the tablet she wants is listed at a regular price of $600. This coming weekend, the store will have a sale and discount the tablet by 25%. How much will Kendra pay, without tax, if she buys the tablet on the weekend?

Kendra will pay $450 without tax.

Students should find that a discount of 25% means the new tablet is 100% – 25% = 75% of 600. By breaking 600 into 4 sections of 150 on a tape diagram, the student should find that 3 sections (or 75%) is equal to $450.

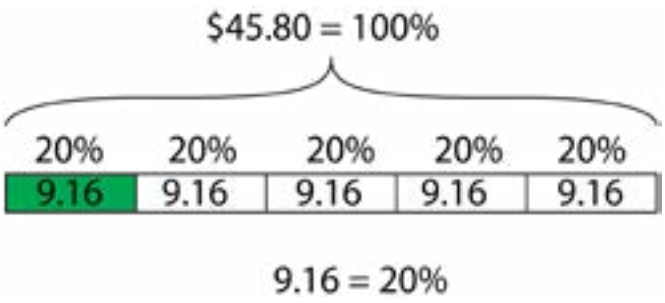


- Solve problems involving tips and commission using proportional relationships.

Example: Ross and his friends are eating out for dinner. The bill is $45.80. They want to leave a 20% tip. What will their total amount be?

Their total will be $54.96.

Students should recognize that they will be adding an amount to the original amount. They should first find 20% of the bill of $45.80. Students will determine this by breaking up $45.80 into five equal parts on a tape diagram. Each part will be worth $9.16. They will then see that 20% (one segment) is equal to $9.16. After they find this, they can add it to the original amount for a total of $54.96.



- Solve problems involving simple interest using proportional relationships. Simple interest is calculated using the formula: $I = P \cdot r \cdot t$, where I is interest, P is the principal, r is the interest rate, and t is the amount of time.

  Example: Heather deposits $80 into a new savings account. The account earns 5% interest per year. No money is added or removed from the savings account for 2 years. What is the total amount of money in her savings account at the end of year 1?

  a. $400.00
  b. $84.00
  c. $88.20
  d. $88.00

  The total amount at the end of year 1 is $84.00.

  Students should first know that interest means that a value is being added to the original value. Students can determine that 10% of $80 is $8. From 10%, students can find 5%, which is $4. So after the first year, Heather would have made $4 in interest for a total of $84.

- Determine the percent error of a problem given an estimated value with the actual value.

Example: Marco estimated that 230 people would be at his choir concert. The actual total that attended was 300 people. What is his percent error to the nearest percent?

The percent error is 23%.

Students will first have to take the absolute value of the difference between the estimated number and the actual number of people: $|230 - 300| = 70$. They will then divide that number by the number of actual attendees: $\frac{70}{300} = 0.233$. They will then multiply this number by 100 to find the percent error: $0.233 \bullet 100 = 23\%$.

While working with your student at home, you may find the following vocabulary terms helpful in your communication about the percent applications. These are terms your student will be encouraged to use throughout our explorations and during our math chats, which are short, whole-group discussions at the conclusion of each activity.

- **Terms to Know**
  - **commission:** money earned for selling a product, usually earned as a percentage of the sales
  - **convert:** to change the form of a measurement using different units, without changing the size or amount of the quantity being measured
  - **discount:** the amount subtracted from the original cost of an item
  - **gratuity:** money given above the amount charged for a service; tip
  - **interest:** money that is a percentage of an original amount typically owed as part of a debt
  - **markdown:** a decrease in the cost of an item; a discount
  - **markup:** an increase in the cost of an item to make a profit
  - **part-to-whole ratio:** a relationship between one part of a whole and the total number of parts in the whole
  - **percent:** a special ratio that compares a number to 100 using the percent symbol, %; a rate per 100
  - **percent decrease:** the amount by which the cost decreased from the initial value expressed as a percent
  - **percent error:** the measure of how far off an estimated value is from the true value expressed as a percent
  - **percent increase:** the amount by which the cost increased from the initial value expressed as a percent
  - **proportion:** two fractions or ratios that are equal in value
  - **proportional relationship:** when two quantities have the same ratio

- **ratio:** a comparison of two quantities that shows their sizes in relation to one another
- **tape diagram:** a rectangular visual model that represents equal parts, used to model word problems involving part-part-whole relationships
- **tax:** a fee added to a good or service, usually a percentage of the total
- **unit rate:** a rate with a denominator of 1 that shows how many units of the first type corresponds to one unit of the second type

We will do many explorations in class to help your student learn these concepts from firsthand experiences. Encourage your student to share these experiences with you and to teach you what they have learned. Ask your student to identify examples of what they are learning in everyday life, or use the examples on the attached page as a starting point.

Thank you for your support as your student begins this new learning adventure.

Sincerely,

Math outside the Classroom!

Applications of percents are used all around our everyday lives. Chat about where you use applications of percents in your everyday life. Below are a few examples:

- ★ Be on the lookout for promotional mailers from nearby restaurants and companies in your mailbox or local newspaper. Choose some of the sale items, and find the original cost of the items. Then, use this information to calculate the percent change on each item.

- ★ When you eat in a restaurant, consider the service provided by the server and all of the other staff in the restaurant. The typical tip is 20%. Determine the amount of tip that you think has been earned, and calculate it on the total cost of the meal.

- ★ Do you know where the sales tax goes after you purchase an item? Research what the government does with sales tax income. Also look online at the sales tax rates of different states. Do all states pay the same percentage of sales tax?

Seventh Grade Scope List

Scope Name	Explores	Suggested Pacing
Addition and Subtraction with Rational Numbers	5 Explores	2 Weeks
Multiplication and Division with Rational Numbers	5 Explores	2 Weeks
Rational Number Operations	3 Explores	1 Week
Proportional Relationships	3 Explores	1 Week
Ratios, Rates, and Percents	4 Explores	2 Weeks
Percent Application	5 Explores	2 Weeks
Expressions	4 Explores	1 Week
Equations	4 Explores	2 Weeks
Solve Equations and Inequalities	4 Explores	2 Weeks
Scaling	2 Explores	1 Week
Angle Relationships	3 Explores	2 Weeks
Triangle Properties	3 Explores	2 Weeks
Circles	2 Explores	2 Weeks
Area, Surface Area, and Volume	4 Explores	2 Weeks
Informal Inferences	4 Explores	2 Weeks
Probability	3 Explores	1 Week
Compound Events	3 Explores	2 Weeks

STEMscopes Math Suggested Scope and Sequence

The STEMscopes Math program is flexible, and there are variations in implementation within the guidelines provided here. This Scope and Sequence is meant to serve as a tool for you to lean on as you find how STEMscopes Math best meets the needs of the students in your classroom.

SEVENTH GRADE

Week	Scope	Cluster
1	• Establish classroom procedures • **Pre-Assessment Benchmark**	Major
2	• Addition and Subtraction with Rational Numbers	Major
3	• Addition and Subtraction with Rational Numbers	Major
4	• Multiplication and Division with Rational Numbers	Major
5	• Multiplication and Division with Rational Numbers	Major
6	• Rational Number Operations	Major
7	• Proportional Relationships	Major
8	• Ratios, Rates, and Percents	Major
9	• Ratios, Rates, and Percents	Major
10	• Percent Application	Major
11	• Percent Application	Major
12	• Expressions	Major
13	• Expressions	Major
14	• Equations	Major
15	• Equations	Major
16	• Solve Equations and Inequalities	Major
17	• Solve Equations and Inequalities	Major
18	• **Mid-Assessment Benchmark**	Major
19	• Scaling	Major
20	• Angle Relationships	Major
21	• Triangle Properties	Major
22	• Triangle Properties	Major
23	• Circles	Additional

Week	Scope	Cluster
24	• Circles	Additional
25	• Area, Surface Area, and Volume	Major
26	• Area, Surface Area, and Volume	Major
27	• Informal Inferences	Supporting
28	• Informal Inferences	Supporting
29	• Probability	Supporting
30	• Compound Events	Supporting
31	• Compound Events	Supporting
32	• **Post-Assessment Benchmark**	
33	• **Review Week**	
34	• **STANDARDIZED TEST (Approximate)**	
35	Review: • Addition and Subtraction with Rational Numbers • Multiplication and Division with Rational Numbers • Rational Number Operations • Proportional Relationships • Ratios, Rates, and Percents	Major
36	Review: • Percent Application • Expressions • Equations • Solve Equations and Inequalities	Major

Week	Daily Numeracy
All	Additional or repeated standards are addressed in Daily Numeracy. These activities should be rotated through daily. To see the full list of what standards are addressed in these activities, please see the Daily Numeracy: Standards by Activity section in the Daily Numeracy Teacher Toolbox.

Whole-Group Plan

1–3 Explores

*Based on a 90-minute class period	Day 1	Day 2	Day 3	Day 4	Day 5
Whole Group	Mathematical Fluency/Daily Numeracy Accessing Prior Knowledge Foundation Builder[1] Hook Begin Explores if time allows. Anchor Chart	Mathematical Fluency/Daily Numeracy Explores[2] Anchor Chart Exit Tickets Show What You Know (Assist and reteach as needed.)	Mathematical Fluency/Daily Numeracy Explores (continued) Anchor Chart Exit Tickets Show What You Know (Assist and reteach as needed.)	Mathematical Fluency/Daily Numeracy Hook (Post-Explore) Teacher Choice[3] All students: • Picture Vocabulary • Interactive Vocabulary • Interactive Notebook Mastery level: • Would You Rather • Choice Board Meets level: • Data Science • Mathematical Modeling Task Approaching level: • Interactive Practice • Skills Quiz	Mathematical Fluency/Daily Numeracy Skill Review and Practice (for students who need it) Fluency Builder (Choose one.) (for students who don't need intervention)
Assessment and Closure	Accessing Prior Knowledge to determine readiness Formative assessment based on APK and student performance on Explore Allow students to share what they felt successful with and what they struggled with today.	Administer the Exit Ticket to assess student learning after the Explore. Allow students to work on Show What You Know – Part I as independent practice after first Explores.	Administer the Exit Ticket to assess student learning after the final Explores. Allow students to work on Show What You Know – Part 2 as independent practice after Explore 2.	Assess how students perform based on individual assignments chosen.	Standards-Based Assessment

The essential elements are highlighted. If time is limited, teach these elements to fully cover the standards.

[1]Use as intervention if APK shows foundational gaps.

[2]Set your pace according to the number of Explores included in this scope. Use Exit Tickets as well as Show What You Knows for each Explore completed.

[3]Teachers can choose from the following elements. We have suggested activities for students, including recommended tasks for students at each skill level.

Small-Group Plan

1–3 Explores

*Based on a 90-minute class period	Day 1	Day 2	Day 3	Day 4	Day 5
Whole Group ***20 Minutes**	Daily Numeracy Accessing Prior Knowledge[1] Hook Introduce stations.	Daily Numeracy Allow students to share what they learned yesterday, and discuss what students worked on. Anchor Chart	Daily Numeracy Allow students to share what they learned yesterday, and discuss what students worked on. Anchor Chart Add Picture Vocabulary words to word wall based on terms introduced in the lessons.	Daily Numeracy Hook (Post-Explore) Review any Explore or Show What You Know problems that gave students trouble. Anchor Chart	Daily Numeracy Spiraled Review Standards-Based Assessment
Small-Group Instruction *Small Group/ Stations 70 Minutes	Pull small groups of students to do the following: 1. The Foundation Builder (if they need previous grade level content) 2. Explores 1–2[2]	Pull students to work with you to finish Explores 1–2.	Pull students to work with you on Explores 2–3.	Pull students to do the Skill Review and Practice based on needs.	None
Stations ***Options are flexible.**	1. Mathematical Fluency 2. Interactive Practice 3. Fluency Builder 4. Interactive Vocabulary 5. Spiraled Review 6. Show What You Know	1. Mathematical Fluency 2. Interactive Practice 3. Fluency Builder 4. Choice Board 5. Spiraled Review 6. Show What You Know	1. Mathematical Fluency 2. Interactive Practice 3. Fluency Builder 4. Data Science 5. Spiraled Review 6. Show What You Know	Have students work in groups on the Mathematical Modeling Task.	Have the following materials available for students who finish early: 1. Mathematical Fluency 2. Would You Rather 3. Skills Quiz 4. Choice Board 5. Spiraled Review
Assessment and Closure	Accessing Prior Knowledge to determine readiness Formative assessment based on APK and student performance to determine who needs to be pulled to small group Allow students to share what they felt successful with and what they struggled with today.	Administer the Exit Tickets to assess student learning after the Explores. Allow students to work on Show What You Knows as independent practice after Explores.	Administer the Exit Tickets to assess student learning.	Student success with intervention can be assessed by using the Checkup. Other students can be assessed by their performance on the Mathematical Modeling Task.	Standards-Based Assessment

The essential elements are highlighted. If time is limited, teach these elements to fully cover the standards.
[1]Use as intervention if APK shows foundational gaps.
[2]Set your pace according to the number of Explores included in this scope. Use Exit Tickets as well as Show What You Knows for each Explore completed.

Whole-Group Plan

3–6 Explores

Week 1 *Based on 90-minute class period	Day 1	Day 2	Day 3	Day 4	Day 5
Whole Group	Mathematical Fluency/Daily Numeracy Accessing Prior Knowledge Foundation Builder[1] Hook (Pre-Explore)	Mathematical Fluency/Daily Numeracy Explores[2] Anchor Chart Exit Tickets Show What You Know (Assist and reteach as needed.)	Mathematical Fluency/Daily Numeracy Explores (continued) Anchor Chart Exit Tickets Show What You Know (Assist and reteach as needed.)	Mathematical Fluency/Daily Numeracy Explores (continued) Anchor Chart Exit Tickets Show What You Know (Assist and reteach as needed.)	Mathematical Fluency/Daily Numeracy Explores (continued) Anchor Chart Exit Tickets Show What You Know (Assist and reteach as needed.)
Assessment and Closure	Accessing prior knowledge to determine readiness Formative assessment based on APK and student performance on Explore Allow students to share what they felt successful with and what they struggled with today.	Administer the Exit Ticket to assess student learning after the Explore. Allow students to work on Show What You Know as independent practice after Explores.	Administer the Exit Ticket to assess student learning after the Explores. Allow students to work on Show What You Know as independent practice after Explores.	Administer the Exit Ticket to assess student learning after the Explores. Allow students to work on Show What You Know as independent practice after Explores.	Administer the Exit Ticket to assess student learning after the Explores. Allow students to work on Show What You Know as independent practice after Explores.

The essential elements are highlighted. If time is limited, teach these elements to fully cover the standards.
[1]Use as intervention if APK shows foundational gaps.
[2]Set your pace according to the number of Explores included in this scope. Use Exit Tickets as well as Show What You Knows for each Explore completed.

Whole-Group Plan

3–6 Explores

Week 2 *Based on 90-minute class period	Day 6	Day 7	Day 8	Day 9	Day 10
Whole Group	Mathematical Fluency/Daily Numeracy Explores (continued) Anchor Chart Exit Tickets Show What You Know (Assist and reteach as needed.)	Mathematical Fluency/Daily Numeracy Hook (Post-Explore) Picture Vocabulary Interactive Vocabulary Would You Rather Choice Board	Mathematical Fluency/Daily Numeracy Interactive Practice Mathematical Modeling Task	Mathematical Fluency/Daily Numeracy Teacher Choice[3] Meets Level: • Would You Rather • Choice Board Approaching Level: • Interactive Practice • Skills Quiz	Mathematical Fluency/Daily Numeracy Skill Review and Practice (for students who need it) Fluency Builder (choose one.) (for students who do not need intervention)
Assessment and Closure	Administer the Exit Ticket to assess student learning after the Explores. Allow students to work on Show What You Know as independent practice after Explores.	Allow students to share what they felt successful with and what they struggled with today.	Assess how students perform on the Mathematical Modeling Task.	Assess how students perform based on individual assessment chosen.	Standards-Based Assessment

The essential elements are highlighted. If time is limited, teach these elements to fully cover the standards.
[3]Choose from the following elements. We have suggested activities for students, including recommended tasks for students at each skill level.

Small-Group Plan

3–6 Explores

Week 1 *Based on 90-minute class period	Day 1	Day 2	Day 3	Day 4	Day 5
Whole Group *20 Minutes	Daily Numeracy Accessing Prior Knowledge[1] Hook (Pre-Explore) Introduce stations.	Daily Numeracy Allow students to share what they learned yesterday, and discuss what students worked on.	Daily Numeracy Allow students to share what they learned yesterday, and discuss what students worked on. Anchor Chart Add Picture Vocabulary words to word wall based on terms introduced in the lessons.	Daily Numeracy Allow students to share what they learned yesterday, and discuss what students worked on. Anchor Chart Review any Explore or Show What You Know problems that gave students trouble.	Daily Numeracy Allow students to share what they learned yesterday, and discuss what students worked on. Anchor Chart Review any Explore or Show What You Know problems that gave students trouble.
Small-Group Instruction *Small Group/ Stations 70 Minutes	Pull small groups of students to the Foundation Builder (if they need previous grade-level content). Begin Explores.[2]	Pull students to work with you on Explore 1.	Pull students to work with you on Explore 2.	Pull students to work with you on Explore 3.	None
Stations	1. Mathematical Fluency 2. Interactive Practice 3. Fluency Builder (from previous scope)	1. Mathematical Fluency 2. Interactive Practice 3. Fluency Builder (from previous scope)	1. Mathematical Fluency 2. Interactive Practice 3. Fluency Builder (from previous scope)	1. Mathematical Fluency 2. Interactive Practice 3. Fluency Builder (from previous scope)	1. Mathematical Fluency 2. Interactive Practice 3. Fluency Builder (from previous scope)
Assessment and Closure	Accessing prior knowledge to determine readiness Formative assessment based on APK and student performance to determine who needs to be pulled to small group Allow students to share what they felt successful with and what they struggled with today.	Administer the Exit Ticket to assess student learning after the Explores. Allow students to work on Show What You Knows as independent practice after Explores.	Administer the Exit Ticket to assess student learning after the Explores. Allow students to work on Show What You Knows as independent practice after Explores.	Administer the Exit Ticket to assess student learning after the Explores. Allow students to work on Show What You Knows as independent practice after Explores.	Administer the Exit Ticket to assess student learning after the Explores. Allow students to work on Show What You Knows as independent practice after Explores.

The essential elements are highlighted. If time is limited, teach these elements to fully cover the standards.

[1]Use as intervention if APK shows foundational gaps.

[2]Set your pace according to the number of Explores included in this scope. Use Exit Tickets as well as Show What You Knows for each Explore completed.

STEMscopes MATH

Small-Group Plan

3–6 Explores

Week 2 *Based on 90-minute class period	Day 6	Day 7	Day 8	Day 9	Day 10
Whole Group *20 Minutes	Daily Numeracy Allow students to share what they learned yesterday, and discuss what students worked on. Anchor Chart Review any Explore or Show What You Know problems that gave students trouble.	Daily Numeracy Allow students to share what they learned yesterday, and discuss what students worked on. Anchor Chart Review any Explore or Show What You Know problems that gave students trouble.	Daily Numeracy Allow students to share what they learned yesterday, and discuss what students worked on. Add Picture Vocabulary words to word wall based on terms introduced in the lessons.	Daily Numeracy Allow students to share what they learned yesterday, and discuss what students worked on. Review any Explore or Show What You Know problems that gave students trouble.	Daily Numeracy Spiraled Review Standards-Based Assessment
Small-Group Instruction *Small Group/ Stations 70 Minutes	Pull students to work with you on Explore 4.	Pull students to work with you on Explore 5.	Hook (Post-Explore)	Skill Review and Practice	None
Stations	1. Choice Board 2. Spiraled Review 3. Show What You Know	1. Interactive Vocabulary 2. Spiraled Review 3. Show What You Know	1. Interactive Notebook 2. Spiraled Review 3. Show What You Know	Have students work in groups on the Mathematical Modeling Task.	Have the following materials available for students who finish early: 1. Would You Rather 2. Choice Board 3. Spiraled Review
Assessment and Closure	Administer the Exit Ticket to assess student learning after the Explores. Allow students to work on Show What You Knows as independent practice after Explores.	Administer the Exit Tickets to assess student learning after the Explores. Allow students to work on Show What You Knows as independent practice after Explores.	Administer the Exit Tickets to assess student learning. Skills Quiz	Student success with intervention can be assessed by using the Checkup. Other students can be assessed by their performance on the Mathematical Modeling Task.	Standards-Based Assessment

The essential elements are highlighted. If time is limited, teach these elements to fully cover the standards.

[1]Use as intervention if APK shows foundational gaps.

[2]Set your pace according to the number of Explores included in this scope. Use Exit Tickets as well as Show What You Knows for each Explore completed.

Percent Application

Explore 1 - Tax

Description

Students will solve problems involving sales tax using proportional reasoning.

Standards of Mathematical Practice

- **MP.1 Make sense of problems and persevere in solving them:** Students will make sense of the tax problems by planning how to solve each question through the use of percentages and tape diagrams. Students will discover that tax is an amount being added to the original amount. Students persevere in solving these problems by strategically converting amounts to determine the final answer.
- **MP.2 Reason abstractly and quantitatively:** Students will reason abstractly as they work through multistep equations in order to find the solution. Students will be able to figure out the percentage of the original amount without the need to convert the percent to a decimal. Through determining that the ending value will be greater than the original value, students will use quantitative reasoning.
- **MP.5 Use appropriate tools strategically:** Although students can use mathematical resources such as calculators, they are able to determine percentages through the use of a tape diagram. The exploration of this tool will deepen their understanding of the concepts further than a calculator can.

Materials

Printed
1 Student Journal (per student)
1 Exit Ticket (per student)

Preparation

- Plan to divide the class into groups of two to complete this activity.
- Print the Student Journal and Exit Ticket for each student.

Procedure and Facilitation Points

Part I – Calculating Sales Tax

1. Read the following scenario to students: *Anthony is opening a new restaurant, the Yellow Rose Diner. There is a lot of planning and preparation before the restaurant's upcoming grand opening. He begins stocking his kitchen by buying pots and pans, bundt pans, silverware, and measuring utensils. Anthony will pay a sales tax on his new supplies for his kitchen. The sales tax rate will vary because it depends on the state that Anthony and his staff purchase the items from. Let's help Anthony calculate the amount of sales tax for his new supplies for his kitchen.*
2. Give the Student Journal to each student.
3. Have students work in pairs to determine the tax amount that Anthony and his restaurant staff will pay on the supplies for the restaurant.
4. Monitor and assess student understanding as each group collaborates by asking the following guiding questions:
    a. **DOK-1** How do you convert a percent to a decimal? We move the decimal point two places to the left. For example, 25% is equivalent to 0.25.
    b. **DOK-2** How can you determine the percent of a number? We can first convert the percent to a decimal and then multiply this decimal value by the number using the equation tax amount = tax rate (as a decimal) times cost of item.

c. **DOK-2** How would you determine the amount of sales tax on an item if the sales tax rate is 8%? What about 8.5%? I would convert 8% to 0.08 and then use the equation tax amount = tax rate (as a decimal) times cost of the item. If the sales tax rate was 8.5%, I would convert this to 0.085 and then use the equation tax amount = tax rate (as a decimal) times cost of the item.

5. Allow students enough time to record all their work for Part I of the Explore on the Student Journal.
6. After Part I of the Explore, invite the class to a Math Chat to share their observations and learning.

Math Chat	
Questions	**Sample Student Responses**
DOK-1 What is sales tax?	Sales tax is a fee added to the cost of purchases and services. That fee is then given to the government.
DOK-2 How do you calculate the amount of sales tax on a purchase?	First, convert the percent to a decimal by moving the decimal point two places to the left. Next, multiply this decimal by the cost of the item.
DOK-2 Why do you think we pay sales tax on the purchase of goods and services?	The government is funded by tax dollars. Without paying a sales tax, we wouldn't be afforded some of the public services the government provides.
DOK-1 What is the formula for sales tax?	Tax amount = tax rate (as a decimal) times cost of item
DOK-1 Do all U.S. states have the same sales tax rate?	No, each state has its own sales tax rate.
DOK-1 What is the sales tax rate in your state? (Allow students time to look up this information online if they do not already know the sales tax for their state.)	Examples include the following: Texas = 6.25% California = 7.25% New York = 4% Arizona = 5.6% Florida = 6%

Part II – Calculating Total Cost

1. Read the following scenario to students: *Anthony is getting ready to purchase the supplies for his kitchen. In order to determine the total amount Anthony pays, the cashier or the customer service rep that places the orders that are placed in different states will add the cost of the pots and pans, bundt pans, silverware, and measuring utensils and the amount of sales tax in order to determine the total cost of each item. How much do you think Anthony spent for the new supplies for the kitchen, including the sales tax?*
2. Students will work in their pairs and will use the tax amounts that were found in Part I to determine the total cost of the items that will be purchased by Anthony and his staff. They will represent the total cost of each item using a tape diagram and an equation to show how to solve for the total cost of each item.
3. Monitor and assess student understanding as each group collaborates by asking the following guiding questions:
   a. **DOK-1** Why do you think a tape diagram is used to help us understand the total cost of an item? The total cost of an item consists of the cost of the item and the amount of tax on the item. The length of the tape diagram represents the total cost of the item.

b. **DOK-2** Given a state's sales tax rate, what operations are used to calculate the total cost of an item? Multiplication, to find the amount of sales tax, and then addition, to find the total cost

c. **DOK-2** Create a formula that could be used to determine the total cost of an item. Cost of an item + amount of sales tax = total cost of item

4. Allow students enough time to record all their work for Part II of the Explore on the Student Journal.
5. After Part II of the Explore, invite the class to a Math Chat to share their observations and learning.

Math Chat	
Questions	**Sample Student Responses**
DOK-2 Including sales tax, how can you determine the total cost of a purchase?	I would add the amount of sales tax to the cost of the item to determine the item's total cost.
DOK-1 How is the tape diagram helpful in understanding the total cost of a purchase, including sales tax?	The entire length of the tape represents the total cost of an item. The total cost of an item is made up of two parts: the cost of the item and the sales tax on the item.
DOK-1 When you go grocery shopping, is the price listed on each item the actual amount you pay for the item? Explain.	No, these prices do not include the sales tax. You will need to pay an additional amount on these items when you checkout.
DOK-2 How does the sales tax rate affect the total cost of an item?	The greater the sales tax rate, the greater the amount of sales tax on an item. This would cause an increased cost in the total price of the item.

6. When students are done, have them complete the Exit Ticket to formatively assess their understanding of the concept.

Anchor Chart and Interactive Notebook

- Be sure to complete the Anchor Chart as a class. Once the class has completed the Anchor Chart, have students individually complete their Interactive Notebook.

Instructional Supports

1. Struggling students may be confused by decimal percentages such as 8.5%, interpreting it to mean 8.5 versus .085. Use a visual representation to help students grasp the difference. For example, have students shade in a hundreds grid with 8.5 unit squares of the 100 unit squares shaded, versus having eight whole hundreds grids and half of a hundreds grid shaded to represent 8.5 or 850%.
2. Struggling students may not understand why the sales tax (as a decimal) is being multiplied to determine the sales tax. They may think that once they've converted the sales tax from a percent to a decimal, they've determined the monetary amount of the sales tax. Set up a proportion so that they can see how the different numbers relate—the price corresponding to 100% (or a whole) and the percent sales tax, or part corresponding to the monetary amount for the taxes.

Language Acquisition Supports

The following Language Acquisition Strategy is supported in this Explore activity. See the strategies below for ways to support a student's language development.

Students will share information with their peers while participating in a cooperative learning activity.

Beginner: Prior to the lesson, show students a zoomed-in image of a grocery store receipt. Circle the word tax on the receipt and explain to the class what are taxes. Discuss, asking students What kinds of things are taxed? Do you think there should be taxes? etc. Explain that they will calculate sales tax in today's Explore.

Intermediate: As a pre-lesson activity, show students a zoomed-in image of a grocery store receipt. Circle the word tax on the receipt and explain to the class what are taxes. Show students a list of things that are taxed in the United States. Then split students into groups and have them create a list of pros and cons list for taxes.

Advanced: As a pre-lesson activity, show students a zoomed-in image of a grocery store receipt. Circle the word tax on the receipt and explain to the class what are taxes. Show students a list of things that are taxed in the United States. Then split students into groups and have them create a list of pros and cons list for taxes. Then split the class in two and have a class debate about taxes.

Explore

Percent Application
Explore 1

Name:_____ Date:_____

Buying Restaurant Supplies

Part I: Calculating Sales Tax

Complete each table by calculating the sales tax for each scenario. If necessary, round to the nearest hundredth.

Pots and Pans for the Kitchen			
Anthony is buying supplies for the kitchen at his new restaurant, the Yellow Rose Diner. He begins stocking his kitchen by buying pots and pans from a local restaurant supply company that cost $450 with a sales tax of 9%.			
Sales tax formula: _____			
Cost of Pots and Pans	**Sales Tax (%)**	**Formula**	**Sales Tax ($)**

Bundt Pans for the Kitchen			
Anthony plans to also go to the Home Warehouse to purchase several bundt pans. The total cost of the bundt pans will be $142 with a sales tax of 12%			
Sales tax formula: _____			
Cost of Bundt Pans	**Sales Tax (%)**	**Formula**	**Sales Tax ($)**

Explore

Silverware for the Kitchen			
The manager at the Yellow Rose Diner needs to purchase silverware for the restaurant. The silverware costs $230, and the manager placed an order for silverware in a state with a sales tax of 6.5%.			
Sales tax formula: _____			
Cost of Silverware	**Sales Tax (%)**	**Formula**	**Sales Tax ($)**

Measuring Utensils for the Kitchen			
The chef at the Yellow Rose Diner has placed an order for measuring utensils in a store in another state. The measuring utensils cost $118 with a sales tax of 8.25%.			
Sales tax formula: _____			
Cost of Measuring Utensils	**Sales Tax (%)**	**Formula**	**Sales Tax ($)**

Explore

Reflect

1. What is sales tax?

2. How do you calculate the amount of sales tax on a purchase?

3. Which purchase has the greater amount of sales tax: a $25 mixing bowl with a sales tax rate of 7% or a $22 baking sheet with a sales tax rate of 9%?

4. Why do you think we pay sales tax on the purchase of goods and services?

Explore

Part II: Calculating Total Cost

Calculate the total cost including sales tax for each problem. Use a tape diagram and an equation to solve the problem.

Pots and Pans for the Kitchen			
Pots and pans cost $450 with a sales tax of 9%. Calculate the total cost.			
Cost of pots and pans	**Sales tax (%)**	**Formula**	**Sales tax ($)**
Tape diagram:		Equation: Total cost:	

Bundt Pans for the Kitchen			
Bundt pans cost $142 with a sales tax of 12%. Calculate the total cost.			
Cost of bundt pans	**Sales tax (%)**	**Formula**	**Sales tax ($)**
Tape diagram:		Equation: Total cost:	

Explore

Silverware for the Kitchen			
Silverware costs $230 with a sales tax of 6.5%. Calculate the total cost.			
Cost of silverware	**Sales tax (%)**	**Formula**	**Sales tax ($)**
Tape diagram:		Equation: Total cost:	

Measuring Utensils for the Kitchen			
Measuring utensils cost $118 with a sales tax of 8.25%. Calculate the total cost.			
Cost of measuring utensils	**Sales tax (%)**	**Formula**	**Sales tax ($)**
Tape diagram:		Equation: Total cost:	

Explore

Reflect

1. Including sales tax, how can you determine the total cost of a purchase?

2. Which purchase has the greater total cost: a $25 mixing bowl with a sales tax rate of 7% or a $22 baking sheet with a sales tax rate of 9%?

3. How is the tape diagram helpful in understanding the total cost of a purchase, including sales tax?

4. How would you calculate the total cost, including sales tax, when buying multiple items?

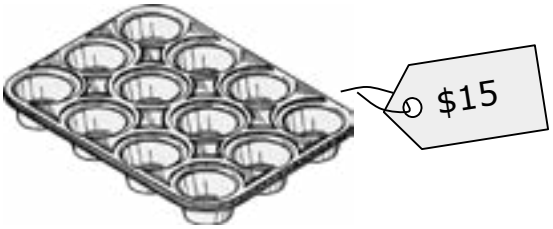
Explore

Percent Application
Explore 1

Name:_____ Date:_____

Amy's Appliances
Exit Ticket

Amy is purchasing a new stand mixer and a new muffin pan for her bakery. The sales tax rate is 8%. Help Amy calculate the sales tax for each item.



1. Calculate the sales tax on the stand mixer.

2. Calculate the sales tax on the muffin pan.

Percent Application

Picture Vocabulary

Commission

Money earned for selling a product, usually earned as a percentage of the sales

Convert

To change the form of a measurement using different units without changing the size or amount of the quantity being measured

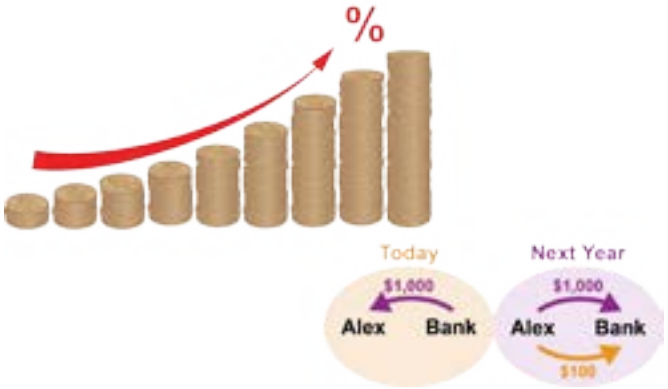
Discount

The amount subtracted from the original cost of an item

Gratuity

Money given above the amount charged for a service; tip

Interest



Money that is a percentage of an original amount typically owed as part of a debt

Markdown

a decrease in the cost of an item; a discount

Markup

An increase in the cost of an item to make a profit

WHAT IS ACCELERATION?

Are your students ready to go above and beyond what they've just learned? In Acceleration, students can engage in a design challenge or relate what they're learning to current events around the world—activities that prompt them to think more deeply about the content and its applications.

Choice Board Activity

DESCRIPTION

Students will explore real-world connections and applications of math content through interactions with engaging activities.

MATERIALS

PRINTED

- 1 Choice Board (per student)
- 1 Set of Activity Handouts (per student)
- 1 Choice Board Self-Assessment (per student)

REUSABLE

- Technology (if applicable)

PREPARATION

- Print a Choice Board and a set of Activity Handouts for each student.
- Print a Choice Board Self-Assessment for each student.
- Plan ahead for technology use. Research may be required for some activities on the Choice Board.

PROCEDURE AND FACILITATION POINTS

1. Distribute a Choice Board to each student.
2. Allow students time to examine the Choice Board and select the activities they would like to explore.
3. Encourage students to attempt at least three activities.
4. Distribute the appropriate Activity Handouts according to students' choices.
5. Upon completion of each Choice Board activity, have students complete a Choice Board Self-Assessment to evaluate their own mathematical thinking and efforts on their project.

Choice Board

Name:_____ Date:_____

Percent Application

Choose one or more extension activities from the table below.

Career Connection Business Owner Research the career field of business ownership. Your research must answer the provided questions. Create a presentation to relay your research to the class.	**Science Connection** Chemistry Experiments Read the scenarios about percent error during chemistry experiments. Then, use the data to answer the questions.
Analogies Percent Change Use analogies to find the prices of items that have been increased or decreased by a certain percent of the cost.	**Create Your Own** Server Tips Create your own meal ticket from an imaginary menu. Be sure to include a 20% tip for your server. Then, determine the total cost of your meal.
Kitchen Connection New Appliances Investigate whether remodeling a kitchen with new appliances will fall within a budget by including the tax for each purchase in the total cost.	**Financial Connection** Interest Rates We use math every day in our financial world. Complete the handout to choose the best loan option between two scenarios.

Choice Board

Name:_____ Date:_____

Career Connections

Research the career field listed on the Choice Board. Your research must answer the following questions:

1. List the career you are researching.
2. Describe the career listed above.
3. What materials does someone with this career work with?
4. Where would a person in this field do most of their work?
5. What training/education is required to enter this field?
6. What does the average day on the job look like for someone with this career?
7. How does this career connect to the math you are currently studying?
8. List several other career fields that someone doing this job interacts with on a daily basis.
9. Is this a career you are interested in? Find out more by interviewing someone with this career in your area and researching on the internet.
10. What 21st-century skills listed below could be used with this career? Identify at least one skill that people in this career field use, and explain why the skill is important, according to your research.

    - Collaboration
    - Creativity and innovation
    - Critical thinking and problem solving
    - Communication
    - Technology literacy
    - Flexibility
    - Leadership

Percent Application

Choice Board

Name:_____ Date:_____

Science Connection

Joanna loved doing chemistry experiments. The only problem was that she often didn't check the amounts, or measure reactants carefully. So sometimes her results were incorrect. Look at some of the examples of Joanna's carelessness below, and find the percent of error in her experiments.

Amount Listed	Amount Used	Workspace	% Error
25 ml vinegar	20 ml vinegar		
2 teaspoons salt	3 teaspoons salt		
16 drops bleach	14 drops bleach		
8 ounces water	24 ounces water		

1. When performing a chemistry experiment, is it preferable to have a large or small percent error? Explain.

Choice Board

Name:_____ Date:_____

Analogies

Shopping for items is a mathematical activity. Keeping track of prices is important for sticking to a budget. Prices are not stagnant, but constantly reflect increases and decreases based on supply and demand.

Complete the analogies of common shopping items when prices are raised or discounted.

1. At a home goods store, a clock was discounted 50%, from $20 to $10.
   At the same store, the price of a new model of clock was increased 50%, from $20 to _____.

2. The price of a pair of shoes decreased by 20%, from $40 to $32.
   A different pair of shoes had its price raised by 20%, from $40 to _____.

3. A cup of coffee at a local café increased 12.5%, from $1.60 to $1.80.
   A cup of tea at the same café was discounted 12.5%, from $0.80 to _____.

4. Before Valentine's Day, the price of a dozen roses was raised 75%, from $16 to $28.
   A week after Valentine's Day a box of chocolates had its price slashed by 75%, and went from $24 to _____.

Percent Application

Choice Board

Name:_____ Date:_____

Create Your Own

Pretend you're going out to lunch with a friend. You order food and a drink, and then leave a tip. Your server is excellent, so you leave a 20% tip.

Create a meal ticket that shows the costs of your food, drink, and tip.

Meal Ticket

Workspace

1. What was your final cost for the meal?

2. What would the final cost for the meal be if you left a 25% tip?

3. Do you think servers make enough money from tips? Explain.

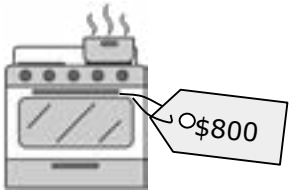
Choice Board

Name:_____ Date:_____

Kitchen Connection

Sienna's mom always cooked incredible meals for their big extended family. She baked birthday cakes, and catered parties for family and friends. One year for Mother's Day, everyone pitched in and bought her a gift card to a kitchen appliance store. She was instructed to purchase a new range, a new microwave, and a new dishwasher. Sienna's mom was so excited! She wanted to be careful to use all of the gift card, but not spend too much other money. She realized to get the full cost of the appliances, she would need to calculate tax, which was 8% of the cost.

Find the total cost of each kitchen purchase Sienna's mom makes. Then, find the total purchase cost.



Appliance	Price	Tax	Total Cost
		Grand Total	

1. If the gift card was for $2000, does she have enough to purchase everything including tax? How much does she need or how much does she have left?

2. If the tax rate was 0.1, would taxes be more or less than 8%?

Choice Board

Name:_____ Date:_____

Financial Connection

Alejandro saved money to buy a car. He saved most of his money from yardwork and babysitting over a two-year period. He saved $5,000. The car he wants costs $10,000. He is sure he can save $6,000 in two years if he is careful with his spending. He spoke to his mother and his grandfather about a loan. They each offered him an option.

Look at the two loan options. Decide which loan option is best for him. Explain why.

I = interest	r = interest rate (expressed as a decimal)
P = principal (amount of loan)	t = time/length of loan (expressed in years)

Mom's Loan Proposal				
Interest Rate	**Time**	**Simple interest Formula** ($I = P \times r \times t$)	**Interest Paid**	**Total Amount Paid**
5%	2 years			

Grandfather's Loan Proposal				
Interest Rate	**Time**	**Simple interest Formula** ($I = P \times r \times t$)	**Interest Paid**	**Total Amount Paid**
4%	4 years			

Who offered Alejandro the best loan? Explain.

Choice Board

Name:_____ Date:_____

Choice Board Self-Assessment

Rank yourself on the statements below.

1. I successfully completed the task(s).

2. The work taught me more about the content.

3. This work represents my best effort.

4. Identify at least one struggle you encountered during your extension activity.

5. What part of your project are you most proud of?

6. If given the opportunity to complete a similar task in the future, what would you do the same, and what would you do differently?

Teacher Feedback

Would You Rather Activity

DESCRIPTION

Would You Rather is an enriching activity in which students use mathematical reasoning and creativity to justify their answers.

MATERIALS

PRINTED

- 1 Student Handout (per student)
- 1 Rubric (for the teacher)

PROCEDURE AND FACILITATION POINTS

1. Distribute a Student Handout to each student.
2. Encourage students to look back at the Student Journals from the Explore activities if they need to review the skills they have learned.
3. Invite students to share their answers and justification with partners.

Percent Application

Would You Rather - End of Year Sale

Description

Would You Rather is an enriching activity in which students use mathematical reasoning and creativity to justify their answers.

Materials

Printed
1 Student Handout (per student)
1 Rubric (for the teacher)

Preparation

None

Procedure and Facilitation Points

1. Distribute a Student Handout to each student.
2. Encourage students to look back at the Student Journals from the Explore activities if they need to review the skills they have learned.
3. Invite students to share their answers and justification with partners.

Use mathematical reasoning and creativity to justify your answer to the Would You Rather question.

Maddie and her mom are on a hunt for a new couch at the furniture store. The store is having a sale on last year's furniture collection and a sale on this year's new furniture collection. They found an orange leather couch from last year's collection and a blue cloth couch from this year's collection and are trying to decide which couch would be the best option. **Would you rather** choose the orange leather couch or the blue cloth couch? Justify your reasoning with mathematics.

Price: $900

25% off

Price: $800
20% off

Percent Application

Would You Rather

Name:_____ Date:_____

End of Year Sale

Use mathematical reasoning and creativity to justify your answer to the Would You Rather question.

Maddie and her mom are on a hunt for a new couch at the furniture store. The store is having a sale on last year's furniture collection and a sale on this year's new furniture collection. They found an orange leather couch from last year's collection and a blue cloth couch from this year's collection and are trying to decide which couch would be the best option. **Would you rather** choose the orange leather couch or the blue cloth couch? Justify your reasoning with mathematics.

Price: $900
25% off

Price: $800
20% off

WHAT IS DAILY NUMERACY?

The goal of Daily Numeracy is to empower students to reason with numbers in an accurate, efficient, and flexible way. We have included a carefully crafted, purposeful activity sample designed to help students build their thinking and reasoning around relationships and connections. Each grade level has numerous Daily Numeracy activities.

Week 3 Mini-Lesson

DESCRIPTION

Students reason with numbers in an accurate, efficient, and flexible way through purposeful activities designed to help students build their thinking and reasoning around relationships and connections.

MATERIALS

PRINTED

- 1 Weekly Slideshow (per class)
- 1 Set of Number Cards (per class) *for Blank Number Line activity

REUSABLE

- 1 Projector or document camera (per class)
- 1 Marker (per class)* for Solve It!activity
- 1 Blank number line (per class) for Blank Number Line activity

CONSUMABLE

- 1 Piece of chart paper (per class)* for Solve It! activity

PREPARATION

- Prepare to project the slideshow prompt of the day to each class.

Solve It! Activity:

- Gather a piece of chart paper and a marker to document student responses.

Blank Number Line Activity:

- Prepare a blank number line to be reused throughout the year. Examples include painters tape on a board, string that is hung by using magnets, or duct tape on laminated poster board.
- Print and cut the Number Cards according to the slide being used in class.

PROCEDURE AND FACILITATION POINTS

1. Project the slideshow prompt of the day. Students should not have anything with them for this activity.
2. Give students a minute of silent time as they look at the prompt. Ask students relevant guiding questions. Sample questions are shown in the table below by activity.
3. Accept multiple student responses if their reasoning is accurate. *For the Solve It! activity, call on students to give out answers only. Record student answers on chart paper.
4. As students discuss their responses, ask the class if they agree or disagree, and provide sentence stems for responses.
    a. I agree because . . .
    b. I disagree because . . .
    c. Can you explain why you . . . ?

Solve It! Activity:

5. Students solve equations or word problems by using mental math and other number-sense strategies. Guiding Questions:
    a. Explain the strategy used to get your answer.
    b. Is there a different strategy we could use?
    c. How are these strategies similar? How are they different?

Blank Number Line Activity:

6. Students place rational numbers on an open number line, and they discuss the relationships between the placements. Guiding Questions:
    a. Why did you place your number on that spot?
    b. What is the distance between those two numbers?
    c. Is your number closer to _____ or _____?
    d. Do you need to move any other numbers to place your number?
    e. What do you know about those numbers?
    f. What if I placed these two benchmark numbers on the number line? How would the distance or order of the numbers change?

Not Like the Others Activity:

7. Students describe the characteristics of an object in a set of four or more, and they discuss how it is different from the others. Guiding Questions:
    a. What do you notice?
    b. Which one is not like the others?
    c. What characteristic makes it different?
    d. How are these objects similar?
    e. Do you see another object that is not like the others?

Math Mystery Activity:

8. Guiding Questions:
    a. What do you notice?
    b. How does each clue help you determine the mystery number?
    c. Which clue helped you narrow down your options?
    d. How does a number range help you determine the mystery number?

Same and Different Activity:

9. Students describe how two objects are the same but different, and they discuss the reasoning behind their responses. Guiding Questions:
    a. What do you notice?
    b. How are these two _____ the same, but different?
    c. What characteristics helped you decide that they were the same and different?
    d. Can you think of another way in which they are the same and different?

$$1\frac{2}{7} + \frac{5}{21} =$$

Daily Numeracy

Use a VERTICAL number line.

−36	−40	−44
−52	−38	−50

Daily Numeracy

Day 3
Not Like the Others

−15	−25
−10	−5

Daily Numeracy

Clue 1

Clue 2

Clue 3

Clue 4

Clue 1
The product of the number and –10 is a positive integer less than 60.

Clue 2

Clue 3

Clue 4

Daily Numeracy

Clue 1

The product of the number and –10 is a positive integer less than 60.

Clue 2

The opposite value of the number is a factor of 24.

Clue 3

Clue 4

Clue 1
The product of the number and –10 is a positive integer less than 60.

Clue 2
The opposite value of the number is a factor of 24.

Clue 3
The absolute value of the number is greater than 2.

Clue 4

Clue 1
The product of the number and –10 is a positive integer less than 60.

Clue 2
The opposite value of the number is a factor of 24.

Clue 3
The absolute value of the number is greater than 2.

Clue 4
The number is a multiple of 2.

The number is …

–4

1:55	A car travels 165 miles in 3 hours.

WHAT IS MATHEMATICAL FLUENCY?

In order for students to be successful as they progress into upper grades, they need to have a solid understanding of the concepts of addition and subtraction, and they also need to be fluent in the thinking strategies necessary for solving such facts. As you use the STEMscopes Math program, you will come to see how your students are starting to rely on their thinking skills and strategies as opposed to their fingers or skip-counting methods. Each grade level has numerous Mathematical Fluency activities.

Operations with Integers: Subtracting Different Signs Lesson Mini-Lesson

DESCRIPTION

In this maze activity, students use their understanding of integer operations to successfully navigate a maze using accurate integer calculations.

MATERIALS

PRINTED

- 1 Maze Instruction Sheet (per student)
- 1 Maze (per student)

CONSUMABLE

- Scrap paper

PREPARATION

Print a Maze Instruction Sheet and Maze for each student.

PROCEDURE AND FACILITATION POINTS

1. Explain to students that each problem has at least one possible solution. Correct solutions lead to the finish line. Incorrect solutions lead to dead ends.
2. Have students start in the upper left-hand corner of the maze.
3. Have students work out solutions, using scrap paper as needed.
4. Tell students that when they have found and chosen a solution, they should trace that path on their handout.
5. Explain that if a problem does not show an accurate solution, students must go back and rework the previous problem.
6. Have students continue solving problems until they reach the finish line.
7. If time allows, have each student compare their solution pathway with a classmate's and decide whether they found the most efficient solution pathway.
8. Monitor students as they work to ensure that they are following instructions, and assist with computation as needed.
9. Refer to the answer key, and prompt students in discovering pathways as needed.

Mathematical Fluency

Maze Instruction Sheet

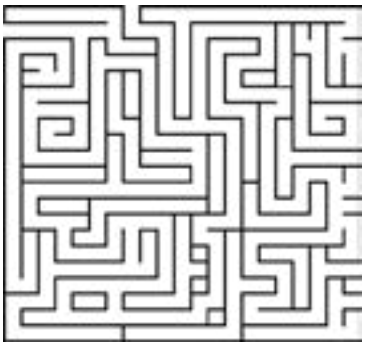
Complete the maze individually, and then compare your solution with a partner.

You Will Need

1 Maze

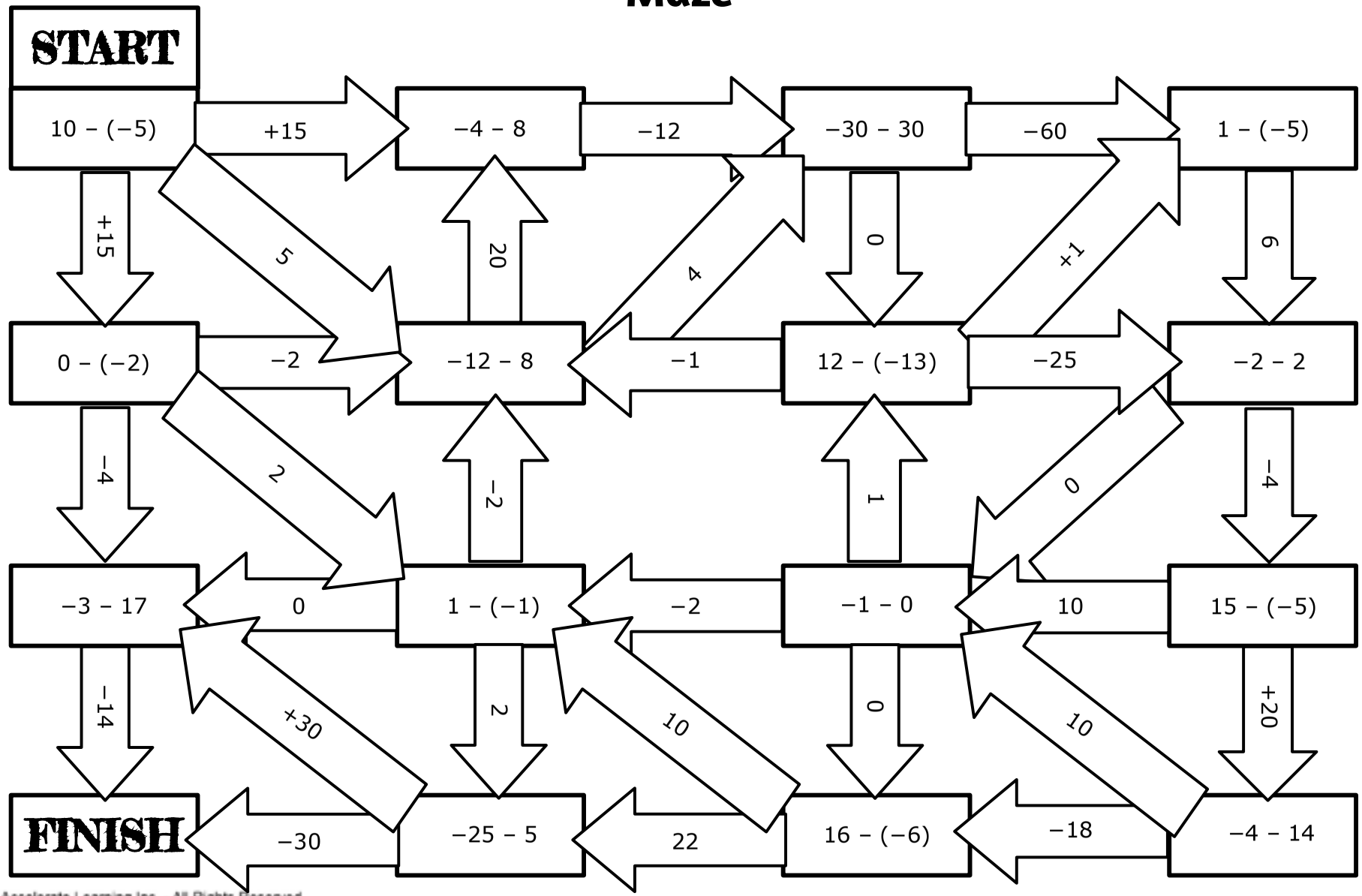
How to Play

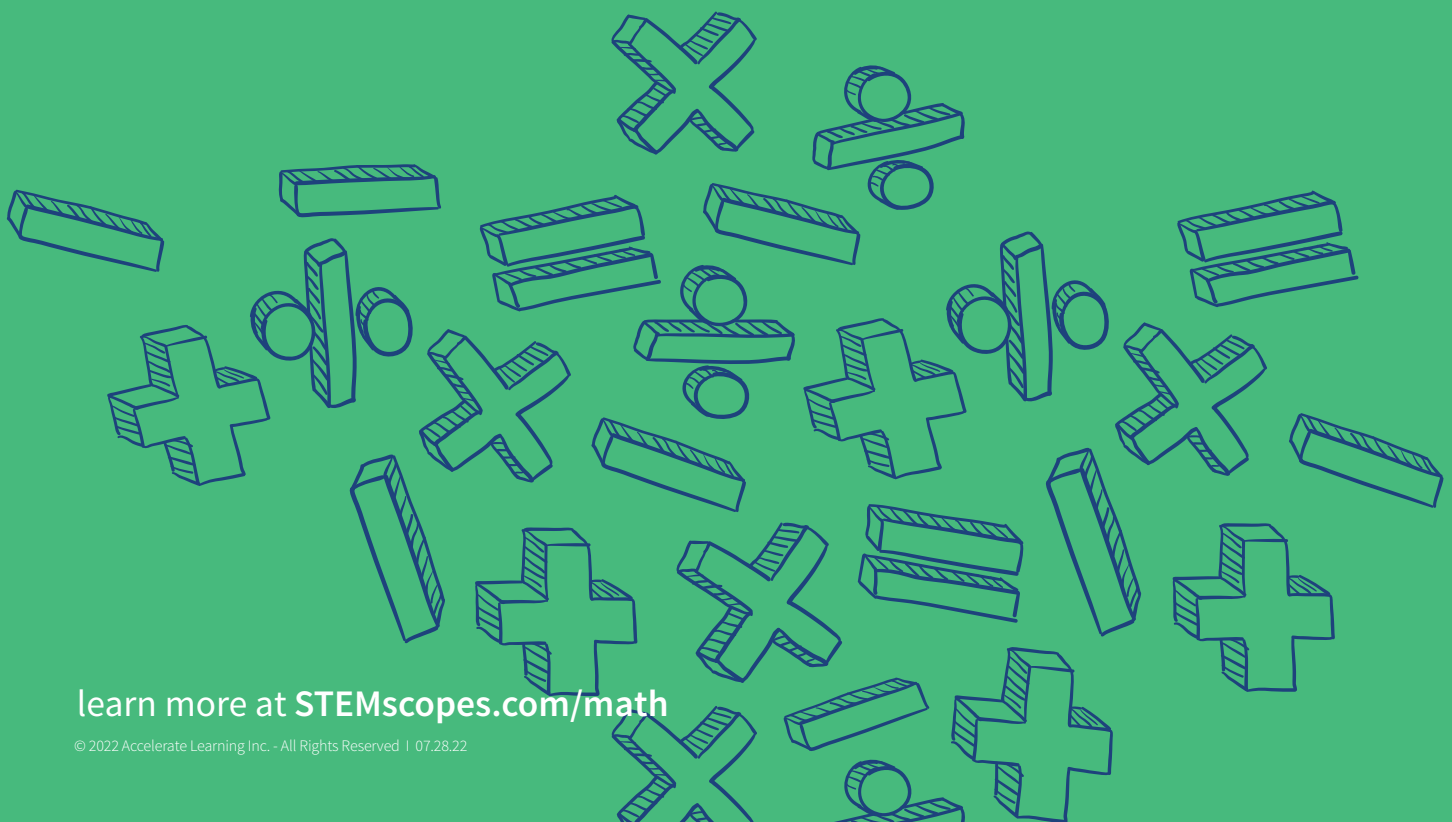
1. Each problem has at least one possible solution. Correct solutions lead to the finish line. Incorrect solutions lead to problems without correct solutions.
2. Start in the upper left-hand corner of the maze.
3. Work out problems, using paper as needed.
4. When you have found and chosen a solution, trace the path on your handout.
5. If a problem does not show an accurate solution, go back and rework the previous problem.
6. Continue solving problems until you reach the finish line.
7. Compare your solution pathway with a classmate's, and decide whether you have found the most efficient solution pathway.



Mathematical Fluency

Maze





learn more at **STEMscopes.com/math**