

Welcome to Concept Quests!

You've made a great decision to use Concept Quests in your classroom! This supplemental program will allow your students to complete puzzles and have fun—all while learning math and becoming better problem solvers!

Concept Quests Overview

Concept Quests is a supplemental resource for grades 2–5 that builds on mathematical concepts related to each of the units in the Bridges curriculum and that uses terminology found in the curriculum. The tasks in Concept Quests provide opportunities for students to engage in additional problem solving and math puzzles. Through Concept Quests, students make choices and learn how to self-regulate, as well as work collaboratively or independently.

Within this program, you will find seven units. Each unit is divided into six tasks called *Excursions* and six tasks called *Adventures*.

| | Task | Task Complete | Teacher Initials |
|---|---------------------------------|---------------|------------------|
| A | All the Single Digits | | |
| B | Counting the Class | | |
| C | Getting to Know You | | |
| D | All the Single Digits, and More | | |
| E | What's in the Coin Jar? | | |
| F | Alberta Falls | | |

Excursions apply and deepen students' understanding of essential unit concepts. The table to the left, for example, shows the tasks and concepts from the Grade 2 Unit 1 Excursions. These tasks often ask students to apply the mathematics they are currently working on in novel ways or authentic contexts. Generally, the Excursions follow the progression of the unit, such that the later tasks address content that is tackled later in the unit.

The table to the right shows the Adventures from Grade 2 Unit 1. Adventures extend students' understanding by encouraging them to make important mathematical connections to other grade-level content or interesting contexts, or to think about and apply generalizations. Adventures are often significantly more challenging than Excursions since they require more creativity and perseverance!

| | Task | Task Complete | Teacher Initials |
|---|---|---------------|------------------|
| A | Give Me a Call! | | |
| B | The Puppy Challenge | | |
| C | For a Good Cause | | |
| D | Kakuro! | | |
| E | Mission Possible 1 <i>Required before Adv. F</i> | | |
| F | Mission Possible 2 | | |

Concept Quests differs from other supplemental programs because it is intended for all students. It is not meant only for gifted or advanced students. The Excursions and Adventures were designed to provide challenge and opportunities for everyone, and the tasks were chosen so that all students, regardless of background or ability, will be able to access the problem and find an entry point.

In this introduction you will find an overview of Concept Quests along with some ideas for organizing and introducing Concept Quests in your classroom, but there is so much more to know! Use the QR code to the right to access professional learning that will expand on the ideas presented in this introduction, explore some Excursions and Adventures, and suggest activities that will help you begin planning how to implement Concept Quests in your classroom.



Guiding Principles

Concept Quests aligns with The Math Learning Center's beliefs about teaching and learning.

We Believe ...

- Mathematics is an enjoyable human endeavor through which we make sense of our world.
- Learning mathematics is simultaneously an individual and a social activity.
- It is through interactions with tasks, tools, and others that students make sense of mathematical concepts.
- Every student is capable of doing and making sense of mathematics.
- Learning for deep mathematical understanding is empowering.

Concept Quests Teachers ...

- Incorporate effective and equitable teaching practices into their daily instruction.
- Create a safe learning environment in which students are responsible for their own learning.
- Promote discourse, draw out student thinking, and embed assessment in their instruction through deliberate noticing and purposeful questioning.
- Honor and build upon children's prior experiences with mathematics, both in and out of the classroom.

Concept Quests Students ...

- Develop competence and confidence as learners and doers of mathematics.
- Solve challenging/high-level problems using manipulatives and visual models.
- Look for patterns, make and test conjectures, and develop mathematical generalizations.
- Share their own discoveries, strategies, observations, and solutions with the classroom community.
- Talk and move around the classroom as they actively engage in learning.

Concept Quests Tenets

In addition, there are four core tenets that are foundational to Concept Quests.

Access & Equity

Concept Quests empowers students to engage in rich mathematical tasks regardless of prior achievement.

Productive Struggle

Concept Quests empowers students to grapple with and make sense of mathematical ideas and concepts by engaging in high-level cognitive tasks for which a solution strategy may not be immediately obvious.

Agency & Identity

Concept Quests empowers students to see themselves as mathematically capable doers of mathematics who have valuable strategies and reasoning skills.

Choice

Concept Quests empowers students to make choices about content, process, product, and environment that work best for their learning experience.

The Role of the Teacher



A positive math identity “develops not only from children’s beliefs about themselves but how others, including teachers . . . see them as being (or not being) mathematically capable and competent,” (Huinker, D., Yeh, C., & Marshall, A. M., 2020, p. 48).

A math teacher’s job is to not only help students learn math concepts but to also help students develop a positive math identity—in other words, see themselves as doers of mathematics. This means that all students, including students who might not always be the top performers in math class, need many opportunities to grapple with, reason, and make sense of math problems and concepts. When we limit students’ opportunities to engage in rich mathematical tasks, we are communicating that we do not believe in their abilities, contributing to students seeing themselves as not being mathematically capable.

Concept Quests allows *students* to be the mathematical problem solvers, sensemakers, thinkers, and doers. It provides an incredible opportunity to help students develop agency in math. Students can rely on their own thinking as they engage in these unfamiliar tasks.

However, Concept Quests is a resource that requires some effort and engagement from the classroom teacher. Though the goal is that students will ultimately engage in Concept Quests independently or with partners or small groups, you will need to monitor your students, support their productive struggle, encourage them, and assess their progress. Attending to students’ learning is just good practice when students engage with Concept Quests.


Concept Quests is not something that all students must do. Some of your students may be adequately challenged by the mathematics curriculum and use all their scheduled time to complete the tasks in the curriculum. This is fine, although some of these students will want time to work on Concept Quests! On the other hand, you may expect some of your students to work on Concept Quests if they need or expect an additional challenge. There is an element of choice here: Concept Quests will be available to all, but students should have some control over the number of Excursions and Adventures with which they engage, as well as when they choose to work on the tasks.

Considerations for advancing a student-centered approach to instruction:

- **Challenge your assumptions about what students can learn and do.** This will require you to examine your beliefs about teaching and learning. Look at each student with unconditional positive regard. If you authentically believe that all students can make sense of mathematics if we allow and even encourage productive struggle, then it follows that you must create the space for every student to engage in rich tasks. This may be uncomfortable for us or them at first, but it's a critical first step!
- **Challenge the traditional notion of what it means to teach.** It may be helpful to consider your role as a facilitator or “guide on the side” rather than “sage on the stage.”
- **Value the process of problem solving more than the answers themselves.** This means listening carefully to students and trying to understand how they get their answers, even when they don't make much sense to you. Students' responses are based on their current understandings.
- **Use these tasks to help reveal students' strengths and weaknesses, and prepare to be surprised!** It is possible to underestimate our students; some may struggle with computations, facts, or procedures, but might demonstrate surprising approaches to challenging problems.
- **Help students clarify and justify their thinking by regularly posing open-ended questions.** Possibilities include:
 - ▶ How did you figure it out?
 - ▶ Did anyone get a different answer?
 - ▶ Did anyone use a different strategy?
 - ▶ Do you think that will always work? Why or why not?
 - ▶ Can you find a way to prove that?
- **Encourage students to choose from a selection of available tools.** This may include Unifix cubes, number racks, square tiles, base ten number pieces, and, when appropriate, individual electronic devices.
- **Honor each student's choice to work in a way that motivates them,** whether that is independently or collaboratively.

Students and teachers using Concept Quests are actively engaged and draw upon their knowledge bases to support learning. This kind of instruction is consistent with equitable and effective teaching practices shown to positively impact students' mathematical understanding, achievement, and identity development. The Math Learning Center draws on research and leading mathematics education frameworks to support the development of high-quality instructional materials.

Problem Solving with Concept Quests

 *Effective teaching of mathematics engages students in solving and discussing tasks that prompt mathematical reasoning and problem solving and allow multiple entry points and varied solution strategies...* (NCTM, 2014, p. 17).

By nature, most students enjoy engaging in tasks that make them think, but some students may lose their appreciation for thought-provoking tasks because their mathematics classes have not consistently presented them with engaging problems. Instead, their schooling has focused on computation, procedures, and exercises that develop basic skills.

The tasks in Concept Quests are authentic problem-solving tasks in that there are no suggestions for how to proceed or expectations for specific solution methods. This allows a certain degree of freedom for students, which can be both liberating and motivating. This freedom also provides opportunities for students to engage in multiple Standards for Mathematical Practice (NGACBP & CCSSO, 2010):

- Make sense of problems and persevere in solving them
- Reason abstractly and quantitatively
- Construct viable arguments and critique the reasoning of others
- Model with mathematics
- Use appropriate tools strategically
- Attend to precision
- Look for and make use of structure
- Look for and express regularity in repeated reasoning

Some of the Concept Quests provide opportunities for students to practice skills. However, these opportunities are often disguised in engaging puzzles or puzzle-like tasks. Computation is not always a prerequisite for problem solving. In both Excursions and Adventures, students may be applying procedures to their world or using representations that support the sensemaking of the procedures, meaning that they require a high level of cognitive demand. As described by the Mathematical Task Analysis chart (Stein, Smith, Henningsen, & Silver, 2009), these types of tasks fall into the category of Procedures with Connections.

| Lower-Level Demands | Higher-Level Demands |
|--|---|
| <p style="text-align: center;"><i>Memorization Tasks</i></p> <ul style="list-style-type: none"> • Involves either producing previously learned facts, rules, formulae, or definitions OR committing facts, rules, formulae, or definitions to memory. • Cannot be solved using procedures because a procedure does not exist or because the time frame in which the task is being completed is too short to use a procedure. • Are not ambiguous—such tasks involve exact reproduction of previously seen material and what is to be reproduced is clearly and directly stated. • Have no connection to the concepts or meaning that underlie the facts, rules, formulae, or definitions being learned or reproduced. | <p style="text-align: center;"><i>Procedures with Connections Tasks</i></p> <ul style="list-style-type: none"> • Focus students’ attention on the use of procedures for the purpose of developing deeper levels of understanding of mathematical concepts and ideas. • Suggest pathways to follow (explicitly or implicitly) that are broad general procedures that have close connections to underlying conceptual ideas as opposed to narrow algorithms that are opaque with respect to underlying concepts. • Usually are represented in multiple ways (e.g., visual diagrams, manipulatives, symbols, problem situations). Making connections among multiple representations helps to develop meaning. • Require some degree of cognitive effort. Although general procedures may be followed, they cannot be followed mindlessly. Students need to engage with the conceptual ideas that underlie the procedures in order to successfully complete the task and develop understanding. |
| <p style="text-align: center;"><i>Procedures Without Connections Tasks</i></p> <ul style="list-style-type: none"> • Are algorithmic. Use of the procedure is either specifically called for or its use is evident based on prior instruction, experience, or placement of the task. • Require limited cognitive demand for successful completion. There is little ambiguity about what needs to be done and how to do it. • Have no connection to the concepts or meaning that underlie the procedure being used. • Are focused on producing correct answers rather than developing mathematical understanding. • Require no explanations, or explanations that focus solely on describing the procedure that was used. | <p style="text-align: center;"><i>Doing Mathematics Tasks</i></p> <ul style="list-style-type: none"> • Requires complex and non-algorithmic thinking (e.g., there is not a predictable, well-rehearsed approach or pathway explicitly suggested by the task, task instructions, or a worked-out example). • Requires students to explore and to understand the nature of mathematical concepts, processes, or relationships. • Demands self-monitoring or self-regulation of one’s own cognitive processes. • Requires students to access relevant knowledge and experiences and make appropriate use of them in working through the task. • Requires students to analyze the task and actively examine task constraints that may limit possible solution strategies and solutions. • Requires considerable cognitive effort and may involve some level of anxiety for the student due to the unpredictable nature of the solution process required. |

Even Excursions and Adventures that appear to be Procedures Without Connections may be more than meets the eye, with twists that raise the cognitive demand. Consider, for example, the Addition Jumble (G2, U2):

NAME _____ | DATE _____

Excursion 2A Supplement

Addition Jumble

| | | | | | | | | |
|----|---|---|---|---|---|----|---|---|
| | + | 7 | 5 | 1 | 4 | 10 | 9 | 3 |
| 1 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 7 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |

| | | | | | | | | |
|----|---|---|---|---|---|----|---|---|
| | + | 7 | 4 | 8 | 9 | 12 | 6 | 2 |
| 9 | | | | | | | | |
| 3 | | | | | | | | |
| 10 | | | | | | | | |
| 5 | | | | | | | | |
| 8 | | | | | | | | |
| 7 | | | | | | | | |
| 11 | | | | | | | | |

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Students may be practicing their addition facts, but they are also looking for patterns and making generalizations about doubles and near doubles facts. The concepts are not trivial, and this not-so-simple fact-practice puzzle can support a deeper learning of mathematics.

It is possible that not all your students will embrace and cheer the challenge provided by Concept Quests, particularly students who have never been asked to productively struggle with mathematics before. To struggle productively means that students are grappling with and trying to make sense of mathematics. Therefore, it is important to model the excitement of a challenge, thereby encouraging and supporting students’ perseverance. Your example may help students develop a growth mindset about problem solving, which will be beneficial in the long run.

Differentiation

Equity does not mean that every student should receive identical instruction; instead it demands that reasonable and appropriate accommodations should be made as needed to promote access and attainment for all students,” (NCTM, 2000, p. 12).

Concept Quests is not solely for a subset of your class. While Concept Quests is a great resource to meet the needs of some of your more advanced students in mathematics—those who are ready for a challenge and extension—it is to be introduced and made available to everyone in the class, without exception. This will require differentiation. Concept Quests has three differentiation goals:

- Provide opportunities for ALL students to engage in high-level problem solving.
- Provide students choice and self-regulation with their learning.
- Provide students with opportunities to engage in independent or collaborative problem solving.

Differentiation is necessary because it enables us to meet the needs of our students. Unfortunately, differentiation frequently leads to leveling or tracking students, creating inequitable experiences and negative math identity for some.

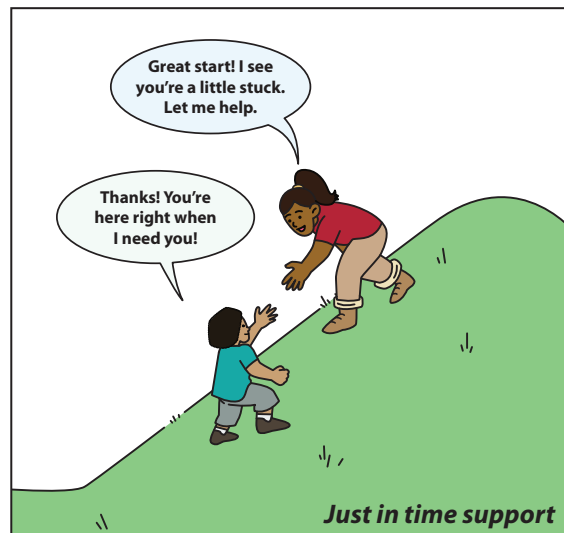
To differentiate with equity in mind, the goal **must** be to make high-level tasks accessible to all students. In other words, it is as important to make the tasks accessible for students who have not demonstrated strong achievement in math as it is for those who have, because a student may reveal their brilliance at any time!

Concept Quests is designed to provide multiple entry points that draw on strengths that are not typically featured in core curriculum. Tomlinson (2022) offers the following key ideas to keep in mind when differentiating, and they are especially applicable when using Concept Quests:

- Not all students advance at the same time or at the same rate.
- Every child has a hidden capacity for success.
- Choice is a means of differentiation that enables students to make decisions about what works best for their learning.
- Students will use logic to approach problems in ways that make the most sense to them. It is important to honor and build upon their thinking.
- Success breeds success.

Effective differentiation often means that teachers will provide support, or scaffolds, to help students successfully solve problems. This may include helping students who are having trouble getting started or helping students who get stuck somewhere in the middle. It is important to resist the urge to tell students what to do while also making sure that students do not become excessively frustrated. This is achieved by providing *just-in-time scaffolding* that a student might need when they need it. This type of support—as opposed to *just-in-case scaffolding*—is an important way to help students become independent. To determine the support that students might need, talk with them to better understand what is challenging for them. This way, you will be able to meet them where they are. Useful just-in-time scaffolds for Concept Quests include:

- Reading the questions to students
- Encouraging the use of manipulatives and visual models
- Having a student talk to another student about their work
- Providing a graphic organizer to help students get started



Structure of the Materials


Mathematical agency shifts the power and authority from the teacher, textbook, and tools to the students. Children who are able to employ their mathematical agency rely on their own thinking and their cooperation with others to expand their understanding.” (Huinker, D., Yeh, C., & Marshall, A. M., 2020, p. 51).

A single Concept Quest consists of 12 tasks that align with a unit of instruction: six Excursion tasks and six Adventures. Excursions extend the learning provided in the unit, whereas Adventures offer an advanced challenge that may require more time, creativity, and perseverance. Though different, both offer significant problem-solving experiences.


Each Concept Quest begins with a Student Record Sheet. The two types of tasks are identified in separate tables on the Student Record Sheet. Excursions and Adventures are sequenced and labeled A–F, as well as identified by their titles. The record sheet also notes when a task is a prerequisite for another task (e.g., Excursion F is to be completed before Adventure D).

The two additional columns provide locations for students and teachers to indicate which tasks have been completed. Teachers should provide a copy of the Student Record Sheet for every student in the class, so all students feel welcome to participate.

Unit 7

 **Excursions**

| | Task | Task Complete | Teacher Initials |
|----------|---|---------------|------------------|
| A | What’s Wrong with This Picture? | | |
| B | Hot Dog Shortage 1 <i>Required before Adv. C</i> | | |
| C | Animal Care | | |
| D | Somebody’s Watching Me | | |
| E | What’s the Problem? | | |
| F | Wacky Web 1 <i>Required before Adv. D</i> | | |

 **Adventures**

| | Task | Task Complete | Teacher Initials |
|----------|-----------------------|---------------|------------------|
| A | Bug Buffet | | |
| B | Spider Spree | | |
| C | Hot Dog Shortage 2 | | |
| D | Wacky Web 2 | | |
| E | Fascinating Futoshiki | | |
| F | Kakuro Finale | | |

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Student Record Sheet

The Tasks

Each task appears on a separate page with a title, icon, and a label that shows the Excursion or Adventure and the unit (e.g., Excursion 1A, Adventure 3F).



Some tasks may require additional pages of information for the task or additional pages on which students document their thinking. These additional pages are found immediately following the task they accompany, and you will see that they will include the label matching the task followed by “Supplement.” The task sheet provides the directions, while the supplement page may provide a graphic organizer, a recording sheet, or the puzzle that students will solve.

Adventure 3D

Coded 100 Grid

A 100 grid has been written in code. It starts with 1 and ends with 100. Cut out the pieces **found on the second and third supplement pages**.

Figure out what digit each symbol represents and build the 100 grid by taping or gluing each piece onto the correct area of the grid on the first supplement page.

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NAME _____ | DATE _____
Adventure 3D Supplement 1

Coded 100 Grid

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Coded 100 Grid task with supplement page

You may find that printing supplement pages is sometimes necessary and sometimes not, depending on your expectations for where and how students will record their work. For example, instead of printing enough copies for every student, you may decide to put a few copies in sheet protectors so that students can write on them with dry erase markers. This decision can be made on a case-by-case basis.

Task Expectations

There are several expectations related to Excursions, Adventures, and task completion:

- Students are to complete the Excursions before moving on to the Adventures, to ensure that they can apply the essential unit ideas in novel ways and different contexts. The Excursions often require students to make connections between representations, justify their reasoning, or even think backward in a way that assesses their understanding. The tasks are not trivial, so it is a reasonable expectation for students to complete these successfully before they tackle Adventures. That said, when you reach the midpoint of the corresponding Bridges unit, you may want to allow students to move on to the Adventures even if they've only completed some of the Excursions, to maintain excitement. A good rule of thumb is that students can move to the Adventures at the halfway point of the unit if they've completed three or more Excursions.
- Generally, Excursions and Adventures can be completed in any order. However, some Excursions and Adventures must be completed before completing a related Excursion or Adventure. Those prerequisites will be noted on the student record sheet.
- Students may gravitate to some tasks, especially tasks that look like puzzles or have fewer words. This is an important aspect, as students are often motivated by choice. Tasks are deliberately labeled with letters, not numbers, to facilitate this freedom of choice.
- Incomplete tasks can be put aside and returned to later. Students will occasionally get stuck! If they are frustrated or find that they are no longer engaging in productive struggle, they are allowed and even encouraged to put the task aside and come back to it at another point. They may learn something later in the unit that helps them with the task, or—as so often happens for many of us—they may have an “aha moment” when they are not consciously thinking about it. Allowing students to put tasks aside can encourage perseverance, as they come to realize that authentic problem solving requires time, prolonged engagement, and even mental breaks.
- There are no time limits or initial expectations for efficiency. In fact, students' free exploration on a task is a wonderful opportunity for assessment. What strategies do they use when left to investigate on their own? What inefficient strategies or computations were favored? Are they applying strategies and operations that are the focus of instruction, or are they relying on less efficient approaches? After a task is completed, you can ask a student to look back and see if it could be solved in a different or more efficient way.
- Students can work independently or collaboratively. There has been a significant push over the past few decades for collaborative work, which is certainly important. However, students may enjoy trying their own approach individually before talking with others. Students should have the choice of working alone or with a partner on a problem, as well as having the ability to switch if they get stuck. Foster flexibility so students become aware of which approach might be useful in various situations.

Answer Keys

Answer keys are provided at the end of each unit. The answer keys also often provide background information that may be useful when looking at student work. The answer keys are **not** intended for student use. Students engage much less genuinely with tasks when the answers are available to them, so please only use the answer keys to review student work.

Resources

After all of the units, you will find other resources that you can use to support your implementation of Concept Quests. These resources are discussed in more detail in *Getting Started with Concept Quests*.

- Family letter
- Task entry organizer
- ABCs of Math Talk
- Concept Quests record sheet for teacher use

Implementing Concept Quests

Set Up

Concept Quests should be introduced and made available to everyone in the class, without exception, to avoid a situation where students perceive that there are different expectations for different students. It is important to note that Excursions and Adventures are not to be handed out as packets; to do so would be irresponsible to both the environment and the philosophy behind Concept Quests, since a packet may cause students to feel like they need to complete all of Excursions and Adventures in order, thus impacting their agency. By putting the materials in a central location, students can choose which one(s) they want to solve in the order they'd like to solve them, with no pressure or expectation to do all of them. Below are three options for making Concept Quests accessible to all of your students:

Literature Sorter

A literature sorter is great for classrooms with limited wall space but ample counter space. Excursions and Adventures can be color-coded, and each unit's work can be labeled and placed in an organized way. Additional compartments can be used for Student Record Sheets and supplement pages. Tasks can be arranged so that titles face outward for student selection.



Hanging File Box

A hanging file box allows teachers to use folders to organize tasks, and student folders can be kept in the same place. This is a good option for classrooms with limited wall space and limited counter space. Excursions and Adventures can be sorted into color coded folders. Tasks can be placed in sheet protectors and stickers can be used to indicate which tasks students will need to use a supplement page to complete.

Wall Display

A wall display works well in classrooms that have ample wall space. A wall display can be integrated easily with the Number Corner display. Excursions and Adventures can be sorted into different-colored folders and inserted so that students can easily read the titles. Supplement pages can be stored in additional folders below.

Whether you choose one of these options or an original idea of your own, any arrangement should keep materials organized and easily accessible for students. Additionally, students should have a way to keep their work organized, such as:

- Dedicated 2-pocket folder
- File folders
- Dedicated notebook, or a reserved Concept Quests section in an existing math notebook



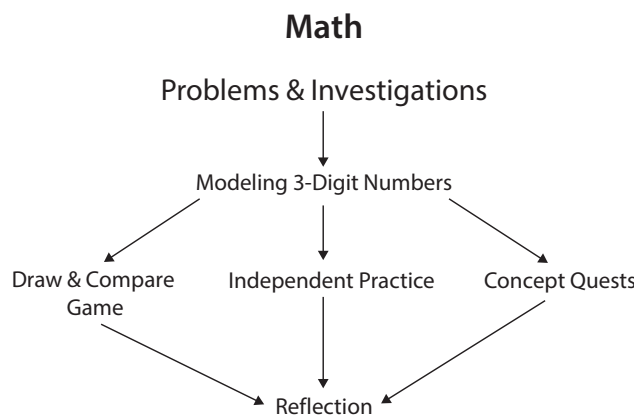
Scheduling and Structuring Concept Quests Time

How and when Concept Quests is used may look different across classrooms, but there are several times during the school day when the tasks can be implemented. The most natural time for students to engage in Concept Quests is when they have finished the rest of their math work for the day. Alternatively, students might opt for Excursions and Adventures during Work Place time. And, of course, any free time during the day—during a class break, at lunch, during recess, or even after school (if you allow students to take Concept Quests home)—is a great opportunity for problem solving!

To help structure student tasks, you may want to consider implementing a flowchart specifically for a given day or a general one that can be followed on any day.

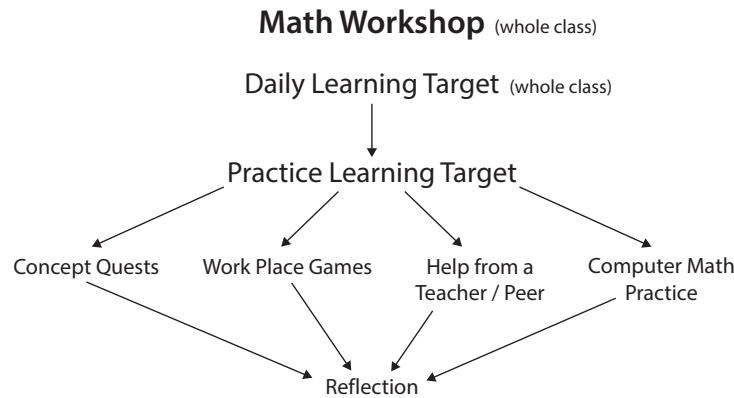
Today's Flow Chart

You may choose to prescribe a flow for the allotted math time on “Today’s Flow Chart” that could change from day to day. The chart below shows the session beginning with whole-group work comparing decimals and then transitions into independent work before culminating with a reflection. Concept Quests could be one option during independent work time.



Everyday Flow Chart

An “Everyday Flow Chart” can be used when students follow a similar flow each day. Students can be reminded at which point in any given session it would be appropriate for them to engage with Concept Quests.



Getting Started with Concept Quests

To ensure that students are successful with Concept Quests, you’ll want to create a positive environment. This can be done by establishing your classroom as a community of learners from the beginning of the year, exhibiting your excitement when introducing Concept Quests, and being prepared if students aren’t as excited about Concept Quests as you are.

Building a Community of Learners

The Bridges curriculum sets the tone for the year by establishing math class as a community of learners. When all classroom members respect one another, believe that their ideas matter, and are supported in exploring these ideas, instruction and learning are transformed. Students should share ideas freely, respectfully agree or disagree with the ideas of others, and regard mistakes as a natural part of the learning process. The norms established with the Bridges curriculum should also apply to Concept Quests.

Considerations for successfully developing a community of learners:

- When introducing Concept Quests, set the tone for the year by encouraging all students to try the tasks and by expressing that you believe that all your students are capable problem solvers.
- Establish clear and consistent habits and routines that allow the teacher and students to focus on learning. Make sure students know where they can find the materials.

| ABCs of Math Talk | |
|-------------------|---|
| Add | <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; width: 150px; text-align: center;">I also noticed...</div> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; width: 150px; text-align: center;">I agree because...</div> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; width: 150px; text-align: center;">That reminds me of...</div> </div> |
| Build | <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; width: 150px; text-align: center;">Another way to ___ is ___</div> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; width: 150px; text-align: center;">The next step is...</div> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; width: 150px; text-align: center;">When ___ said ___ it made me think of ___.</div> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; width: 150px; text-align: center;">___ said ___ You could also ___.</div> </div> |
| Challenge | <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; width: 150px; text-align: center;">Why did you...?</div> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; width: 150px; text-align: center;">I respectfully disagree because...</div> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; width: 150px; text-align: center;">A more efficient strategy might be...</div> </div> |
| Connect | <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; width: 150px; text-align: center;">I also did something similar when I...</div> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; width: 150px; text-align: center;">My strategy was similar/different because...</div> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; width: 150px; text-align: center;">I also...</div> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; width: 150px; text-align: center;">___'s strategy and ___'s strategy are similar/different because...</div> </div> |
| Clarify | <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; width: 150px; text-align: center;">Why did you use that strategy?</div> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; width: 150px; text-align: center;">How did you get that answer?</div> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; width: 150px; text-align: center;">When you said ___ did you mean ___?</div> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; width: 150px; text-align: center;">I would like to know why...</div> </div> |

ABCs of Math Talk (included in Resources section)

- Cultivate a sense of respect between students by modeling respectful behaviors and by setting clear and high expectations for respect in your classroom. Refer students to the ABCs of Math Talk on the inside cover of their Student Books for ways to start sentences and questions respectfully.
- Create an environment that supports risk-taking by helping students regard mistakes—both their own and those of others—as opportunities for learning:
 - ▶ Give students time to work through their own confusion and process their ideas. Don't correct them at the first sign of a mistake.
 - ▶ Encourage students to be supportive of each other's learning process.
 - ▶ Celebrate the risks that students take.
- Focus on partner and group work. Working together gives students the chance to grapple with problems, consider different points of view, and challenge and support each other, all of which contribute to stronger relationships between students and deeper mathematical understandings.
- For more information, use the QR code to the right to access “Building & Nurturing a Classroom Community” on the Bridges Educator Site.



Introducing Concept Quests

When introducing Concept Quests to students, project a level of enthusiasm, and frame the Excursions and Adventures as challenges that may not be easy but will be fun and rewarding. Reinforce that mistakes and perseverance are not only expected but are cause for celebration, because they provide opportunities for learning.

Additionally, students need to learn the routines and procedures you have established for Concept Quests. To engage in Concept Quests, students will need to know:

- Where to find materials
- When they can work on Concept Quests
- How to record and store their work
- How to turn in work and receive feedback

The routines and expectations will likely need to be repeatedly reinforced at the start of the year. You may choose to have students work independently, in pairs, or even in small groups on tasks (though only when students' interests coincide with their peers').

Sometimes, Excursions and Adventures are so fun that kids may not want to stop working on them! While Concept Quests is not intended to be used as homework, students can choose to take them home to work on them. Therefore, make sure that families are informed about what Concept Quests is so they can support their child. You will find a letter you can use to introduce Concept Quests to families in the Resources section after the units.

Preparing Students to Face Challenging Problems

Students will have a variety of reactions to challenging problems. Some embrace the challenge, but a few become discouraged. To help students get started on tasks, they can use the Task Entry Organizer, found in the Resources section following the units. The organizer helps them establish what they know, what they want to know, and what their plan is for solving the problem.

The “What do I know?” section can include knowledge from the problem, inferences, and outside information. The “What do I want to know?” section can include

what the problem is asking for, as well as other questions along the way. The “What is my plan?” section can be used to outline how they will approach the problem and what they hope to learn from carrying out the steps. Students can record what they learn, calculations, and other information in the “My problem-solving work” section at the bottom.

Many students will not need the organizer, but for students who get stuck, it will be important to offer the organizer and to model how it can be used. You could also model the use of the organizer at the beginning of the school year for all students—using an Excursion from Unit 1— and then let students know that the organizer is not required but available if they think they need it. The organizer is more effective with word problems than puzzle problems. It could be beneficial to allow students to complete one or two tasks with the organizer in small groups.

Ongoing Support

As you begin to implement Concept Quests in your classroom, consider the following suggestions for setting student goals, monitoring and checking student work, and providing feedback.

Students should spend the first unit or two becoming familiar with Concept Quests and should be encouraged to work on a variety of tasks. As they become more familiar with the structure of the tasks, it is important that students set appropriate targets for their work within a given unit. Within the Concept Quests materials, you are provided with a Differentiated Expectations resource. This resource can support students in selecting a path for their Concept Quests work. Goals range from completing just one Excursion to completing all 12 Excursions and Adventures for a unit and writing additional reflections. These goals should be set by students. With your input, students can be encouraged to make informed decisions based on how many Excursions and Adventures they’ve completed in previous units. Students should be given the opportunity to monitor and modify their goals as they progress through a unit.

| | | | | |
|-----------------------------|-------------------------|------------------|--|------------|
| NAME _____ | | TASK _____ | | DATE _____ |
| Task Entry Organizer | | | | |
| What do I know? | What do I want to know? | What is my plan? | | |
| My problem-solving work: | | | | |

Teachers have an opportunity to use purposeful questions when engaging with students about Concept Quests. You can start by asking students, “What do you notice about this problem?” From there, you can engage students by asking them to talk you through their thinking, eliciting their ideas for moving forward. As you move into a unit, it would be beneficial to formulate task-specific questions to ask.

It is important to allow students the freedom to solve problems in a way that makes sense to them. Though certain problems may elicit certain strategies, the goal is to have students justify their reasoning mathematically, regardless of the path they choose in solving the tasks. This builds on students’ current understanding and leads to deeper learning. Additionally, students should be encouraged to put certain tasks aside at times and come back to them later.

There are several things to consider when thinking about checking student work. Student work can take many forms with Concept Quests. Depending on the task at hand, there are times that you might expect to receive an answer only, an answer accompanied by some work, or a full explanation with their work and answer.

Just as student work may take different forms, teacher feedback will as well, depending on the task or the classroom. You might provide quick, in-the-moment feedback verbally, or you can provide written feedback on the student’s work or on the record sheet. You could also opt for a miniconference with students to discuss their work.

As students work through Concept Quests, they will track their own work on the Student Record Sheet. To track the work of your entire class, you can use the Concept Quests Record Sheet that appears in the Resources section.

| Concept Quests Record Sheet | | | | | | | | | | | | |
|-----------------------------|-----------|---|---|---|---|---|-----------|---|---|---|---|---|
| Unit _____ | | | | | | | | | | | | |
| Student Name | Excursion | | | | | | Adventure | | | | | |
| | A | B | C | D | E | F | A | B | C | D | E | F |
| | | | | | | | | | | | | |
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If your students find it motivational, you could make a wall display to honor students’ perseverance. Each time a student finishes a task, you could display their name under the title of the Excursion or Adventure. This may serve as an active resource for a teacher. For instance, if a student would benefit from working with a peer who has completed a task, the display can help the teacher decide how to pair the students.

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