

# Strengths-Based Mathematics Learning: A Tool Kit for Families



Dear Educator,

Strengths-based mathematics teaching is for each and every educator or family member in all school contexts. You can use this approach to design lessons, organize your classrooms, provide feedback, engage in professional learning communities, and communicate with families. This approach benefits all students, including those who repeatedly have difficulty in mathematics, those who sometimes need support, multilingual learners, those with specific learning challenges, and those who may not exhibit difficulties with learning but instead relish challenge. In other words, strengths-based instruction supports *all* students to recognize their value, develop an identity as a competent learner, increase their confidence, and engage in learning with clarity and purpose (Anderson, 2000).

We believe that partnering with families is more urgent and important now than ever before. Parents, along with their children, are navigating learning in new ways and at a much more granular day-to-day level during hybrid and remote learning. We have developed this toolkit to support you in this effort.

This toolkit provides activities that you can share with your students' families as an entire set or one activity at a time. You can print out the materials and send them home with students, share them at a back to school evening, post them on your class website or learning management system, or perhaps even engage families in one of the activities in a face-to-face or remote setting. Please share in any way that will be helpful to you, your students, and your families.

The following activities are included in this toolkit:

Strengths-Based Questions

Strengths Family Interview

Strengths Storytelling Game

Family Communication About Mathematics

Family Strengths Chain Link

Student Attitude Survey

Strengths Spotting Box

Home Learning Encouragement Checklist



In appreciation,  
Beth Kobett and Karen Karp  
Authors of *Strengths Based Teaching and Learning in  
Mathematics: Five Teaching Turnarounds for Grades K-6*

Dear Families,

Have you ever heard someone say that they are “not good at math” when talking about their interest in and attitude about mathematics? Maybe you or other family members have repeated this same sentiment. We understand. Many people may have had a rough time learning mathematics – not because they didn't have the right brainpower, but possibly because of anxiety, missing key information, or a variety of other reasons. We want to turn these challenging experiences around and offer ways for ALL children and their families to understand that they possess the ability and perseverance to learn math and enjoy it!

We believe that each and every child, person for that matter, possesses mathematics learning strengths. We know that leveraging children’s strengths to address their challenges is more successful than focusing on their weaknesses. Let’s work together to uncover and nurture your child’s mathematical strengths (maybe yours too!). Children need families to invest time in using their areas of strength to build bridges to those areas that need support and attention. We promise you that your children will flourish with a new emphasis on mathematical strengths.

The Strengths Toolkit for Families provides questions for you to use while working with your child, ways to help you and your children locate strengths, strength storytelling cards, activities that that will help your family focus on the mathematical brilliance in your children through strengths spotting, and games to play with your children. With your help, we can support each and every child to recognize their own mathematical talents while enjoying the beauty of mathematics!



Be well,  
Beth Kobett and Karen Karp,  
Authors of *Strengths-Based Teaching and Learning in Mathematics*

# Strengths-Based Questions

## Directions:

1. Read the following five Strengths-Based Questions to familiarize yourself with the questions. Print the list for easy reference.
2. Sometimes, we feel tempted to rescue our children from struggle by telling or showing them how to perform a problem or operation. Instead, consider asking one of the Strengths-Based Questions to help open up the conversation.
3. Listen for what your child says next. Use the explanations to advance thinking. For example, when your student says, “We are supposed to solve this problem, but I am not sure what to do.” Say, “What are you thinking about trying?” or “Let’s use your strength in drawing pictures to see if we can make a picture of this problem.”
4. As your child works on the problem, point out all strengths in the solution pathway. For example you might ask, “I see that you have tried a couple of different equations here. You have a great strength in taking risks and trying different ideas. Which one makes the most sense for this problem?”

# Strengths- Based Questions



What strengths do you have that will help you solve this problem?



What have you done before that will help you solve this problem?



What do you know about this problem?



What is one question you could ask me about this problem?



Is there a sketch that you could make that would help you solve this problem?

# Affirming Strengths

We can help our family members affirm their strengths by helping them identify specific times when they exhibit those strengths.

## **Directions:**

1. Depending on the age of the student, you can select or read a statement that is appropriate for the age of your child.
2. Next, hold a discussion about what the statement means.
3. Finally, write the statement at the top of a blank piece of paper and ask the child to draw a picture or write down examples to fit the statements. You can also write for your child if appropriate.

# Affirming Mathematics Strengths

I am capable of \_\_\_\_\_.

I am strong in \_\_\_\_\_.

I work hard at \_\_\_\_\_.

I am proud of \_\_\_\_\_.

I trust my decision to \_\_\_\_\_.

I showed my strength when \_\_\_\_\_.

When I am doing math, I am \_\_\_\_\_.



# Strengths Story Telling Game

**Preparation:** To prepare for the game:

**1. Print:**

- *Strengths Story title pages,*
- *Strengths Story situation cards,*
- *Tell Us More title cards and*
- *Tell Us More prompt cards*

**2. Glue:**

*Strengths Story title pages and Strengths Story situation cards with the blank pages glued together.*

- *Tell Us More title cards and Tell Us More prompt cards.*

**3. Cut:**

- *Strengths Story Cards and place them face down so that the animals are face up.*
- *Tell Us More cards and place them face down.*

**Directions:**

1. Have each participant select a *Strengths Story* card and tell your story.
2. After the story is told, select a *Tell Us More Story* card and add on to your story.
3. Answer any questions that other family members have about your story.
4. Repeat the process with another family member.



Strengths  
Story



Strengths  
Story



Strengths  
Story



Strengths  
Story



Strengths  
Story



Strengths  
Story



Illustration by Abigail Shih and Penelope Shih

Strengths  
Story



Strengths  
Story



Strengths  
Story



Tell a story about a time when you used one of your strengths in math class.

Tell a story about a time when you used one of your strengths to help a family member.

Tell a story about a time when you used one of your strengths on the playground.

Tell a story about a time when you didn't use your strength but wish you did.

Tell a story about a time when you struggled and then tell the story of how you used your strength to overcome the struggle.

Tell a story about a time someone else pointed out your strength.

Tell a story about a time when you used one of your strengths to help a friend in math.

Tell a story about a time when you used one of your strengths to solve a math problem.

Tell a story about a time when you used one of your strengths to solve a problem in life.

Strengths  
Story



Strengths  
Story



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Strengths  
Story



Tell a story about a time when you were learning when you felt excited. Why?

Imagine yourself enthusiastic about learning math. What does this look like?

Tell a story about a time when you found an answer to a math problem using an approach no one else thought of.

Tell a story about a time when you persevered while you were learning math.

Tell a story about a movie that you watched that had a character who showed a strength.

Tell a story about a time you used something you already knew to solve a math problem.

Tell a story about a time when you remembered a similar problem and used it to solve a new one.

Tell a story about a time when you taught another person something in math.

Tell a story about a time when you used a drawing or chose a tool to help you solve a problem.

Tell Us More



Tell Us More



Tell Us More



Tell Us More



Tell Us More



Tell Us More



Tell Us More



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Tell Us More



Tell Us More



Tell Us More



Tell Us More



Tell Us More



Tell Us More



How did you feel at that time?

What did you learn most from this experience?

How could you repeat this experience?

What did you value about yourself in this story?

How can this experience help you with a challenge you have?

What might happen if there was another ending to the story?

How might you build on this strength?

What did you learn most from this experience?

How do you feel now telling this story?

How might you share this strength with others?

What do you like most about this story?

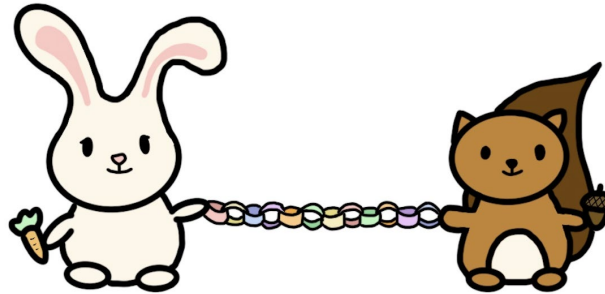
If you could imagine doing this again, what would you do?

Did you feel joy or excitement when you were using this strength? Why do you feel that way?

How could you turn around a negative experience into a positive experience like this one?

Who would you like to tell about this experience? Why?

# Family Strengths Chain Link



## Directions:

1. Cut apart strips of construction paper, printer paper, or scrapbook paper.
2. Observe your family members and notice their strengths.
3. Write the family member's name and one strength on each strip and connect the strips to form a chain-link.
4. Once you form the chain-link, measure the link and predict how long it will be in one week, two weeks.
5. Challenge other families to make their own chain links.

# Strengths Spotting Box

1. Select a box to decorate. The box should be big enough to hold a collection of small slips of paper.
2. Wrap the box in plain paper of any color.
3. Write strengths words on the outside of the box.
4. When you see a family member using a strength, write the story down and put it in the box.
5. Set aside some time each week to share the strengths spotting stories.





# Strengths Family Interview

## You will need:

- The three Strengths Lists (Attitude, Problem Solving, and Content)
- Colored markers or crayons (one for each family member)



## Directions:

1. Select a family member for the focus of the strengths interview. This person is called the Strong Member.
2. Have each family member circle five strengths they see in the Strong Member using a different colored marker or crayon.
3. Ask each family member to share a story when they saw the Strong Member using those strengths.
4. Present the list to the Strong Member and ask:
  - *What did you learn about yourself?*
  - *How can you continue to use these strengths?*



# Strengths List

## Attitude About Learning

- Perseveres
- Works well with other students
- Uses novel or creative approaches
- Compromises with others when working on strategies and solutions
- Knows when to ask for help
- Asks good questions
- Takes risks
- Recognizes making mistakes is part of learning
- Can teach/mentor others
- Demonstrates a positive attitude towards mathematics
- Enjoys mathematics
- Sees mathematics as a way to understand the world
- Listens to others' ideas
- Works well with other students
- Works independently
- Is curious about mathematical ideas
- Enjoys finding another way to solve a problem
- Creates mathematics problems
- Brainstorms new approaches



# Strengths List

## Problem Solving

- Represents problems in different ways (e.g., drawings, numberlines manipulatives)
- Sketches mathematical ideas
- Explains strategies and ideas
- Explains thinking
- Connects mathematical concepts and procedures
- Listens to others' ideas
- Uses appropriate mathematical vocabulary
- Identifies and understands patterns
- Enjoys solving puzzles
- Enjoys finding another way to solve a problem
- Regularly seeks multiple ways to solve problems
- Uses reasoning
- Uses manipulatives well
- Works analytically
- Identifies important and unimportant information
- Explains and justifies solutions
- Translates data into different forms
- Thinks flexibly
- Organizes information
- Uses novel or creative approaches
- Appropriately sequences multiple steps or directions
- Asks probing questions



# Strengths List

## Content

- Understands concepts
- Understands and uses procedures
- Uses number sense
- Identifies and understands patterns
- Converts measurements
- Connects real-world problems
- Regularly estimates quantities
- Has algebra sense
- Has graph sense
- Has fraction sense
- Has spatial sense
- Has number sense
- Visualizes mathematics
- Knows basic math facts
- Understands and regularly uses mental math
- Interprets information from a chart, table, or graph
- Converts measurements
- Remembers and uses previously learned mathematics ideas
- Identifies the correct operation
- Regularly estimates quantities
- Explains the meaning of procedures

# Family Communication About Mathematics

## Directions:

Our experiences learning mathematics often shape how we feel and communicate about mathematics. As you work with your family members to learn mathematics, please write down your communication and consider how you might turn it around to include strengths-based language.



I said...

I want to say...

I can't do this.

I CAN do this!

I never did math this way.

It is exciting that you are learning new ways to understand math.

This new way doesn't make any sense.

Explain to me how you are learning...

# Student Attitude Survey



**Directions:** Check all that make sense for you.

- Math makes me curious.
- I enjoy doing math puzzles.
- I would rather avoid doing math.
- I never think about math unless I am doing math at school or for school.
- Word problems are confusing.
- I am not very confident in math class.
- Working with numbers is fun.
- Using math materials helps me think about the problems.
- Math makes me nervous.
- I have never liked math.
- I enjoy being challenged by math problems.
- Math tests are scary.
- When I get a hard math problem, I keep on working until I have a solution.
- My mind sometimes freezes up in math class.
- Math is my favorite subject.

Next, discuss with your family.

1. How can you use your strengths to help you feel even more positive about learning math?
2. What can you do to feel even more positive about learning math?
3. What can your family do to feel even more positive about learning math?

# Home Learning Encouragement Checklist

We all need a little support to keep us working positively together!

## **Directions:**

1. Print the Home Learning Encouragement Checklist and post in a spot that you can see.
2. Note areas that are easiest for you to communicate and make a goal for the areas that are little more challenging.
3. Ask your child to let you know how you are doing by reviewing the checklist together.

# Home Learning Encouragement Checklist



- I encourage my child's effort to learn math.
- I express positive messages about learning mathematics.
- I ask my child to teach me a new math strategy.
- I talk about how I do math in my job.
- I notice when we are doing math throughout our day (cooking, home repairs, shopping)
- I point out when characters in television and movies are solving problems and doing mathematics.
- I point out how community members are using math strengths (postal worker, grocery store clerk)
- (Please add more!)