

Math Strategy Index

Math In Other Contexts:

[Writing and Math](#) provides ideas in which students can express their ideas and understandings related to math (Countryman, 1993).

[Mr. Three Feet](#) is a strategy which allows students to learn measurement conversions through a story. This technique also encourages listening and comprehension skills (Wilson, 1993).

Place Value:

[Teaching Place Value](#) provides sources in which students can identify groups of ten (Bos & Vaughn, 1994).

[Stick Math](#) allows students to actively collect sticks in which they will then group into tens, helping to increase their understanding of place value (Paddock, 1992).

Computations:

[Counting-On](#) gives students an individual strategy for addition (Bos & Vaughn, 1994).

[Get the Commutative Idea](#) helps students to learn and identify the commutative property of facts (Bos & Vaughn, 1994)

[Using Doubles](#) uses a multisensory approach to learning doubles (8+8, etc.). This will increase students computation time (Bos & Vaughn, 1994).

[SASH](#) is a strategy that will support children who already know single digit arithmetic yet who have difficulty recalling the steps in multidigit addition problems (Frank, 1992).

[The 4 B's](#) strategy gives assistance to students who have difficulty remembering the steps to the process of multidigit subtraction problems (Frank, 1992).

[A Supplementary Strategy for Teaching Equivalent Fractions](#) allows students to use a multiplication matrix to identify fraction equivalents (Coker, 1992).

[Think of a Family First](#) enables students to remember the steps to long division (MacCracken, 1986).

[Nifty Nines](#) is a strategy that could be used to introduce students to multiplication problems with a factor of nine in them (Van de Walle, 1990).

Problem Solving:

[RIDGES](#) allows students to formulate an appropriate plan to solve math word problems (Snyder, 1988).

[SSP](#) is a strategy which provides educators with a method of teaching the steps to solving a story problem (Bos & Vaughn, 1994).

[Step by Step](#) offers students a ritual way to attack story problems. [Teaching students these steps will provide a specific strategy for solving such problems \(Bos & Vaughn, 1994\).](#)

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Math Strategy

Strategy: Writing and Math

Appropriate Grade Level: 3-high school

Procedures / Steps:

This strategy can be used before or after a math lesson. It can help students express their feelings about math, teacher can catch misconceptions, and the student is able to ask questions about the lesson. The following are suggestion to use for writing and math:

1. Freewriting: Done for five minutes at the beginning of the lesson.
2. Learning Logs: A journal about materials used, their own work, their progress, or the class itself.
3. Homework: Students should write a note on the back of every assignment to discuss struggles, enjoyment, or questions.
4. Vocabulary: Students should write down all new vocabulary and methods.
5. Writing Paragraphs: Students may be asked to write a paragraph on a given topic or problem.
6. Autobiographies: Students will be asked to write their own mathematical history. This can be particularly helpful to a teacher at the beginning of the year to get an idea of how each individual feels about math.

Comments and / or tips:

This strategy helps students understand the language and vocabulary of mathematics as well as give them an outlet for venting frustrations. For a shy student it can be a way of asking questions without feeling threatened. Punctuation and grammar should not be corrected, content is more important.

Source:

Countryman, J. (1993). Writing to learn mathematics. Teaching K-8, 51-53

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Math Strategy

Strategy: Mr. Three Feet

Appropriate Grade Level: 2-4

Procedures / Steps:

This story can be used to help students learn measurement conversions.

The following story can be read to students with a discussion at the end so students get the connection.

There's an old, old man who lives down the road near the creek. I'm not sure what his real name is, but I have always heard of him as "Mr. Three Feet".

Mr. Three Feet is the strangest looking fellow I've ever seen. He's not like you and me. Instead of having two feet, he has three feet!

Mr. Three Feet lives in a neat little house with a fenced-in back-yard. He can be seen standing in his backyard late some afternoons., all by himself.

*Last Spring I was out walking and saw Mr. Three Feet standing in his backyard. All of the sudden, 12 mosquitoes flew **up to him and bit him** on his right foot. Boy, did he start scratching! Then 12 more mosquitoes buzzed up and bit his left foot. After that, 12 more mosquitoes bit his middle foot.*

The poor fellow itched and scratched, itched and scratched. Just think, 12 itches on one foot, 12 itches on another, and 12 itches on the third foot.

Follow up with these questions:

Where was Mr. Three Feet standing?

How many feet does he have in that yard? How many itches does he have on each foot? Can you figure out how many itches were in the yard all together?

What does itches sound a lot like? (Inches).

Comments and / or tips:

The story can be followed up by making a book. Write the text on a chart so the children can choose a layout. Have them write the text and illustrate it. This activity can be carried a step further by using other topics the children have a hard time with and let them make up a story to help them remember a math concept. These activities can be done individually or in groups.

Source:

Wilson, S. E. (1993). Mr. Three Feet. Teacher to Teacher: Strategies for the Elementary Classroom, 114-115. Newark, Delaware: International Reading Association.

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Math Strategy

Strategy: Counting On

Appropriate Grade Level: 1st and up

Procedures / Steps:

Students do not need to start counting from one to solve all their math problems. They can learn to "count-on".

1. Teach students to count on from the largest number in an addition problem.

For example:

$$7 + 2 =$$

2. The student counts from 7: "seven, eight, nine!"
3. The same principle can be applied when subtracting. For example:

$$7 - 2 =$$

The student counts backward from 7: "seven, six, five!"

Comments and / or tips:

Students can be taught counting-on before operations, and then will only need new principles taught.

Source:

Bos, C. and Vaughn, S. (1994). Strategies for Teaching Students with Learning and Behavior Problems. Boston: Allyn and Bacon.

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Math Strategy

Strategy: Stick Math

Appropriate Grade Level: 1-3

Procedures / Steps:

Students will be given the challenge to collect as many ice cream and popsicle sticks as they can. They can write to other classes asking them to save their ice cream and popsicle sticks. After sticks begin to accumulate

students should do the following:

1. Count the number of sticks collected and place them in groups of ten with rubber bands.
2. Add the number counted to the total they had from the day before.
3. Post a sign outside the door letting the school know how many have been collected.
4. Have students make predictions on how many sticks the class will be able to collect. The winner may be given a prize that is chosen by the class.

When the project is finished the sticks could be used for an art project or other math projects.

Comments and / or tips:

This strategy will help students improve their speed and accuracy on daily math problems. This project found that the students involved improved on their math grades.

Source:

Paddock, C. (1992). Ice cream stick math. *Teaching Exceptional Children*, 50-51.

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Math Strategy

Strategy: Teaching Place Value

Appropriate Grade Level: All Grades

Procedures / Steps:

Place value is critical to students' understanding of numeration. Students' need to be able to:

1. **Group by ones and tens.** Students can sort buttons, sticks, blocks in groups of tens. A table arid can be used to record their answers.
2. **Naming tens.** Teach students to identify numerals by the number of tens.
Example: six tens is 60.
3. **Place value with older students. The following sources of numbers may be useful for teaching place value to older students.**
 - a. An odometer.
 - b. Numbers from students' science or social studies text.
 - c. Numbers from population of the school. (e.g. number of freshman, sophomores, etc..)

- d. Population data from the town, county, state, or country.
- e. The financial data page from the newspaper.

Source:

Bos, C. and Vaughn, S. (1994). Strategies for Teaching- Students with Learning and Behavior Problems. Boston: Allyn and Bacon

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Math Strategy

Strategy: Get the Commutative Idea

Appropriate Grade Level: 1st and up

Procedures / Steps:

The commutative property means that when adding or multiplying any two numbers, the answer will be the same regardless of the order of operation. Students will love to hear that if they know it one way, they know it the other,

For example:

$$3 + 5 = 8 \text{ and } 5 + 3 = 8$$

$$9 \times 5 = 45 \text{ and } 5 \times 9 = 45$$

Source:

Bos, C. and Vaughn, S. (1994). Strategies for Teaching Students with Learning and Behavior Problems. Boston: Allyn and Bacon.

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Math Strategy

Strategy: Using Doubles

Appropriate Grade Level: 2nd and up

Procedures / Steps:

When students learn to use their knowledge of doubles, they can more easily solve other basic math facts!

1. Teach doubles by using visual and auditory cues.

2 + 2 car fact- 2 front tire, 2 back tires

3 + 3 grasshopper fact- 3 legs on each side

4 + 4 spider fact- 4 legs on each side

5 + 5 hands fact- 5 fingers on each hand

6 + 6 egg, carton fact- 6 in each row

7 + 7 crayon pack fact- 7 in each row

2. After the doubles are learned, students can easily figure out other math

facts by adding to the doubles.

$6 + 7 = 6 + 6 = 12 + 1$ so $6 + 7 = 13$

Source:

Bos, C. and Vaughn, S. (1994). Strategies for Teaching Students with Learning and Behavior Problems. Boston: Allyn and Bacon.

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Math Strategy

Strategy: SASH

Appropriate Grade Level: 2-5

Procedures / Steps:

SASH is a strategy that will support children who already know single digit arithmetic yet who have difficulty recalling the steps in multidigit addition problems.

Start with the ones column whenever you begin to add.

Add together the numbers in each column.

Should I carry a numeral?

Have I carried the proper number?

Comments and / or tips:

This strategy should be modeled by the teacher as often as possible. For those children with learning disabilities or who have a great difficulty remembering the steps, a note card with the steps could be placed on the corner of their desk to assist them in the process.

Source:

Frank, A.R. & Brown, D. (1992). Self-monitoring strategies in arithmetic. Teaching Exceptional Children.

24(2), 52-53.

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Math Strategy

Strategy: 4 B's

Appropriate Grade Level: 2-5

Procedures / Steps:

The 4 B 's strategy gives assistance to students who have difficulty remembering the steps to the process of multidigit subtraction problems. The 4 B's are:

Begin in the ones column always.

Bigger: is the top or the bottom number bigger?

Borrow: If the bottom number is bigger then borrow.

Basic facts: Check all you basic facts in the problem.

Comments and / or tips:

This strategy should be modeled by the teacher as often as possible. For those children with learning disabilities or who have a great difficulty remembering the steps, a note card with the steps could be placed on the corner of their desk to assist them in the process.

Source:

Frank, A.R. & Brown, D. (1992). Self-monitoring strategies in arithmetic. Teaching Exceptional Children, 24(2), 52-53.

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Math Strategy

Strategy: A Supplementary Strategy for Teaching Equivalent Fractions

Appropriate Grade Level: 3-6

Procedures / Steps:

1. Give each student a multiplication matrix. Have one large matrix also

displayed in the classroom.

2. A suggested procedure for finding equivalent fractions could develop as

follows:

- a. Using the multiplication chart, identify a fraction such as $\frac{3}{4}$.
- b. Locate vertically the three and four on the left side of the chart.
- c. Start at three on the left side of the chart and move horizontally to the right and you will find the multiples of three. Then start at the four on the left side of the chart and find the multiples of four. For example, $\frac{21}{28}$ is equivalent to $\frac{3}{4}$.

Comments *and / or* tips:

This multiplication matrix can also be used to find the greatest common factor. Look at the equivalent fraction and then to the number located on the top horizontal scale. An example would be the fraction $\frac{21}{28}$, the greatest common factor for both 21 and 28 is seven.

Source:

Coker, D., & Cook, D. (1992). A supplementary strategy for teaching equivalent fractions. Reading Improvement, 29, 14-17.

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Math Strategy

Strategy: Think of A Family First (Division)

Appropriate Grade Level: 3-6

Procedures / Steps:

When children learn long division there are many steps involved. This strategy will help some of your students remember the steps.

First is the big old DAD - D is for division. Sitting next to him is the MOTHER- M is for multiply. Next comes the SISTER- S is for subtraction. Then the BROTHER- B stands for bring down.

Source:

MacCracken, M. (1986). Turnabout Children. Boston, Massachusetts: Penguin Books.

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Math Strategy

Strategy: Nifty Nines

Appropriate Grade Level: 3-5

Procedures / Steps:

This strategy could be used to introduce the students to multiplication problems with a factor of nine in them.

1. Review the multiplication problems they have been working on.
2. Begin teaching multiplication problems with a factor of nine to the students by repeating them with the entire class. For example, $9 \times 1 = 9$, $9 \times 2 = 18$, $9 \times 3 = 27$, etc.
3. After practicing the problems a couple of times have the students hold up both their hands in front of them (open palmed).
4. Give them a multiplication problem and have them count from left to right on their fingers the factor in the problem other than the nine. For example, if the problem was 9×5 the students count off five fingers from left to right. Their left thumb is the fifth number. (Model for them)
5. Have the students keep practicing the multiplication tables with a factor of nine in this manner. Have them try to figure out the reason for counting with their fingers.
6. If they haven't noticed that when they count out the number in the problem, other than the nine, on their fingers their remaining fingers to the left and right of it is the answer tell them how it is done. (9×5 --The left thumb is the fifth number. The four fingers to the left of it is the tens digit, and to the right of it are five fingers, the ones digit. The answer is forty-five.

Comments and / or tips:

This strategy can be used to teach students up to 9×10 .

Source:

Van de Walle, J.A. (1990). Elementary school mathematics: Teaching developmentally.. Lonciman, New York.

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Strategy: RIDGES

Appropriate Grade Level: Upper Elementary - High School

Procedures / Steps:

This strategy can be used for math word problems to help a student formulate an appropriate plan to solve the problem.

RIDGES stands for:

Read the problem- If the problem is not understood it should be reread.

I know statement- List the information given in the problem. All information should be listed, relevant or not.

Draw a picture- Draw a picture of the information in the problem. This may help a student pick out the relevant information.

Goal statement- The student should express, in their own words, the question the problem is asking.(I.e. I know the field is six feet wide and ten feet long)

Equation development- The student will write an equation to the problem.
(i.e. length + width + length + width = distance around the field)

Solve the equation- The given information is plugged into the equation.
(i.e. $10+6+10+6=\text{distance around the field}$)

Comments and / or tips:

Steps can be modified to meet individual needs.

Source:

Snyder, K. (1988) Ridges: A problem-solving math strategy. Academic Therapy, 230), 261-263.

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Math Strategy

Strategy: Solving Story Problems (SSP)

Appropriate Grade Level: 3-8

Procedures / Steps:

This strategy provides, educators with a method of teaching the steps to solving a story problem. The steps to this strategic instruction include:

Read

What is the question being asked?

Reread

What information do I need to answer the question?

Think

Putting together=addition

Taking apart=subtraction

Do I need all the information that is given?

Is it more than a one step problem?

Solve

Write the equation, then solve it.

Check

Recalculate the problem, are the basic facts correct?

Label the answer.

Compare your answer to the question and information you found in the story problem.

Comments and / or tips:

Be sure students are efficient with their arithmetic computations before introducing story problems.

Introduce keywords that help students to identify what the problem is asking, for example: What do you have altogether? How much is left? etc.

Source:

Bos, C.S. & Vaughn, S. (1994). Strategies for teaching students with learning and behavior problems. Needham Heights, Massachusetts: Paramount.

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Math Strategy

Strategy: Step by Step

Appropriate Grade Level: 2-8

Procedures / Steps:

Step by step offers students a ritual way to attack story problems. Teaching students these steps will provide a specific strategy for solving such problems.

1. Read the problem

-Find unknown words

-Identify cue words such as left and altogether

2. Reread the problem

A) Identify what information is given in the problem

-is renaming needed?

-Are there unit changes?

B) Decide what is being asked

-What process is needed, subtraction? addition?, etc.

-What unit or label is asked for? Money? Seconds? etc.

3. Use objects to show the problem

-Decide what operation you will use.

4. Write the problem out

5. Solve the problem

Comments and / or tips:

This process should be modeled to the students by the teacher many times. Students should be reminded to always check their work.

Source:

Bos, C.S. & Vaughn, S. (1994). Strategies for teaching students with learning and behavior problems. Needham Heights, Massachusetts: Paramount.

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Press.

Bos, C. and Vaughn, S. (1994). Strategies for Teaching Students with Learning and Behavior Problems. Boston: Allyn and Bacon.

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Osborn, L. (1980). Painless math drills. Instructor, 90,(4), 124-126.

Paddock, C. (1992). Ice cream stick math, Teaching Exceptional Children, 50-51.

Snyder, K. (1988) Ridges: A problem-solving math strategy. Academic Therapy, 23(3), 261-263.

Van de Walle, J.A. (1990). Elementary school mathematics: Teaching developmentally. Longman, New York.

Wilson, S. E. (1993). Mr. Three Feet. Teacher to Teacher: Strategies for the Elementary Classroom, 114-115. Newark, Delaware: International Reading Association.

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Other strategies in this notebook include [classroom and behavior management strategies](#), [reading strategies](#), and [written expression strategies](#).