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Differentiation Planning Chart

	CONTENT	PROCESS	PRODUCT
Readiness			
Interests			
Learning Profile			

Narrative–Style Parent or Guardian Questionnaire

Distribute to parents at the beginning of the school year.

Student name: _____

Dear Parent or Guardian:

I am always so excited about the start of the school year and a roomful of eager students. I am looking forward to getting to know each and every one of them, as well as their families. Because no one knows your child as well as you do, I am hoping that you will have the time to answer these few questions. There are no right or wrong answers, just responses that will help me to meet your child's needs more completely when he or she is learning math. I am very interested in helping children realize that math is an important part of the world, and is exciting to learn. I believe that by connecting the learning of math to other important aspects of your child's life, I can make it more relevant and exciting. Please feel free to call me if you have any questions. Thank you.

1. What are your child's favorite hobbies, interests, pastimes, books?

2. In what ways is mathematics part of your child's life at home?

3. What, if any, concerns do you have about your child's knowledge of mathematics?

4. What is a mathematical strength that you see in your child?

5. Describe your child's experience with math homework.

Survey–Style Parent or Guardian Questionnaire

Distribute to parents at the beginning of the school year.

Dear Parent or Guardian:

This first day has been a wonderful start to the school year. I am excited about getting to know each of my new students. I hope that you will help me by completing this questionnaire about mathematics. There are no right or wrong answers! Please feel free to call me if you have any questions. Thank you.

Student name: _____

Please circle the number next to the statement that corresponds to the number key listed here:

1 = agree
2 = somewhat agree
3 = somewhat disagree
4 = disagree

My child will stick with a math problem, even when it is difficult.	1 2 3 4
My child lacks confidence in mathematics.	1 2 3 4
My child has strong computational skills.	1 2 3 4
My child's favorite subject is mathematics.	1 2 3 4
My child becomes frustrated solving math problems.	1 2 3 4
My child does math homework independently.	1 2 3 4
As a caregiver, it is my job to help my child with math homework.	1 2 3 4
Math is talked about at home and is part of our everyday life.	1 2 3 4
I do not always understand the way my child thinks about math problems.	1 2 3 4
Math is taught better today than when I was in school.	1 2 3 4

Comments:

What Interests You? Questionnaire

Distribute to students early during the school year. For younger children, ask the parent or guardian to complete this questionnaire at home, with the adult reading and recording the information given by the child.

Student name: _____

What Interests You?

1. What activities do you like to do after school?

2. What are your favorite sports or games?

3. What do you like to do during indoor recess?

4. If you could plan a field trip, where would you want to go?

5. Who is your favorite character from a book or a video?

6. In the following list, place a 1 next to the things you like the most. Place a 2 next to the things you like second best.

____ music	____ reading
____ sports	____ nature walks
____ acting	____ drawing or art projects
____ being with friends	____ building things
____ science experiments	____ field trips to historical places

Who Are You as a Learner? Questionnaire

Distribute to students early during the school year. For younger children, ask the parent or guardian to complete this questionnaire at home, with the adult reading and recording the information given by the child.

Student name: _____

Who Are You as a Learner?

1. If you could learn about anything at school, what would you choose?

2. What do you know a lot about?

3. How do you work best in school (check all that describe you)?

   ____ alone ____ partner ____ small group ____ large group

4. Where do you like to work at school (check all that describe you)?

   ____ desk ____ table ____ hallway ____ floor ____ library area ____ other

5. You learn best when your classroom is (check all that describe you)

   ____ quiet ____ somewhat quiet ____ somewhat noisy ____ noisy

6. Do you like schoolwork to be (check all that describe you)

   ____ easy ____ somewhat easy ____ somewhat hard ____ hard

7. What else helps you to learn?

8. What makes it hard for you to learn?

What Do You Think About Mathematics? Questionnaire

Distribute to students early during the school year. For younger children, ask the parent or guardian to complete this questionnaire at home, with the adult reading and recording the information given by the child.

Directions: Complete these sentence starters.

Student name: _____

What Do You Think About Mathematics?

1. Math is important to learn because . . .

2. When I am learning math I feel . . .

3. One thing I am good at in math is . . .

4. One thing I am not good at yet in math is . . .

5. This year in math I want to learn about . . .

A Mathematics Autobiography

Student name: _____

My Mathematics Autobiography

Directions: Write an autobiography that focuses on your experiences with mathematics. Use the following questions to guide your thinking. Be sure to explain your answers. You don't need to answer every question, but comment on at least 5 of them.

1. How do you feel about yourself in math class?
2. What is your first memory of using mathematics?
3. What do you remember about learning to count or using numbers?
4. What kinds of things have your math teachers done to help you enjoy math?
5. What is your favorite area in mathematics (geometry, computation, logic, problem solving)?
6. What kind of math equipment, tools, or games do you like to use when learning mathematics? Why?
7. What are 2 examples of when you have used math outside of school?
8. When solving problems, do you prefer working alone or in a group? Why?
9. What area of math is a strength for you?
10. What area of math do you find the most challenging?

Sums Investigation: Red

Getting Started

- Write the numbers 3, 6, 8, and 10 on the blank cards clipped to this sheet. Write one number on each card.
- Put your number cards in the bag and shake it.

To Play

- Pull out two cards. Record the numbers and their sum.
- Return the cards to the bag and take another turn.
- Do this at least fifteen times.

Stop and Think

- List all the sums you get.

What Did You Learn?

- Do you think you have all the different sums that can be made by adding two of your numbers at a time?
- Talk together about why you think you have all the possibilities.

Sums Investigation: Blue

Getting Started

- Write the numbers 4, 5, 11, and 17 on the blank cards clipped to this sheet. Write one number on each card.
- Put your number cards in the bag and shake it.

To Play

- Pull out two cards. Record the numbers and their sum.
- Return the cards to the bag and take another turn.
- Do this several more times.

Stop and Think

- Make a list of all the sums you could get when using these four number cards.
- Continue to play.

What Did You Learn?

- Make a list showing all the sums you made.
- Do you think you have them all?
- Talk together about why you think you have all the possibilities.

Sums Investigation: Green

Getting Started

- Write the numbers 12, 15, 19, and 24 on the blank cards clipped to this sheet.
- Put your number cards in the bag and shake it.

To Play

- Pull out two cards. Record the numbers and their sum.
- Return the cards to the bag and take another turn.
- Do this a few times.

Stop and Think

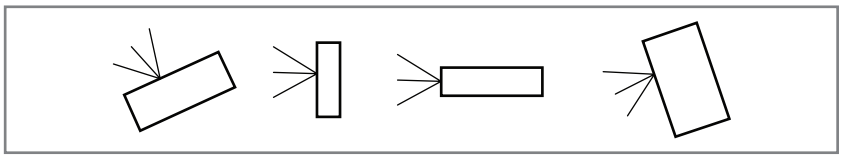
- How many different sums do you get when you pull two of these number cards from the bag?
- How do you know you have all the possibilities?

What Did You Learn?

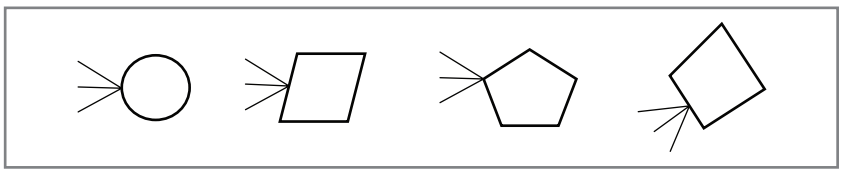
- Write about your thinking.

Shape Puzzler Card: Red

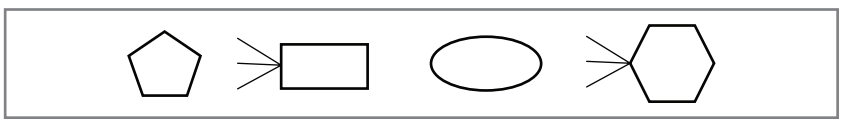
These are sops.



These are not sops.



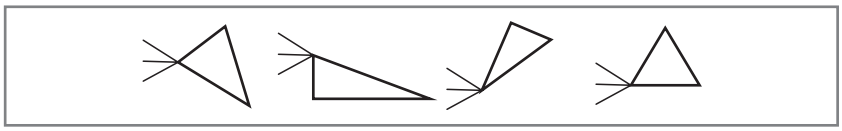
Which one of these is a sop?



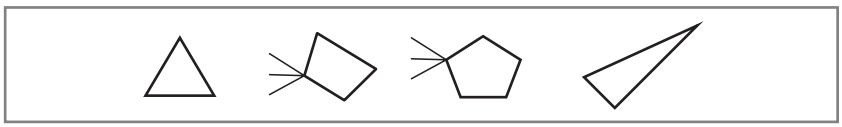
Talk with a partner about what makes a sop.

Shape Puzzler Card: Blue

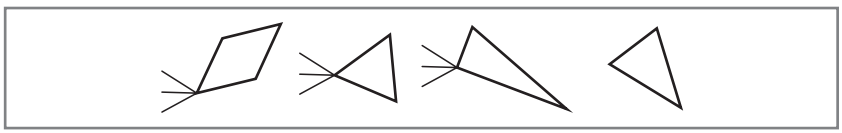
These are mips.



These are not mips.



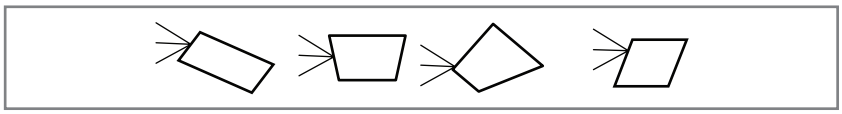
Which ones of these are mips?



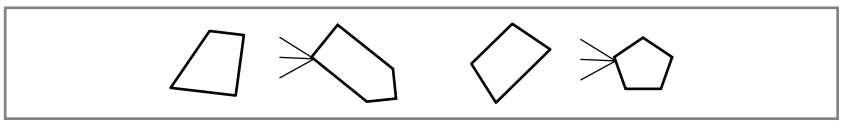
Draw a new example of a mip.

Shape Puzzler Card: Green

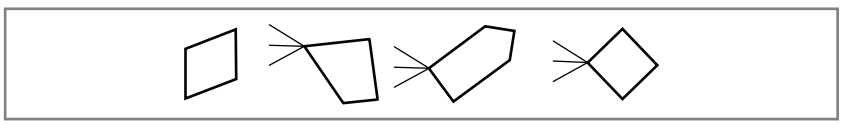
These are reps.



These are not reps.



Which ones of these are reps?



Make your own *Shape Puzzler*.

Directions

Write the name in the blanks.

Draw the missing pictures.

These are _____.

These are not _____.

Which of these are _____?

Talk with a partner about your *Shape Puzzler*.

Addition Facts: Red

Materials

shuffled ten-frames for 0 to 9

Directions

1. Turn the frames facedown.
2. Look at the ten-frame on top.
3. Copy this: _____ + _____ = 10
4. Write the number shown on the frame in a blank.
5. Talk with a partner about how to find the missing number.
6. Write the number in the blank that makes the equation true.
7. Put this ten-frame aside.
8. Repeat Steps 2 through 7 four times.

Addition Facts: Blue

Materials

2 sets of shuffled ten-frames for 0 to 9

Directions

1. Turn each set facedown.
2. Look at the top ten-frame in each set.
3. Talk with a partner about how to use the ten-frames to find the sum.
4. Write an equation to show the sum.
5. Put these two frames aside.
6. Write another equation for this sum.
7. Repeat Steps 2 through 6 four times.

Addition Facts: Green

Materials

2 sets of shuffled number cards 5 to 9

Directions

1. Turn each set facedown.
2. Look at the top card in each set.
3. Write an equation to show the sum.
4. Put these two cards aside.
5. Use different numbers to write three more equations for this sum.
6. Repeat Steps 2 through 5 four times.
7. Talk with a partner about how to find other equations with the same sums.

Ten-Frame

Number Cards 1 to 10

1	2	3
4	5	6
7	8	9

Number Cards 1 to 10 *(continued)*

10		

Finish the Story: Red

1	7:25	20	7:05	2

Dani woke up at _____a.m. She was ready to run _____ minutes later, at _____a.m. She ran for _____ miles. She drank _____ liter of water as soon as she got home.

Directions

1. Fill in each blank so the story makes sense.
2. Explain in writing how you decided what to write in the first blank.

Finish the Story: Blue

18	280	6:23	8	6:41

Lisa got home from work at _____ p.m. and, _____ minutes later, at _____ p.m., she and her dog Max went out for a walk. Max weighs _____ kilograms and eats about _____ grams of food each day.

Directions

1. Fill in each blank so the story makes sense.
2. Explain in writing how you decided the number of kilograms that made sense.
3. What time do you think Lisa and Max got back from their walk? Write the time and explain your thinking.

Finish the Story: Green

12:24	30	12:34	4	150	11:09	75

Cam and Andi went to the gym at _____ a.m. and completed their workout _____ minutes later, at _____ p.m. They both lifted _____ kilograms with each arm to strengthen their biceps. At _____ p.m., they each ate an apple that weighed about _____ grams. They were home _____ minutes later.

Directions

1. Fill in each blank so the story makes sense.
2. Write about the hardest number for you to place.
3. Add a sentence to the story. Make sure a measurement of kilograms or grams is in the sentence.

Hopping Robots: Red

Imagine a robot that make hops along a number line.

A 5-hopper robot starts at 0 and makes 15 hops.

1. On what numbers will the robot land when it hops?

2. Write the numbers.

3. Make a list of the patterns you see in the numbers.

4. Think about:
   - patterns in the ones place,
   - patterns in the tens place, and
   - even and odd number patterns.

Start the robot at a different number.

5. On what numbers will the robot land when it makes fifteen hops?

6. Which patterns stay the same?

7. Which patterns change?

Hopping Robots: Blue

Imagine a robot that make hops along a number line.

The five-hopper robot is going for a walk.

1. Pick the number on the line where the robot starts.

2. List the numbers on which the robot lands when it makes fifteen hops.

3. Pick a different start number.

4. List the numbers on which the robot lands when it makes fifteen hops.

5. Write equations that would let you find the 20th numbers in each list.

6. Write about four patterns you find in your lists.

Hopping Robots: Green

Imagine a robot that make hops along a number line.

You have a two-hopper robot and a five-hopper robot.

1. Pick the number on the line where the robots will start.

2. List the numbers on which the robots land when they make fifteen hops.

3. Pick a different start number.

4. List the numbers on which robots land when they make fifteen hops.

5. Write equations that would let you find the 20th numbers in each list.

6. Write about patterns you find in your lists.

7. What changes a pattern more: the hopper or the start number? Explain your thinking.

8. Predict how many hops a four-hopper robot must make for the pattern in the ones place to repeat. Explain your thinking and then check your prediction.

Real-World Connections: Red

Plan a Class Field Trip

1. Survey your classmates to find out the type of field trip they would like to take. The choices are a science museum, a historic tour, an art museum, or an aquarium.

2. Prepare a report of what you learn. In your report include:

- the choices each person made,
- a table of your data,
- a bar graph of your data, and
- your recommendation for a class trip.

3. Consider the cost of the class trip. Your jobs are to:

- brainstorm possible costs (remember to include four parent helpers),
- use the computer or make calls to collect data,
- find the total cost.

Real-World Connections: Blue

Consult to a Business

The local athletic store wants to know more about students' preferences for sneakers. The owners are interested in learning more about the number, color, size, and type of sneaker that they should keep in stock. You are to collect the data for our classroom and prepare a report.

1. Make sure to include the choices each person made using tables and graphs in your report, as well as your recommendations.

2. Investigate prices of sneakers. Based on your data, how much do you think your classmates will spend on sneakers this year?

Real-World Connections: Green

Plan a Lunch Party

We are going to have lunch with our kindergarten reading buddies. Use supermarket flyers to prepare possible choices.

1. Collect data about lunch preferences and activities for both classes. Make sure to include choices students made, using tables and graphs in your report, as well as your recommendations.

2. Analyze your menu. Use references to estimate total calories and sodium content.

3. Make a shopping list. Use the flyers to find the price of the items we need to buy. Explain how to use the information to estimate the total cost of the lunch.

Mystery Puzzles

RED

$$\nabla + \Diamond + \Diamond = 110$$

$$\Diamond + 30 = 35$$

∇ = _____

$\Diamond$ = _____

Explain how you solved this problem.

BLUE

$$\Diamond + \Diamond + \nabla + \nabla + \nabla = 236$$

$$\Diamond - \nabla = 88$$

$\Diamond$ = _____

∇ = _____

Explain how you solved this problem.

GREEN

$$\otimes + \otimes + \Lambda + \Lambda = 522$$

$$\otimes + \Lambda = 261$$

$\otimes$ = _____

Λ = _____

Explain how you solved this problem. Can you find more than two solutions? Prove it!

Vocabulary Sheet

New word: _____

My definition: _____

_____

_____

_____

Examples

Used in a sentence:

_____

_____

A Project Contract

Student name: _____

1. Due date:

   The topic for my mathematical project is:

   This is what I want to learn:

   I will use these materials and resources:

   This is what I will create to show what I learned about mathematics:

2. Due date:

   This is what I have accomplished so far:

   This is what I still have to do:

3. Due date:

   My project is complete. The three most important things I learned about mathematics are:

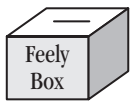
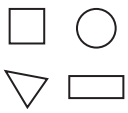
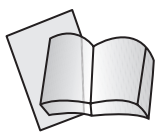
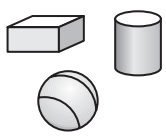
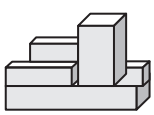
   The best part of this project was:

   The most challenging part of this project was:

Geometry Menu

Student name: _____

Make a check mark (✓) to show what you chose.

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
					
Art Project 					
Books 					
Sorting 					
Block Area 					

Measurement Menu

Student name: _____

20 points

- Get a flyer from a supermarket or a sports store. Cut out items that list a measure in liters, grams, or kilograms and make a collage.
- Measure the lengths of 5 items in your classroom that are shorter than $6\frac{1}{2}$ inches. Measure to the nearest half-inch. Make a list of the items and their measures.

30 points

- Write two story problems about liters, grams, or kilograms.
- Measure the lengths of 5 items in your classroom that are between $4\frac{1}{4}$ inches and $8\frac{1}{2}$ inches long. Measure to the nearest quarter-inch. Work with a partner to create a line plot using the lengths of all the items you each measured.

50 points

- Go through your kitchen or visit a supermarket. Make a guide that shows examples of items with their measures given in liters, grams, or kilograms that would be helpful to use as benchmarks. Use drawings and words to show how to use these items to estimate other masses or liquid volumes.
- Write a story about a scientist or designer who has to measure the perimeters of items very carefully. Include the measures of 5 real items in your story.

Menu: Math All Around Us

Student name: _____

Main Course *(You must do each one.)*

- For 1 week, keep a list of all the ways you use mathematics outside of school.
- Interview 2 adult neighbors or relatives about the ways they use mathematics when they are at work. Share your information with your team. Together, make a visual summary of your combined data.
- Create your own character. Write and illustrate your own version of *Math Curse.* Make sure your story contains at least 10 math problems, and attach an answer key.

Side Orders *(Complete two.)*

- Write about how mathematics is used in your favorite sport.
- Read 3 stories in the newspaper. Make notes about the ways mathematics is used in the articles or how knowing mathematics helps you to understand the articles.
- Reread *Math Curse* and solve 6 of the problems in the story.
- Make a photo display of geometry in our world.
- Choose 1 of the real-world math Web sites that have been saved as favorites and write 4 problems to put in our real-world problem box.

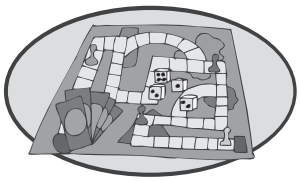
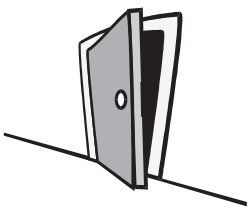
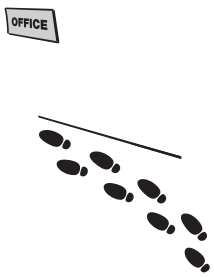
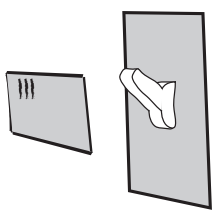
Desserts *(Do one or more if you are interested.)*

- Read a biography of author Jon Scieszka and coauthor/illustrator Lane Smith at www.kidsreads.com/series/series-warp-author.asp.
- Make up a song called "These Are a Few of My Favorite Uses of Math."

Counting Think Tac Toe

Student name: _____

Choose and complete one activity in each row.

Play *Count to 120*. 	Talk with a partner about what someone needs to know and do to be a good counter.	Complete 3 number clue cards. 
Count the number of doors there are in our hallway. Write the number. 	Count the number of steps you take to get from our classroom to the office. Write the number. 	Does it take more steps to walk from the cafeteria to the nurse's office or the gym to the nurse's office?
Ask an adult to tell you all the things he or she counted today.	Count to find the total number of letters in the first names of all the members of your family.	Keep track of how many times you turn off the bathroom light on a Saturday. 

RAFT: *Telling Time*

Student name: _____

ROLE	AUDIENCE	FORMAT	TOPIC
Teacher	Our class	Riddles (with clues and clock pictures)	What Time Is It?
Writer/illustrator	Second graders	Illustrated children's book	All About Time
Camp counselor	Campers	Schedule with activities and times	First Day of Camp
Self	Parents	Analog clock with explanation	This Is the Time I Like the Best!
Self	Classmates	Collage of clocks with written times and activities	How I Spend Saturdays

What Matches You?

Student name: _____

Try to find two classmates to fit each description. Have them write their initials in the box that matches. No one may initial more than 3 boxes on 1 sheet.

I learn best through hands-on experiences.	I like to solve problems.	I prefer to work alone.	I find it helpful to write about my mathematical ideas.	I sometimes get confused when others explain their thinking.
I like face clocks better than digital ones.	I like to measure things.	I use drawings to understand a problem.	I learn best when the teacher writes on the board.	I find Unifix cubes more helpful than base ten blocks.
I am better at subtraction than addition.	I like building things.	I need quiet when I work.	I find base ten blocks more helpful than Unifix cubes.	I prefer to work with others.
I know my basic facts well.	I like digital clocks better than face clocks.	I am better at addition than subtraction.	I like geometry.	I like to find different ways to solve problems.
I like to brainstorm ideas with a group and then follow up alone.	I like logic games and puzzles.	I want rules for solving problems.	I would like to use a calculator all of the time.	I like collecting data and making graphs.

Self-Assessment of Differentiation Practices

Rate your agreement with each of the following statements using the scale provided here:

1—disagree strongly, 2—disagree somewhat, 3—agree somewhat, 4—agree strongly

I feel confident in my ability to facilitate the learning of mathematics at my grade level.	1 2 3 4
I can challenge my most mathematically able students.	1 2 3 4
I know how to support my least mathematically able students.	1 2 3 4
I can meet students' individual needs in mathematics as well as or better than I can in literacy.	1 2 3 4
I have enough knowledge of mathematics to support a variety of models, representations, and procedures in my classroom.	1 2 3 4

Rate the likelihood of the following activities occurring within a week of mathematical instruction using the scale presented here:

1—very unlikely, 2—somewhat unlikely, 3—somewhat likely, 4—very likely

I work with students individually.	1 2 3 4
Students are grouped by readiness.	1 2 3 4
Students are grouped by interest.	1 2 3 4
Students are grouped by learning preferences.	1 2 3 4
Different students are working with different materials and tasks.	1 2 3 4

Check off each instructional strategy that you have tried in your teaching of mathematics. Give yourself 2 points for each checkmark.

- ☐ Transformation of tasks to make them more open-ended
- ☐ RAFT
- ☐ Learning station
- ☐ Menu
- ☐ Think Tac Toe
- ☐ Compacting
- ☐ Tiered task

Total score: _____

Scores range from 10 to 54 points.

Are you comfortable with where you are on this continuum of change? What next steps do you want to take?