

**MORE ON  
DIFFERENTIATION  
& OTHER THINGS**

**MARIAN SMALL**

# AGENDA TODAY

Differentiating instruction through the use of parallel tasks.

Responding to your questions

# PARALLEL TASKS

- Usually two very, very similar tasks from a structural perspective, but different details.
- There is a common discussion.

# FOR EXAMPLE

- Choice 1:
- How are 10 and 42 alike? Different?
  
- Choice 2:
- How are 5 and 7 alike? Different?

# COMMON QUESTIONS

- Are your numbers close together or far apart?
- Which of your numbers could you show with one coin?
- Which of your numbers could you show with nickels?

# COMMON QUESTIONS

- Which of your numbers could you split into two equal groups?
- Do you think your numbers are more alike or more different? Why?

# FOR EXAMPLE

## Choice 1

- You have red, blue and green counters.
- There is 1 more RED than BLUE.
- How many counters could there be altogether?

# FOR EXAMPLE

Choice 2:

- You have red, blue and green counters.
- There is 1 more RED than BLUE.
- There are 2 more GREEN than BLUE.
- How many counters could there be altogether?

# COMMON QUESTIONS

- What is the least number of counters you could have?
- Could you have 6 counters? How?
- Could you have 12 counters? How?
- What's the most number you could have?

# COMMON QUESTIONS

- Could you have 20 counters? How?
- What's the most number you could have?

# SOLUTIONS TO CHOICE 1

Red	Blue	Green	Total
2	1	2	5
2	1	3	6
4	3	1	8
6	5	4	16

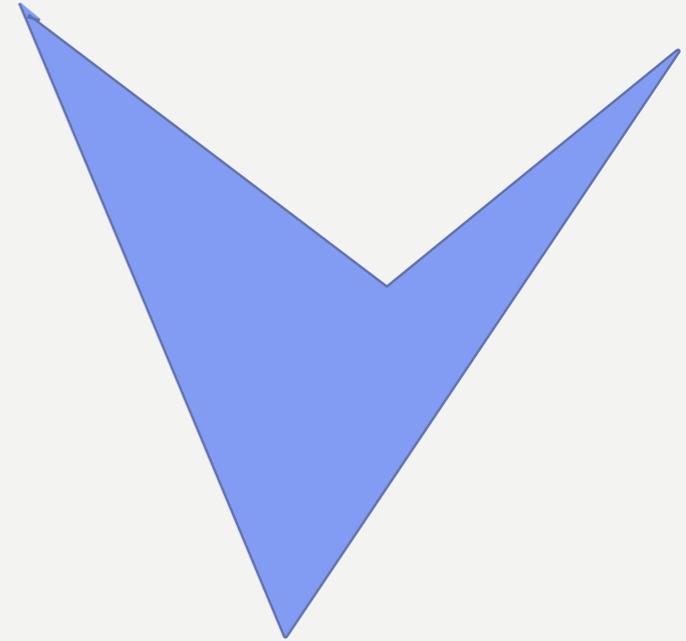
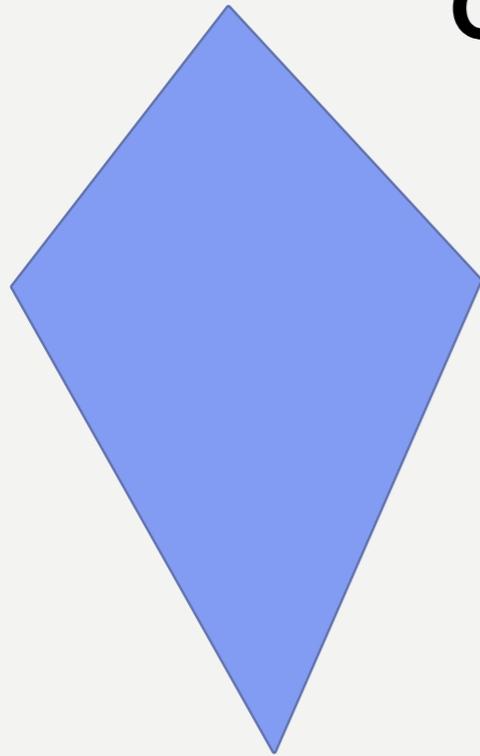
# SOLUTIONS TO CHOICE 2

Red	Blue	Green	Total
2	1	3	6
3	2	4	9
4	3	5	12
6	5	7	18

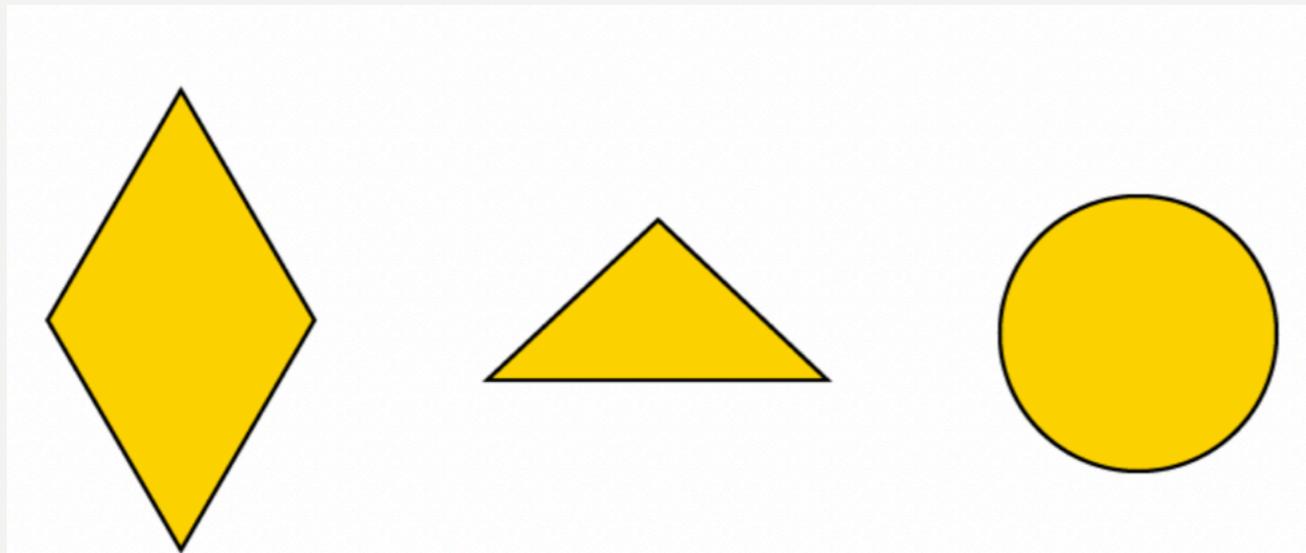
# EXAMPLE

- Choose one of these shapes.
- Don't say the name.
- Give a clue that will help someone guess the shape you mean.

**Choice 1**



**Choice 2**



# COMMON QUESTIONS

- Was your clue true about more than one of your three shapes or only one?
- What about the shape you chose made you choose it?
- What other clue might you have chosen?

# FOR EXAMPLE

- What might the story be if you solve the problem by figuring out:
- Choice 1:  $12 - 8$ ?
- Choice 2:  $25 - 12$ ?

# LET'S TRY

- What do you think would be a good common question?
- Choice 1:  $12 - 8$ ?
- Choice 2:  $25 - 12$ ?

# FOR EXAMPLE

- A pile of 8 coins is worth the same amount as a pile of
- Choice 1: 18 coins.
- Choice 2: 10 coins
  
- What could your two sets of coins be?

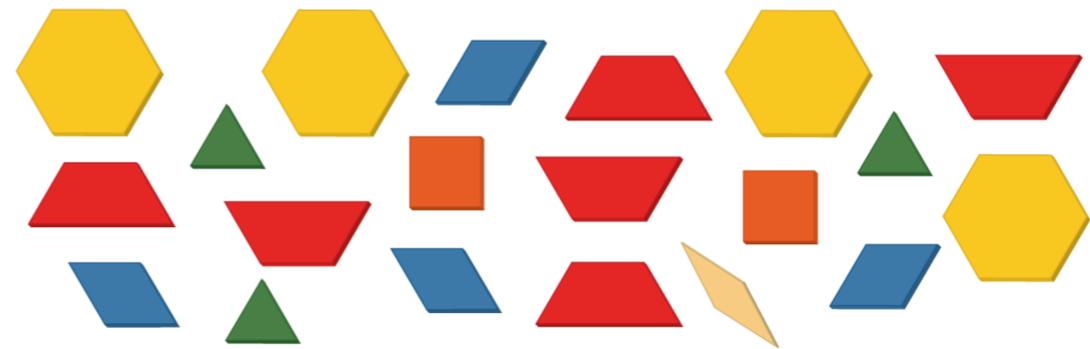
# COMMON QUESTIONS

- What might be a good common question?
- A pile of 8 coins is worth the same amount as a pile of
- Choice 1: 18 coins.
- Choice 2: 10 coins

# CREATING PARALLEL TASKS

- Begin with your "usual" task.
- Think about how to pull it down or bring it up by changing details.
- Think about common questions.

# FOR EXAMPLE



- Make a pattern. Make sure the core of your pattern has at least 3 blocks.

# YOUR QUESTIONS

- What questions would you like to raise?

# TO SIMPLIFY

- You start the pattern for them.

# TO RAMP IT UP

- Add the condition that the yellow shape has to be both the third and eighth shape in the pattern.

# POSSIBLE COMMON QUESTIONS

- 1. What is the letter code for your pattern?
- 2. Did you have more triangles or more hexagons?
- 3 What makes a pattern a pattern?
- 4. Is there more than one way to continue the pattern starting  ?

What if it has to be an ABB pattern?

# GRADE 2



🔊 Choose 3 things in the classroom. Measure each thing using a ruler or metre stick.

🔊 • Measure 1 thing that is about 20 cm long.

🔊 • Measure 1 thing that is about 60 cm long.

🔊 • Measure 1 thing that is about 3 m long.

# SIMPLIFY

- Let children choose 3 things to measure with no conditions.

# RAMP UP

- You need to find things to measure of about each of these lengths:
  - 10 cm
  - 20 cm
  - 30 cm
  - 40 cm
  - 80 cm
  - 1 m

# COMMON QUESTIONS

1. What strategies did you use to estimate the lengths you needed to find?
2. What did you pay attention to when you used your ruler?  
What did you pay attention to when you used your metre stick?
3. Why don't you need to see the things that are 20 cm long and 60 cm long to decide which is longer?

# GRADE 3

 **1. a)** Follow these steps to land on an odd number on a number line.

- Start at 0.
- Make a jump.
- Make more jumps of the same size.
- You must end on an odd number.

 **b)** How many jumps did you make?

What size was each jump?

 **c)** Write a multiplication sentence for the jumps you made on your number line.

 **2.** Repeat Question 1 four more times. Use different numbers each time.

# SIMPLIFY

- Do not require that the result is an odd number.

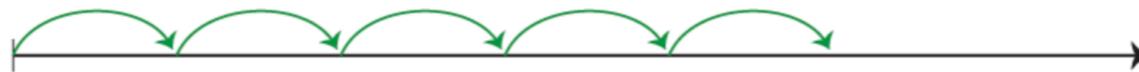
# RAMP UP

- List some odd numbers you are not likely to land on and tell why.

# COMMON QUESTIONS

1. Suppose you need to land on an even number. What numbers could you multiply? Why?

2. What might the final landing spot be in the model below? How do you know?



3. Multiplication is about the total amount in equal groups. Why does showing equal jumps on a number line show multiplication?

# OR

- You could have simplified by having students add instead of multiply.
- You would change the common questions but not a lot of change is needed.

# NOW YOU TRY

- Work together to choose a task you normally use.
- Create either a simplified or scaled up version.
- Create the common questions that would work.

# YOUR QUESTIONS

- Grade 1 Making Change
- Grade 2 Place Value
- Grade 3 Subtraction

# MAKING CHANGE

Technically not a clearly required part of curriculum

- Financial literacy asks for
- Identifying values of coins
- Counting multiples of same denomination
- Role-playing financial transactions
- Trade games

# MAKING CHANGE

And we are only expecting work with numbers to 20 even if they are identifying coins worth more than 20

# MAKING CHANGE

That said, we do want to develop a few skills and ideas:

Skills- counting up and skip counting

Idea- Change + cost = what you give

Skill- determining change by adding up

# I MIGHT ASK THINGS LIKE THIS

Start at 4. Count out counters until you get to 10.

I give you 10. The cost is 4. Will I get money back?

# I MIGHT ASK THINGS LIKE THIS

Start at 4. Count out counters until you get to 10.

I give you 10. The cost is 4. Will I get money back?

Why might I say 5, 6, 7, 8, 9, 10 to figure it out?

# **I MIGHT ASK THINGS LIKE THIS**

Do not think this should be a single unit, but repeatedly spread out over time.

Can play act all kinds of financial transactions

# PLACE VALUE IN GR 2

- I would have introduced the 100 chart, 10-frames, base ten rods and ones (or sets of 10 linked cubes and single cubes)
- I would have introduced the notion that we choose to group in only tens and only ones. Somebody just decided that.

# PLACE VALUE IN GR 2

- What could 32 look like with single counters?
- What about with ten-frames?
- What about with base ten blocks?
- What are there 3 of? What are there 2 of?

# PLACE VALUE IN GR 2

- I am thinking of a number that filled 4 ten frames and part of another. What could it be?
- I am thinking of a number that filled some ten frames and I had 4 counters in the last frame. What could it be?

# PLACE VALUE IN GR 2

- Noticing things on the hundreds chart
- What is true about all the numbers in a row?  
In a column?
- Where are the numbers with lots of tens but not many ones? Lots of tens and lots of ones?

# SUBTRACTION IN GRADE 3

- Ideas I think that matter
- Sometimes subtraction means comparison, so  $25 - 8$  asks how much more 25 is than 8.
- Sometimes subtraction means how much more do I need, so  $25 - 8$  asks how much more I have to get if I want 25 and only have 8.

# SUBTRACTION IN GRADE 3

- Sometimes subtraction means take-away.
- I model differently in each situation.
- Let's try  $25 - 8$  the three different ways.

# SUBTRACTION IN GRADE 3

- Focusing on addition as a way to subtract because of the “how much more do I need” meaning.
- Noticing the difference between problems where I add the given numbers or where I subtract them, but realizing that I might solve using the other operation, e.g.

# SUBTRACTION IN GRADE 3

- I want to collect 100 stickers. I have 24. How many more do I need?
- I had some stickers. I lost 15 and still have 42. How many did I start with?

# SUBTRACTION IN GRADE 3

- Some useful strategies are:
- Adding up on an open number line
- Adding up with base ten blocks or on a hundred chart.

**ANY OTHER QUESTIONS?**

# DOWNLOAD

- [www.onetwoinfinity.ca](http://www.onetwoinfinity.ca)
- Recent presentations
- YHP2