@TammyMcMorrow's Favourite Picture Books
Linked to @Burdess Alicia's Big Beautiful Problems

In a K-2 #thinkingclassroom

PROBLEM: There are 12 piggies that live on bacon street in 12 houses in a row. You are the big bad wolf and, wanting some exercise before a snack, you run up the street opening and closing the front doors of their houses following an interesting pattern. Which Piggies won't be safe? why?

Extension: What if there were 25 houses?

PIGGY PROBLEM

Imagine that you, the big bad wolf, run down bacon street opening and closing the Piggy-house doors. The first time, you open every door. The second time, you close every second door. The third time, you change the state of every third door – if it's open, you close it, if it's closed, you open it.
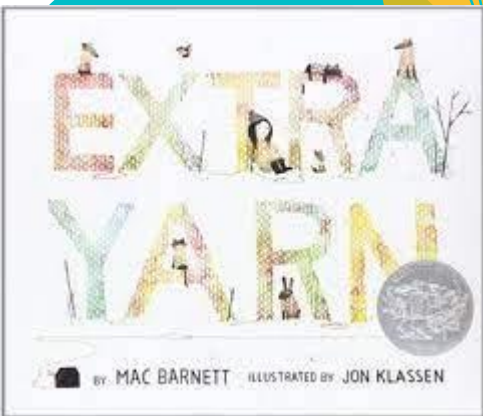
You follow this pattern until the 12th time, when you only touch the 12th door – if it's open, you close it, if it's closed, you open it. After you have run down Bacon Street 12 times, which doors are open? Which piggies are going to be snacks? Why?

Extension: What if there were more piggy houses?

Modified from Open Lockers Problem

Book:

Big Beautiful Problem: Ball of Yarn
*Credit to David Pimm

Can you pass a ball of yarn around a circle (with an odd number of people) so that everyone can grab a part of it? Let's start with every person in the circle. What shape does it make?

What if you passed it to every second person? How many times does the ball of yarn have to go around the circle so that everyone can grab a part of it? What shape does it make?

Every third person? Every fourth person…

What do you notice? What do you wonder?

Extension: How many intersections of yarn are made each time?

Notes:

Do this as a whole class first to model the first couple times.

Then break up into smaller groups of uneven numbers of students for them to explore.

Follow up with random groups or two or three at vertical surfaces with a marker to represent the problem visually and continue to explore.

Can explore in many different directions - who touches the yarn? How many times around the circle does it take for everyone to touch it? How many different intervals can you explore? How many intersections are made? What if it was a different number of students in the circle?
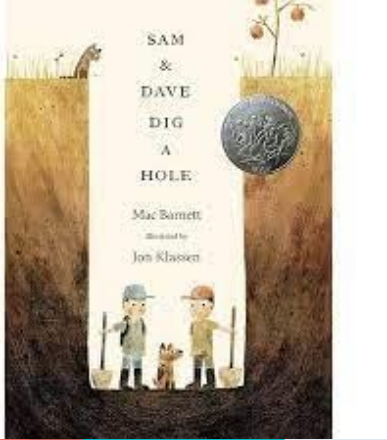
*shapes, patterns, skip counting
*building thinking classroom competencies
*wonder, beauty, joy!

Writing/Picture Prompt: Tell/Draw me the story of how you solved the problem.
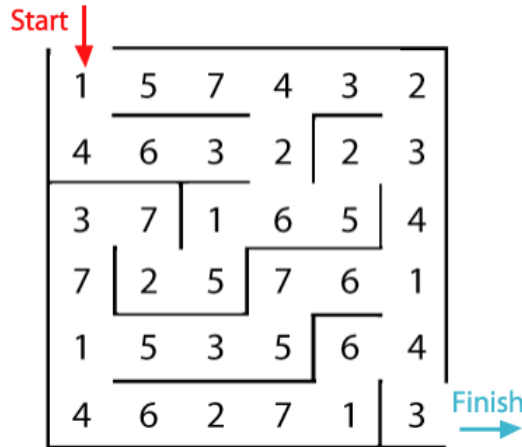
Big Beautiful Problem: Maze 100

*Credit to https://nrich.maths.org/91

Start ↓

1	5	7	4	3	2
4	6	3	2	2	3
3	7	1	6	5	4
7	2	5	7	6	1
1	5	3	5	6	4
4	6	2	7	1	3

Finish →

Can you find a way out of this maze as you add up the numbers in your path? What's the smallest number you can make? What other numbers can you make? Can you make exactly 100?

Extension: What's the biggest number you can make? Can you make your own maze?

Notes:

Provide groups with manipulatives and a hundred chart at their vertical surfaces.

Support students with hints and extensions as you circulate. Might have to model strategies with manipulatives, hundred chart, organizing.

*number sense and adding
*building thinking classroom competencies
*wonder, beauty, joy!

Writing/Picture Prompt: Tell/Draw me the story of how you solved the problem.

Another idea: **Sally the Slug, Suzie the Snail Problem**

[Read Aloud Link](#)

Big Beautiful Problem: Over the Wall

*Credit to https://jrmf.org/puzzle/river-crossings/

You are the knight and you are back on your side of the wall. You have a head of cabbage, a goat, and a wolf that you want to bring over the wall to the Ogre's side of the book. You can only carry one thing up the ladder at a time and have to carry each one of your items the whole way over to the other side. The problem is that the cabbage can't be left alone with the goat or it will be eaten and the goat can't be left alone with the wolf or it will be eaten. Can you help your cabbage, goat, and wolf get over the wall safely?

Extension: Is there more than one way?

What if there were two goats?

Notes:

Random groups of 2 or 3 at a vertical surface with magnetic manipulatives would be awesome!

Manipulatives are key. The students could make them own or use counters. Could pull over a desk to their whiteboards to use manipulatives as well.

Afterwards, students could continue to explore with the JRMF online app - there are many variations of the problem - https://jrmf.org/puzzle/river-crossings/

*patterns
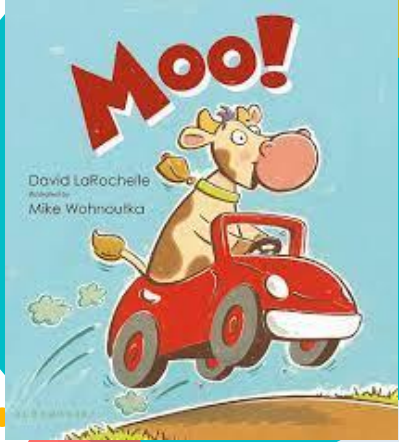*building thinking classroom competencies
*wonder, beauty, joy!

Writing/Picture Prompt: Tell/Draw me the story of how you solved the problem.

Another idea: **Knights at a Round Table Problem**

Big Beautiful Problem: Moo Legs

You are in a field full of cows doing all kinds of tricks. Some of them are standing up on two legs, some of them are standing on three legs, some of them are even balancing on one leg, and of course, some are just standing normally on all four legs. How can you make the numbers 1-20 using a combination of all of these cow legs?

Extension: Is there more than one way for each number?

What other numbers could you make? Are there any numbers you can't make?

What if there weren't any cows balancing on one leg?

What if there were 24 legs? How many cows?

Notes:

Random groups of 2 or 3 at a vertical surface with a hundred chart!

Manipulatives could be helpful as well. Students could make their own. Could be magnetic. Could pull over a desk to their whiteboards to use manipulatives as well.

*composing and decomposing numbers, number sense
*building thinking classroom competencies
*wonder, beauty, joy!

Writing/Picture Prompt: Tell/Draw me the story of how you solved the problem.