Math Tasks that Kick Your ... Math!

January Conference 2015 Amy LeHew, Drew Polly

✦ Overview

- Low Floor/High Ceiling Tasks
- Work and Considerations
- Reflection

Low Floor, High Ceiling Tasks

Low Floor High Ceiling Tasks are those that all students can access but that can be extended to high levels. These tasks are important because all classes are heterogeneous and students work at different paces and can take work to different depths at different times. The low floor high ceiling tasks we prefer are those that are also visual and lead to rich mathematical discussions.

Your Work Today- As you SOLVE

- Determine what makes it a low floor, high ceiling task?
- How might a student working at the "floor" solve this?
- Where might a student reaching the ceiling go with this task?
- What about students in the "middle"?

Robot Stepper: Green

Imagine that you have several robots: a two-stepper, a three-stepper, a four-stepper, all the way to a nine-stepper.

- Pick the number on the line where the robots will start.
- Explore the walks of four different robots.
- Try at least two different start numbers for each robot.
- Write about the patterns you find in your lists. Think about:
    - Patterns in the ones place
    - Patterns in the tens place
    - Even and odd number patterns
    - Patterns in the sums of the first and second number, the third and the fourth number, the fifth and the sixth number, and so on.
- What changes a pattern more, the stepper or the start number? Explain your thinking.

Choose a robot that you have not yet explored. Try to predict how many steps it will take for the pattern in the ones place to repeat. Explain your thinking and check yor prediction.

1. Use the clues to find the code number:
   - It is between 8,500 and 8,800.
   - When multiplied by 8, the result is a whole number.
   - The digit in the hundreds place is $\frac{3}{4}$ the digit in the thousands place.
   - The sum of all digits in the number is 26.
   - The digit in the hundredths place is 200% of the digit in the tenths place.
   - There are no zeros in the decimal places.

2. What code numbers fit these clues?

3. Explain how you used all of these clues to find these possibilities.

4. Write one more clue so that there is only one possible code number.

Leo The Rabbit

Leo the Rabbit

Leo the Rabbit is climbing up a flight of 10 steps. Leo can only hop up 1 or 2 steps each time he hops. He never hops down, only up. How many different ways can Leo hop up the flight of 10 steps? Provide evidence to justify your thinking.

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.

✦ Takeaways

Low floor means....

High ceiling means...

Takeaways

- What is the role of the teacher?
- Consider what grade level and standards you would use this for