HALLOWEEN CANDY TO 20

Big Idea: Numbers to 20 represent quantities that can be decomposed into tens and ones; Addition and subtraction with numbers can be modelled concretely, pictorially, and symbolically to develop computational fluency.

Curricular Competencies:

Although students will demonstrate many of these competencies during the three acts, when thinking about the learning you decide to focus on, it is recommended that you select one competency to look closely at. For example, in term one many teachers focus on communicating; therefore, for this three act task teachers may decide to place emphasis on looking at how students are able to represent their mathematical ideas in concrete, pictorial, and symbolic forms.

Reasoning and Analyzing

- *use reasoning to explore and make connections*
- *estimating reasonably*
- *developing mental math strategies and abilities to make sense of quantities*
- *model mathematics in contextualized experiences and explore the utility of mathematics as a tool for solving real-life problems*

Understanding and Solving

- *visualizing to explore mathematical concepts*
- *develop, demonstrate and apply mathematical understanding through play, inquiry and problem solving.*
- *develop and use multiple strategies to engage in problem solving*

Communicating and Representing

- communicate mathematical thinking in many ways
- explain and justify
- represent mathematical ideas in concrete, pictorial, and symbolic forms

Connecting and Reflecting

- reflect on mathematical thinking
- connect mathematical concepts to each other

Content: number concepts to 20; addition and subtraction to 20; estimating sums and differences; using various strategies; using different models such as a number line, hundreds chart, and ten frames.

ACT ONE:

What did you notice?	What do you wonder?
Record all your students' noticings.	Write down all the questions your students come up with. If they are not math'y – ask "What questions could we ask that Math could help us solve?" If they do not come up with the focus question, you could say "I was wondering how many candies are in the bowl? Were any of you wondering the same thing?" The more three act tasks you do, the better they will get at asking questions.

FOCUS QUESTION:

How many candies are in the bowl?

Estimating:

A too low estimate:	A too high estimate:

ACT TWO:

What else do you need to know to answer the question? What information would you like to have? e.g., How many of each different kind of candy are there?

Provide students with materials they can use to model the problem. These could include:

- ten-frames both empty to be used with counters and paper ten frames ones with dots that can be used represent the different addends
- unifix cubes
- counters all the same colour (e.g., pebbles)
- numbers (e.g., wooden, plastic, dice)
- hundreds charts and highlighters
- number lines or number pathways to 20
- paper and pencils

Guiding questions for the teacher to consider:

- How are students engaging in the problem solving?
- What do they notice? What do they wonder?
- Are the students able to ask questions?
- Once the students engage with problem, are they able to mathematically model the situation?
    - What tools/model to they select to represent the question? (e.g. ten frames, number lines, hundred's chart, pictures, counters, equations)
    - Are they able to think abstractly and use different coloured or all the same colour counters to represent the different smarties?
    - Can they represent their concrete models pictorially?
    - Do they use labels to help communicate ideas?
- Are the students able to orally explain their thinking?
- When different strategies have been shared, are students able to make connections between similar strategies and the representations used?

ANTICIPATING STUDENT THINKING:

Make note of who uses which strategy and take pictures or video so that these can be shared with the class as a whole. Please note that students may represent these strategies concretely using materials, representationally through pictures, or abstractly through numbers and symbols on paper and just because they may choose to use concrete materials, does not mean the strategy is not sophisticated.

Some potential STRATEGIES students might use:
Make note of who uses which strategy and take pictures or video so that these can be shared with the class as a whole.

- Who **counted all**?
  - Do students have one-to-one correspondence? If they make a mistake do they catch themselves and self-correct?

- Who **counted on**?
  - Are students counting on from the largest quantity?

- Who **adds in chunks**?
  e.g., 9 + 2 + 8 =
  (9 + 2) + 8 =
  11 + 8 = 19

- Who made **friendly tens**?
  e.g., 9 + 2 + 8 = 9 + 2 + 8 =
  (8 + 2) + 9 = (9 + 1) + 1 + 8 =
  10 + 9 = 9 10 + 1 + 8 = 18

- Who used **compensation**?
  e.g., 9 8
  + 1 - 1
  10 + 7 = 17 then added 2 to 17 = 19

- doubles/**near doubles strategy**?
  e.g., 9 + 2 + 8 =
  (8 + 1) + 2 + 8 =
  (8 + 8) + 1 + 2 =
  16 + 1 + 2 = 19

ACT THREE:
Gather the students as a whole class and share photos and videos taken via the projector with the class. Ask students to orally explain the strategies they used. Highlight, compare and connect the strategies students used.

Sharing

- Build a class anchor chart with the different strategies students used.

REVEAL the answer! – ACT THREE

Summarize the learning:

Self-Reflection:

Strengths: What worked (What strategies did you use to work toward a solution)?
Stretches: What was difficult?
Next steps: What would you do differently next time? Was anyone inspired by someone else's strategy?

Moving Forward:

Continue to explore different combinations of quantities to 20.

Name _____

How Many Candies Were In The Bowl?

9 

8 

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