CLEAR AS MUD

TRYING OUR BEST TO BE TRUE TO THE INTENT OF EXPECTATIONS

Marian Small, August, 2016

Windsor, ON

Grade 1

- Estimate, measure and record lengths, heights and distances
- What is important?

For me....

- How reasonable are the estimates?
- Is unit size considered?
- Do they know how to measure properly?

For me….

- Do they realize which attributes matter and which don’t?
- Do they realize units need to be the same size and why?
- Do they choose appropriate units?

For me….

- Do they know what to do if they don’t have enough units?
- Do they know what to do if the fit is not perfect?

So…

- What useful task might incorporate many of these issues?

Task

- Provide 4 small and 5 large paper clips.
- Ask students to predict something that will be about 20 paper clips long.
- Ask them to explain their prediction and then test it.
- Then ask: Would or how would the answer change if you used this giant paper clip?

We have opportunities to assess

- Reasonableness of estimates
- Recognizing unit size as a factor
- Appropriate procedures

We have opportunities to assess

- Whether they measured only length
- Whether they used the same size unit
- What they did when there were not enough units
- What they did if the fit was not perfect

This did not address

- Appropriate unit choice
- How might you address this?

Grade 3

- Relate multiplication of one-digit numbers and division by one-digit divisors to real-life situations, using a variety of tools and strategies

- What matters?

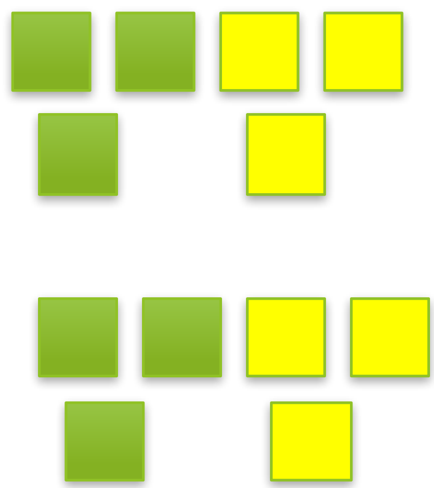
For me..

- Relating the meaning of a x b to a physical configuration (going in either direction)
- Using realistic situations that describe multiplication

For me..

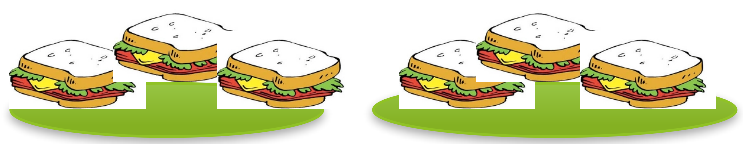
- Including a rectangle interpretation, i.e. a x b is the area of an a x b rectangle
- Recognizing that a x b can be "buried" in other situations, e.g.

- This shows 2 x 6 but also shows 4 x 3.



A Possible Task

- Jane made 6 sandwiches.



- What multiplications might describe this situation?
- How could you represent the multiplications you mentioned with counters?

We have opportunities to assess

- Relating a x b to a physical configuration
- Recognizing that a x b can be ”buried” in other situations.

We do not address

- Starting with the symbolic and creating the situation.
- The rectangle interpretation

- What tasks might you set?

Grade 5

- Solve problems requiring conversion from metres to centimetres and from kilometres to metres

- What do you think matters?

For me….

- I want students to know which value should be greatest and why.
- I want students to know why the converted value uses the same digits (other than maybe extra 0s).
- I want students to know why the “scale factor” is 100 or 1000 and why.

For me..

- I want students to realize that each measurement can be described with both units using the same number, as long as one of them includes the words “thousands” or “hundreds” or “hundredths”, etc., e.g. 5.3 km = 5.3 thousand metres

Possible task

- I described the same distance using different units.
- One number was WAY MORE than the other number.
- What could the two descriptions of that distance have been?

Possible task

- Why is one number way more?
- What is the same about both numbers?
- How are they related?

We have opportunities to assess…

- An understanding of which number is greater and why.
- Whether students notice the digits are the same.
- What scale factor to apply

Grade 2

- Compose and decompose two-digit numbers in a variety of ways using concrete materials
- What do you think matters?

For me..

- That decomposition is affected by the materials being used, e.g. base ten blocks, coins, etc.
- That there are many ways to decompose
- That different decompositions might be related to one another
- That decompositions are useful to tell us about a number

For example

- Since 60 = 30 + 30, I know that 60 is even.
- Since 60 = 15 + 15 + 15 + 15, I know that 60 can be made up of four equal groups.
- Since 60 = 58 + 2, I know that 60 is just a little more than 58.

Task

- Choose between 20 and 50 counters.
- Which of these decompositions will work with your number of counters?

Task

- 3 equal groups
- 2 groups- one exactly double another
- 2 groups- one close to double the other
- 1 big group and 2 small ones
- 2 equal groups and 1 very small one

We have opportunities to assess…

- Seeing that decompositions are useful to tell us about a number
- That there are many ways to decompose
- Possibly that decompositions are related

Alternate task

Some tables get play coins. Some get base ten rods and ones and some get counters.

Alternate task

Choose a number between 20 and 50.

Show how it can be made up of smaller amounts in more than one way.

How are the different ways you decomposed related?

We have opportunities to assess..

- How decomposition is affected by the materials being used
- That there are many ways to decompose
- That different decompositions might be related to one another

Grade 4

- Describe relationships that involve simple whole number multiplication
- What do you think matters?

For me…

- That some numbers are whole number bunches of other numbers, but some are not.
- That additive and multiplicative relationships are different, e.g. one number can be, e.g. twice another and A LOT more than it or NOT A LOT more than it

For me…

- That visually saying one number is twice or three times or four times another is saying that if the first number of counters is in each box, I have 2 or 3 or 4 of those boxes.

Task

- You add a number to its triple.
- List a bunch of possible sums- some big and some small.
- List a bunch of numbers that could not be the sums- some big and some small.
- Why do these answers make sense?

We have opportunities to assess..

- Whether students realize that some numbers are whole number bunches of other numbers, but some are not.
- That one number can be, e.g. three times another and A LOT more than it or NOT A LOT more than it.

What can I do to help students….

- Have a visual picture for what a multiple of a number really is

Grade 6

- Extend and create repeating patterns that result from rotations, through investigation using a variety of tools
- What do you think matters?

For me…

- That knowing the number of items in the core helps you predict future terms
- That knowing the core of the pattern tells you which items in the patterns are the same
- Recognizing the relationship between 90° cw and 90° ccw and 180° rotations.

Task

- Create a rotation pattern where the 34th term and the 46th term are the same and you use more than one sort of rotation. What is the core?
- What other terms are like the 34th and 46th? Why?
- Could you have created the exact same pattern using different rotations?

We have opportunities to assess:

- Whether students realize that knowing the number of items in the core helps you predict future terms
- That knowing the core of the pattern tells you which items in the patterns are the same
- Whether students recognize the relationship between 90˚ cw and 90˚ ccw and 180˚ rotations.

Your turn

- Choose one or two expectations of your choice.
- Work through the same process as I did.

Download

- www.onetwoinfinity.ca
- Recent presentations
- WindsorK6