



Grades 7, 8, and 9 Applied

5

Posters

Classroom

Communication Prompts

Why?

What if ... ?

Give an example of ...

Is there a counter-example?

Do you see a pattern?

Is this always true?

What do you think would happen if ... ?

How is this the same as/different from ... ?

How does this connect to ... ?

Can you explain that in another way?

If this is true then what else is true?

Describe what you did ...

Compare this to

Explain your solution to ...

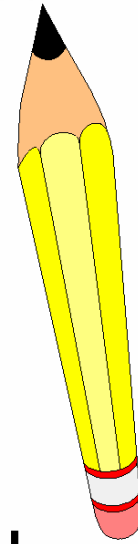
What evidence can you give to ...

List the ...

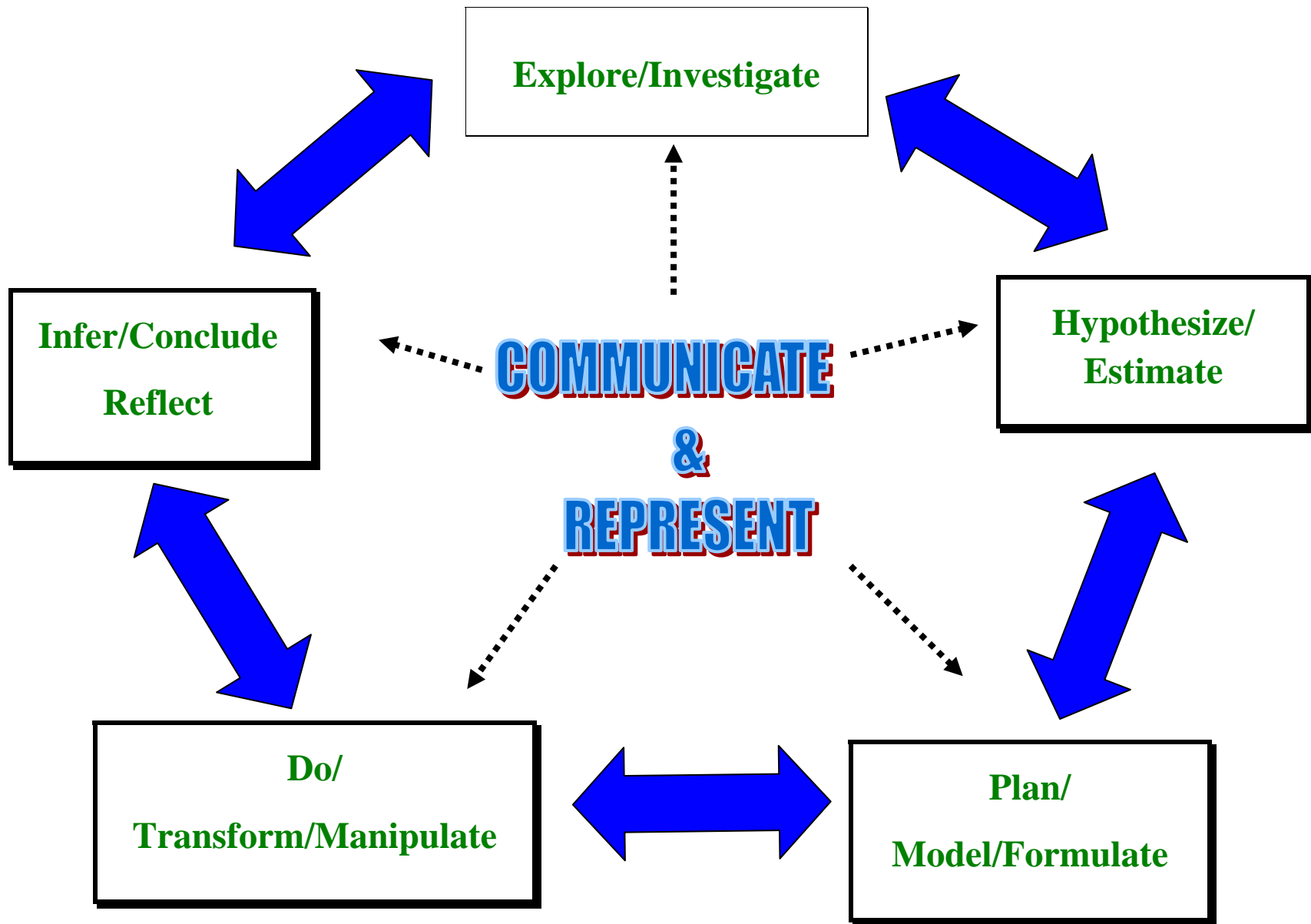
Would a picture or diagram make
your explanation clearer?

I am communicating when I...

- Use mathematical symbols, labels, units and conventions correctly.
- Describe what I am thinking.
- Connect my prior knowledge to new knowledge.
- Read and interpret mathematics that is presented in words, pictures and graphs.
- Present my understanding effectively using tables and charts.
- Ask questions to further my thinking.
- Make hypotheses and conjectures in my problem solving.
- Justify my thinking.

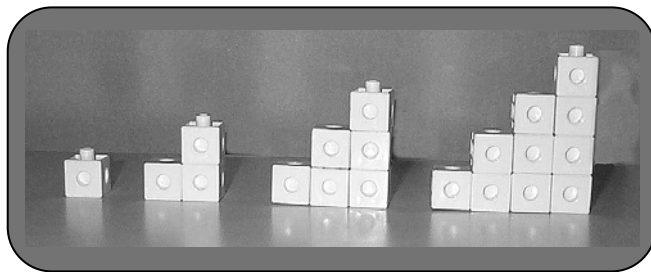


Inquiry Model Flow Chart

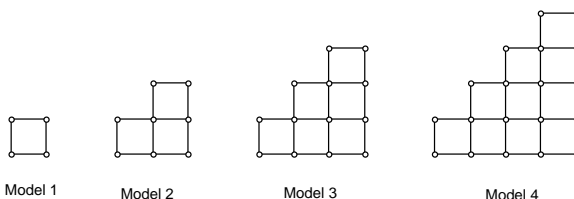


Mathematical Models and Actions

Physical



Picture/
Diagram



Numerical

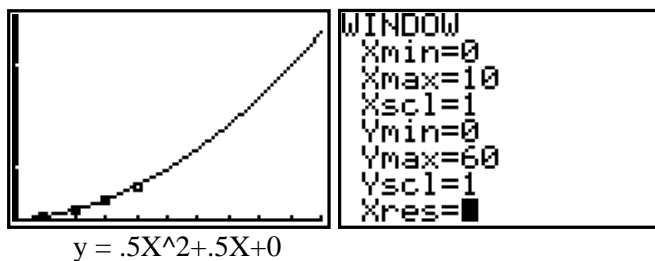
Model Number	Number of Blocks
1	1
2	3
3	6
4	10

Algebraic

$$N = \frac{n(n+1)}{2}$$

where N represents the number of blocks and n represents the model number

Graphical

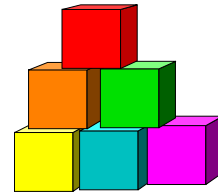


Predict, Represent, Explore, Interpret, Transform,
Manipulate, Conclude, Reflect, Make Connections

Communication

Problem-Solving Strategies

Act it out or make a model.



Make a picture or diagram.

Look for a pattern. 

Guess and check. $24 \times 6 =$ $26 \times 6 =$

Make an organized list.

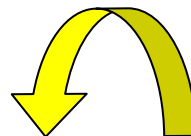
1. _____
2. _____
3. _____

Make a table or chart.

Make a simpler problem.

$$\begin{array}{r} 2 \\ +3 \\ \hline 5 \end{array}$$

Work backwards.



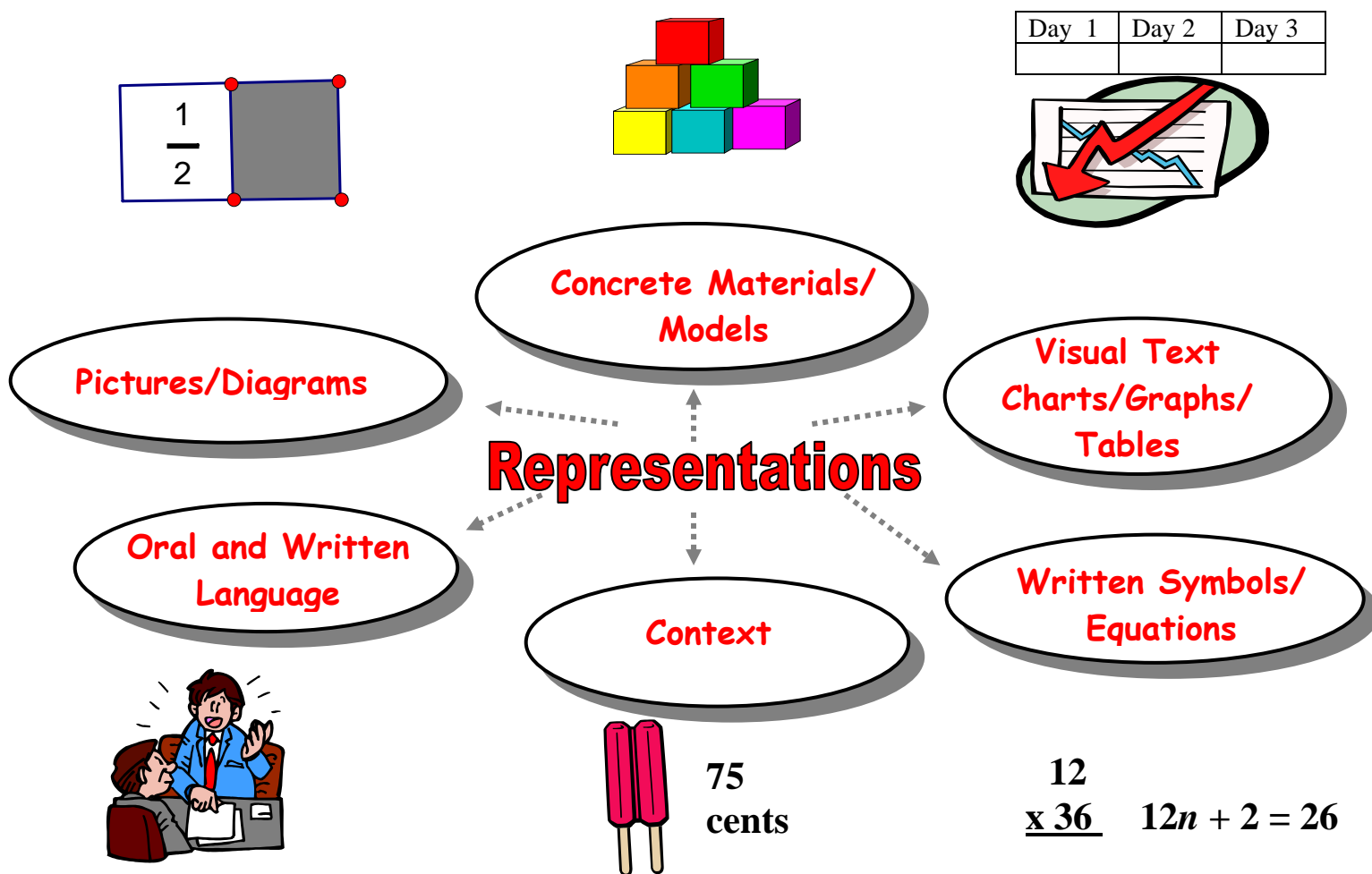
Use logical reasoning.

Understand the Problem

1. Think about the problem.
2. Talk through the problem with a partner.
3. Select a strategy, tools, organizer, and materials.
4. Estimate the solution.
5. Solve and represent the problem.
6. Reflect: is the solution reasonable?
7. Look for patterns and rules.
8. Explain and justify your thinking in diagrams, words, tables, models, and numbers or symbols.

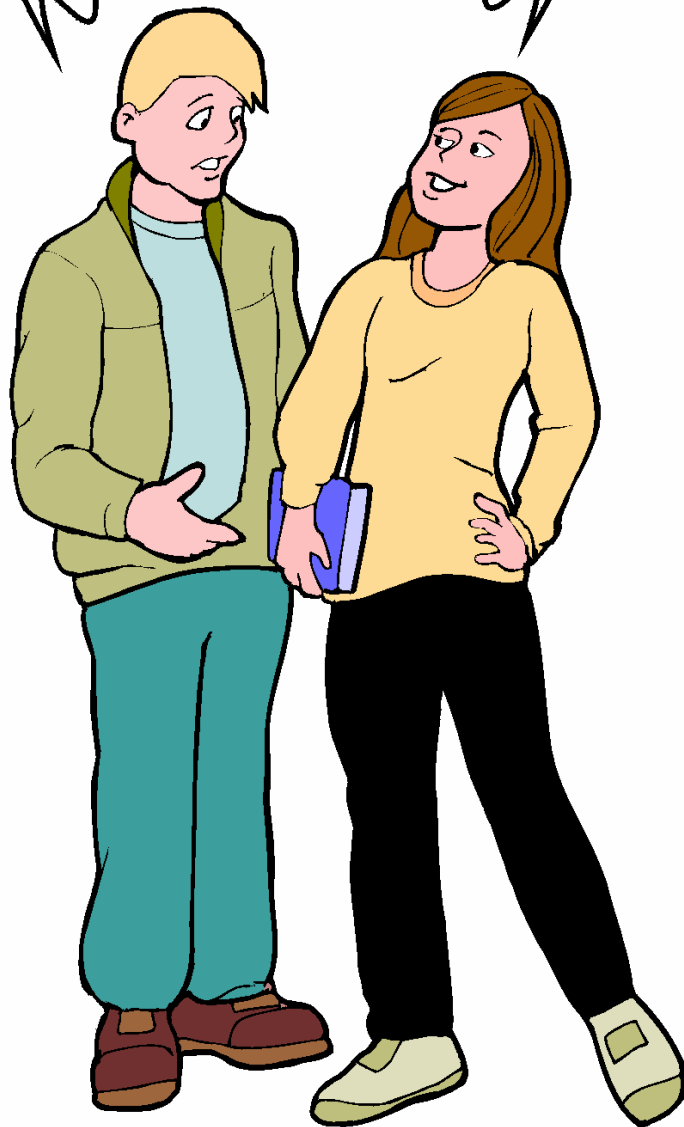
Representations Make Our Thinking Visible

The more ways we represent our thinking, the deeper our understanding becomes.



Multiplying always gives a bigger answer.

No it doesn't!!



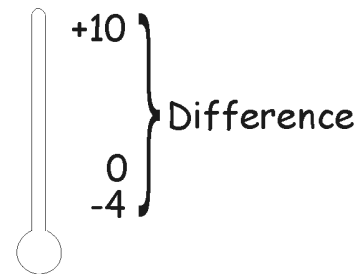
Who is correct?

Subtracting Integers

Subtracting finds the difference between two numbers.

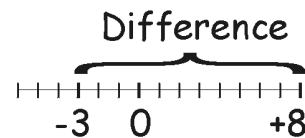
One winter day, London had a high temperature of 10° and a low temperature of -4° . The temperature difference was:

$$\begin{aligned} & (+10) - (-4) \\ & = \end{aligned}$$



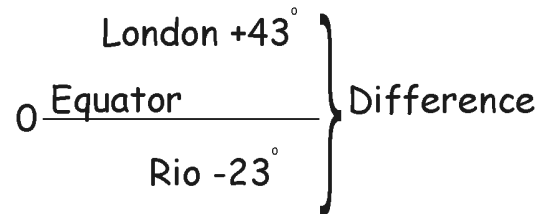
Joe win \$8 in a game. Pete loses \$3. The difference in their wins is:

$$\begin{aligned} & (+8) - (-3) \\ & = \end{aligned}$$



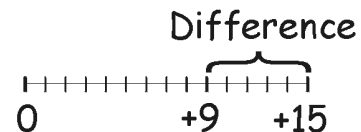
Woodstock is a at latitude 43° N
Rio de Janiero is at latitude 23° S
The difference in latitude is:

$$\begin{aligned} & (+43) - (-23) \\ & = \end{aligned}$$

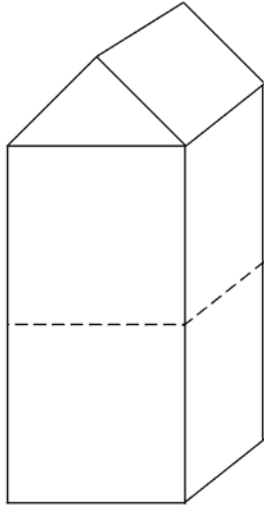


Cody earned \$15 babysitting. Pam earned \$9 cutting lawns. The difference in their earnings was:

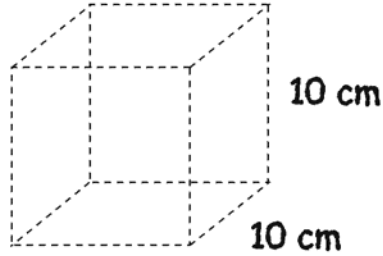
$$\begin{aligned} & (+15) - (+9) \\ & = \end{aligned}$$



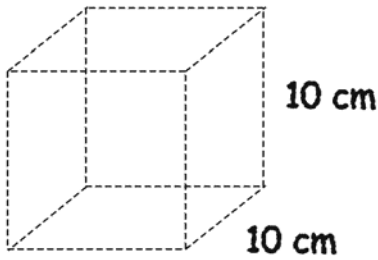
Metric-Capacity & Mass



Two-litre milk carton

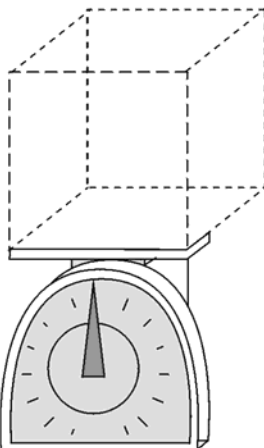


10 cm



10 cm

1000 cm³ holds 1 litre



1 litre of water has a mass of 1 kg

****1cm³ holds 1 ml and has a mass of 1 g**

In Mathematics...

Asking your own questions is important.

Authentic problems can be complex and time consuming.

Learning may require several attempts.

There can be many approaches to solving problems.

Learning rules is insufficient for complete understanding.

Using manipulatives can help to make concepts clearer.

A record of your work with a problem is helpful for reference, review, and reflection.

