Mathematical Practice #1:

Make sense of problems & persevere in solving them.

Make a Plan:

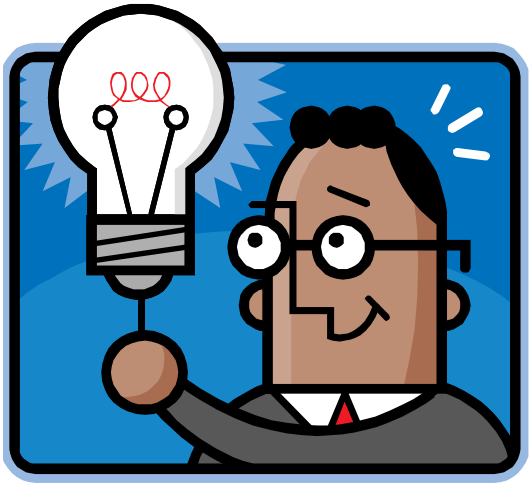
- Can I restate the problem by verbally describing it?
- Where can I begin to find a solution?
- Have I solved similar problems?

Get Organized:

- What is the goal of this problem?
- What information is given?
- Are there any restrictions?
- Do I have prior knowledge that will help me?
- Can I try special cases when looking for a solution?
- What tools do I need?

Solve the Problem:

- What presumptions can I make that make sense?
- Can I make a table or graph?
- Are there any trends?



PERSEVERE

Never give up!!

Evaluate Myself:

- Is my answer correct?
- Does the answer make sense?
- Can I explain how I solved the problem?
- What worked?
- What didn't work?
- Have I observed others and understood how they solved the problem?

Mathematical Practice #2:

Reason abstractly & quantitatively.

In problem situations, I can make sense of quantities & their relationships

Decontextualize

I can take numbers **out** of a word problem and make sense of them to solve a problem.

For example:

"I worked 8.5 hours each day for 5 days. How long did I work?"

8.5 x 5 = 42.5 hours

Contextualize

I can take numbers and put them **in** context, in a real world problem.

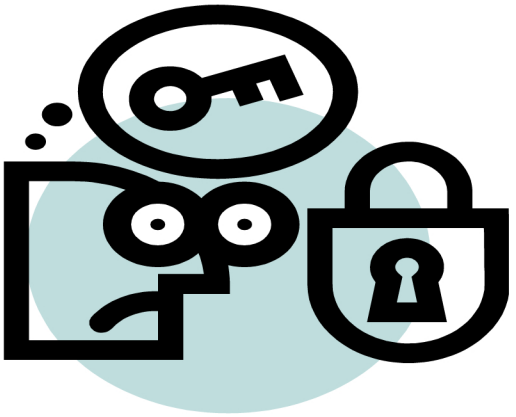
For example:

"I bought 8 apples for $6.00. How much does one apple cost?"

$6 ÷ 8 = 0.75

My Habits of Mind:

- I can explain what the problem means.
- I pay attention to the units.
- I don't just compute the problem; I know the meaning of the vocabulary.
- I can use & explain the properties of numbers.



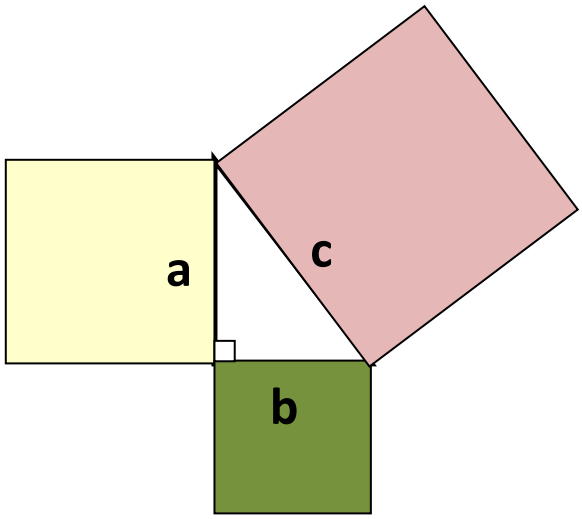
Mathematical Practice #3:
Construct viable arguments & critique the reasoning of others

I can make assumptions based on my prior knowledge to create an argument for a problem by:

- Making *conjectures*
- Building a *logical progression* of statements
- Analyzing situations by *breaking the problem into parts*
- Using *counterexamples*
- Making *logical arguments*
- Determining if a solution is *logical*

I can critique the mathematical thinking of others by:

- *Responding* to arguments
- *Comparing* two logical arguments
- *Recognizing* flawed logic
- *Listening*
- *Asking* questions for clarification



Understanding

Can I understand the explanation of others' solutions?

Proof

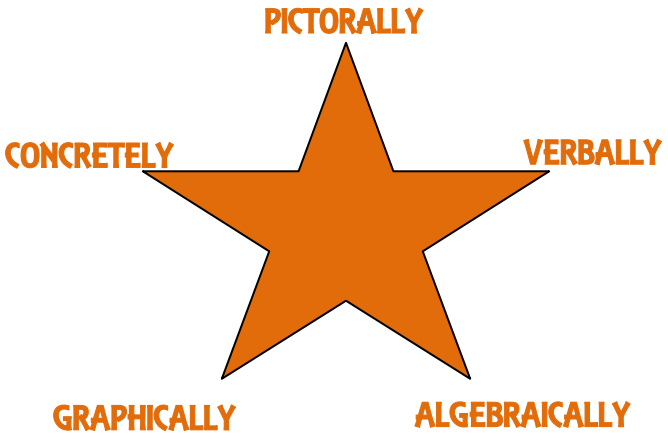
Can I prove I am correct?

Justify my conclusions:

- Consider the context of the problem
- Use examples & non-examples
- Use objects, drawings, diagrams, and actions.

Mathematical Practice #4:
Model with mathematics.

5 ways to represent a problem:



I can use the math I already know to solve problems that come up in everyday situations.

EXAMPLES:

1. Write an addition equation to calculate potential profit.
2. Use proportional reasoning to plan a school event.

- I can identify important quantities and use mathematical tools to show relationships.
- I can analyze mathematical relationships to draw conclusions.
- I can interpret the results for a problem and know whether the solution makes sense.

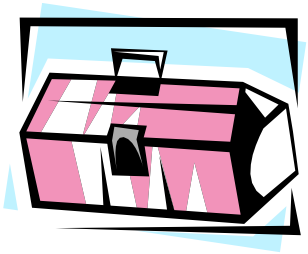
I know when to make improvements when what I'm using is not working.

I can use what I know to simplify a problem & make an assumption about it & know that I may need to make adjustments to it later.

Mathematical Practice #5:

Use appropriate tools strategically.

What TOOLS should I use?

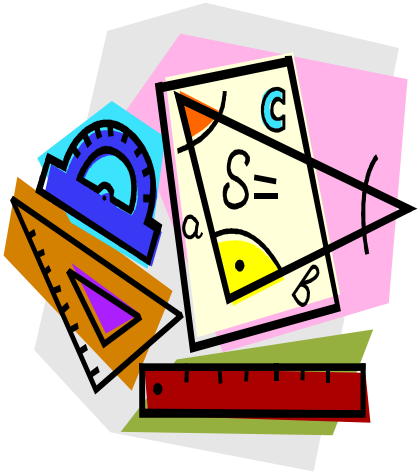


Use TECHNOLOGY to:

- Visualize results
- Explore consequences
- Compare predictions

Things to keep in mind about my Math Toolbox:

- Be familiar with appropriate tools and know when to use them
- Know the capabilities and restrictions of tools you choose



MANIPULATIVES
GRAPH
table
pencil
calculator
ruler
PROTRACTOR
scale/THERMOMETER
NUMBER LINE
CLOCK
compass
CALENDAR
reference sheet

Use estimation and prior knowledge to detect possible errors in calculation

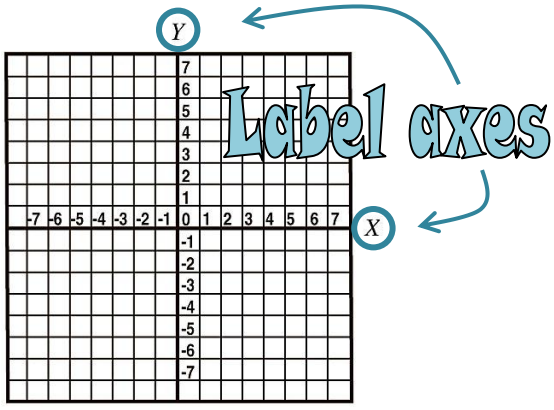
Mathematical Practice #6:

Attend to precision.

Be Accurate:

- Communicate precisely
- Use clear definitions at all times
- Know what your symbols mean
- Calculate accurately and efficiently
- Express numerical answers precisely
- Carefully formulate explanations

Use the equal sign consistently and appropriately.



Specify units of measure where appropriate.

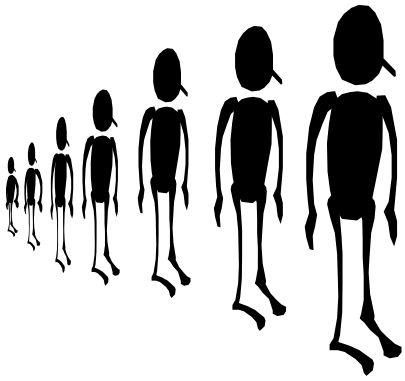
- 36 ft^2
- 12cm
- 2,000 lbs.
- 55 mm
- $35.00
- 16 oz.
- 100 yds.
- ¾ in^3

When you make a graph, don't forget:

- title
- x-axis label
- y-axis label
- use appropriate scale

Mathematical Practice #7:

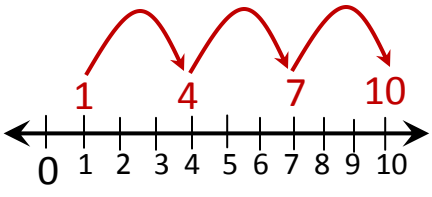
Look for & make use of structure.



Understand how **NUMBERS** and **SPACES** are **grouped together**

Recognize ***parts*** of ***wholes***

Shift your ***perspective*** to find the ***patterns***

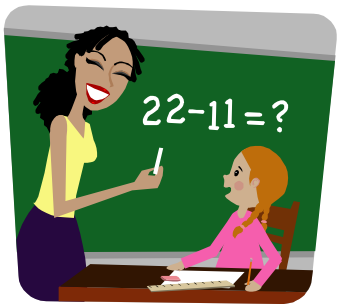


Look ***closely*** to find a pattern

MATHEMATICAL PRACTICE #8:

Look for & express regularity in repeated reasoning

Notice if calculations are ***repeated***



$5^1 = 5$

$5^2 = 5 \cdot 5 = 25$

$5^3 = 5 \cdot 5 \cdot 5 = 125$

$5^4 = 5 \cdot 5 \cdot 5 \cdot 5 = 625$

$5^5 = 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 = 3125$

$x + x + x + y + y - y - x + 13$

$x + x + x - x =$	$y + y - y =$
$2x$	y

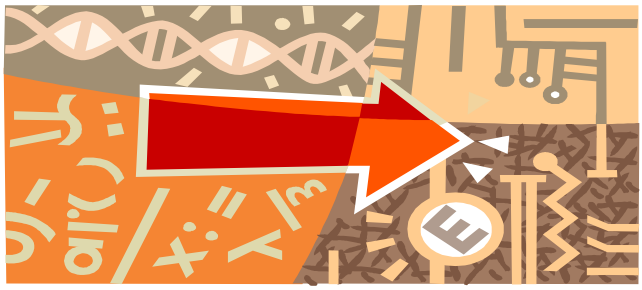
SO,

$2x + y + 13$

Look for a **SHORTCUT**

Can you find a **FORMULA** ?

Can you write an **EQUATION** ?



Are you ***paying attention*** to the ***details?***

EVALUATE YOURSELF!

Is my answer ***reasonable?***