Make sense of problems and persevere in solving them. Mathematical Practice 1

When presented with a problem, I can make a plan, carry out my plan, and check its success.

**BEFORE...**

**EXPLAIN** the problem to myself.

**MAKE A PLAN** to solve the problem

- What is the question?
- What do I know?
- What do I need to find out?
- What tools/strategies will I use?

**DURING...**

**PERSEVERE** (Stick to it!)

**MONITOR** my work

**ASK** myself, “Does this make sense?”

**CHANGE** my plan if it isn’t working out

**AFTER...**

**CHECK**

- Is my answer correct?
- How do my representations connect to my solution?

**EVALUATE**

- What worked/didn’t work?
- How was my solution similar or different from my classmates’?
Reason abstractly and quantitatively.

I can use numbers, words, and reasoning habits to help me make sense of problems.

Contextualize (Numbers to Words)

\[ \frac{1}{2} \times 6 = 3 \quad \text{or} \quad 6 \times \frac{1}{2} = 3 \]

Mary practices the piano \( \frac{1}{2} \) hour a day for 6 days. How many total hours does she practice?

Decontextualize (Words to Numbers)

Mary practices the piano \( \frac{1}{2} \) hour a day for 6 days.

How many total hours does she practice?

\[ \frac{1}{2} \times 6 = 3 \quad \text{or} \quad 6 \times \frac{1}{2} = 3 \]

Reasoning Habits

1) Make an understandable representation of the problem.
2) Think about the units involved.
3) Pay attention to the meaning of the numbers.
4) Use the properties of operations or objects.
Construct viable arguments and critique the reasoning of others.  

I can make logical arguments and respond to the mathematical thinking of others.

I can make and present arguments by...

- using objects, drawings, diagrams and actions
- using examples and non-examples
- relating to contexts

I can analyze the reasoning of others by...

- listening
- asking and answering questions
- comparing strategies and arguments
Model with mathematics.

Mathematical Practice 4

I can recognize math in everyday life and use math I know to solve problems.

I can...

My box turtle is getting a new tank. He is 5 1/2" long and 3" tall. One side length of the tank needs to be 5 times his length. How long will the length of the tank need to be?

Use estimates to make the problem simpler.

I will round 5 1/2" to 6".

Find important numbers.

Turtle: About 6" long
Tank: 5 times the length of the turtle

Consider my answer – Does it make sense?

I thought about the problem again and a 30" side length on the tank makes sense!

Think about the relationship to find an answer.

The tank (30") is 5 times bigger than the turtle length (6").

Use tools to show relationships.

<table>
<thead>
<tr>
<th>Turtle Length (inches)</th>
<th>Tank Length (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>20</td>
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<td>5</td>
<td>25</td>
</tr>
<tr>
<td>6  <strong>yellow</strong></td>
<td>30  <strong>highlighted</strong></td>
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...to solve everyday problems.
Use appropriate tools strategically.

Mathematical Practice 5

I can use certain tools to help me explore and deepen my math understanding.

- I know **HOW** and **WHEN** to use math tools.

- I can reason: “Did the tool I used give me an answer that makes sense?”

\[ a \times b = b \times a \]
Attend to precision.
Mathematical practice 6

I can be precise when solving problems and clear when communicating my ideas.

Mathematicians communicate with others using...

- math vocabulary with clear definitions
- symbols that have meaning
- context labels
- units of measure
- calculations that are accurate and efficient

48 inches = 4 feet

symbol: equal (the same as)


units of measure

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Jordan School District 2012, Grades 4-5
Look for and make use of structure.

I can see and understand how numbers and spaces are organized and put together as parts and wholes.

**Numbers**

For Example:

I know that \( \frac{3}{10} \) is equal to \( \frac{30}{100} \).

So, \( \frac{3}{10} + \frac{4}{100} = \frac{34}{100} \).

**Equivalent Fractions**

**Spaces**

For Example:

**Lines and Angles**

**Symmetry**

**Location**
Look for and express regularity in repeated reasoning.

I can notice when calculations are repeated. Then, I can find more general methods and short cuts.

As I work...

...I think about what I’m trying to figure out while I pay attention to the details.

...I evaluate if my results are reasonable.

There are many ways to decompose $\frac{3}{8}$ because it is composed of repeated $\frac{1}{8}$s.

I CAN.....

....draw a whole and shade in three $\frac{1}{8}$s parts.

....add eighths.

$\frac{3}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$

....count by eighths.

(one-eighth, two eighths, three eighths)

$\frac{3}{8} = \frac{1}{8}, \frac{1}{8}, \frac{1}{8}$

....jump three $\frac{1}{8}$ size jumps on a number line.