Make Sense of Problems and Persevere in Solving Them.
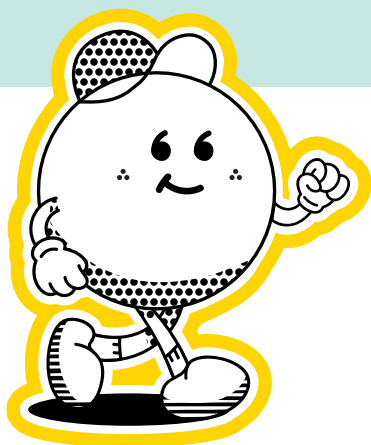
When presented with a problem, I can make a plan, carry out my plan, and check its success.

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?"
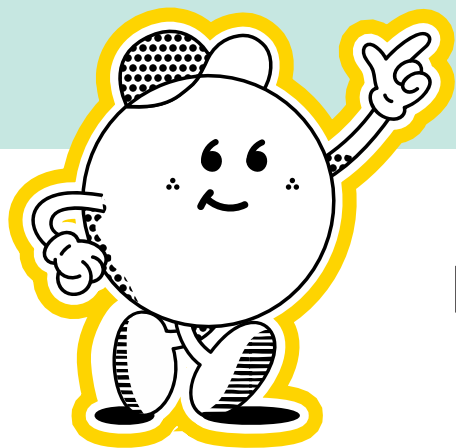**CHANGE** my plan if it isn't working out

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'?
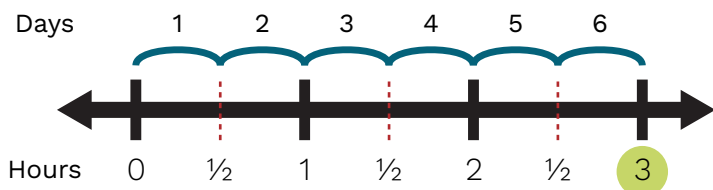
Reason Abstractly and Quantitatively.

I can use numbers, words, and reasoning habits to help me make sense of problems.
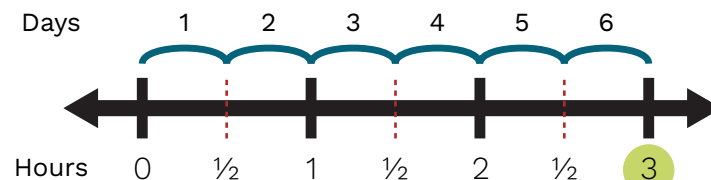
Contextualize
(Numbers to Words)

½ x 6=3

⬇

Mary practices the piano ½ hour a day for 6 days. How many total hours does she practice?

| Days | 1 | 2 | 3 | 4 | 5 | 6 |

| Hours | 0 | ½ | 1 | ½ | 2 | ½ | 3 |

Decontextualize
(Words to Numbers)

Mary practices the piano ½ hour a day for 6 days. How many total hours does she practice?

| Days | 1 | 2 | 3 | 4 | 5 | 6 |

| Hours | 0 | ½ | 1 | ½ | 2 | ½ | 3 |

⬇

½ x 6=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.
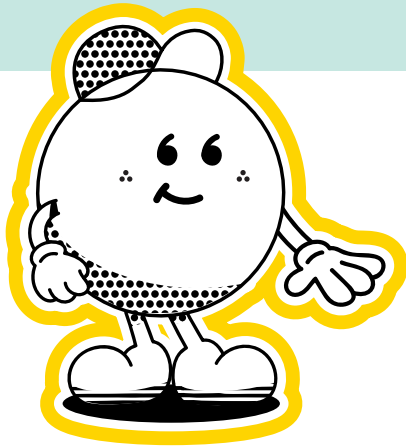
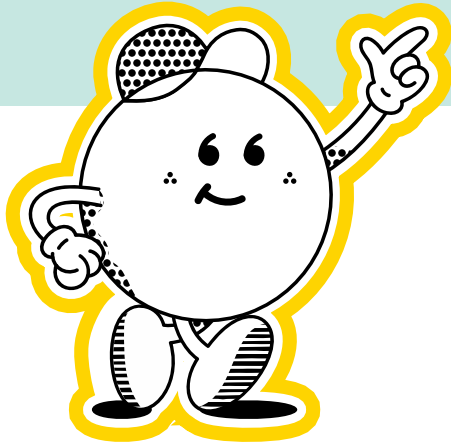I can make logical arguments and respond to the mathematical thinking of others.

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.

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

My box turtle is getting a new tank. He is **5 ½"** 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 use the next bigger (whole) number.

→

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!
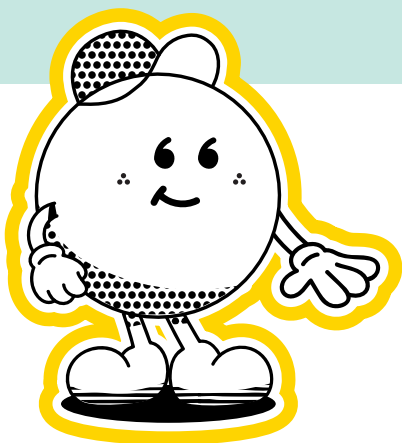
←

Think about the **relationship** to find an **answer**.

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

←

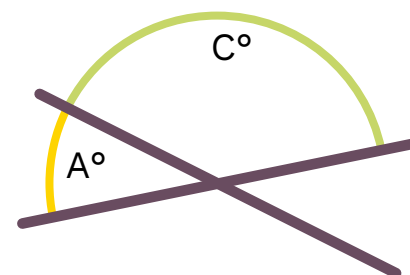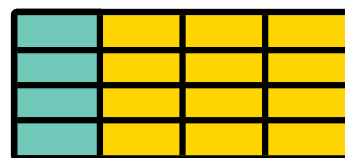| Turtle Length (in)	Tank Length (in)
4	20
5	25
6	30
7	35
8	40

←

Use **tools** to **show relationships.**
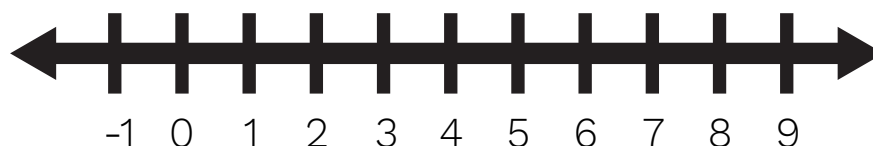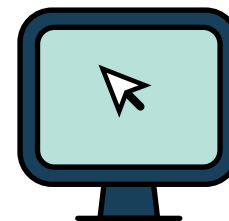
Use Appropriate Tools Strategically.

I can use certain tools to help me explore and deepen my math understanding.
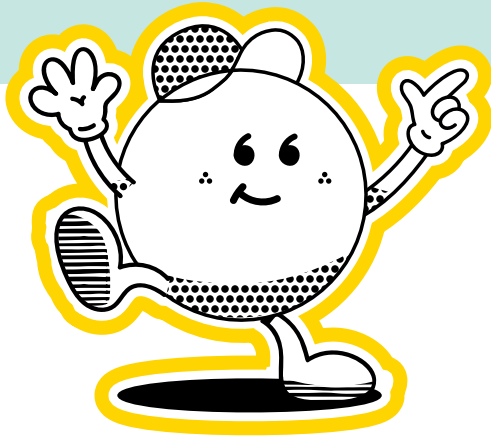
I know **HOW** and **WHEN** to use math tools.

I can reason: **"Did the tool I used give me an answer that makes sense?"**

C°

A°

AxB=BxA

-1 0 1 2 3 4 5 6 7 8 9

Attend to Precision.

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

Mathematicians communicate with others using...
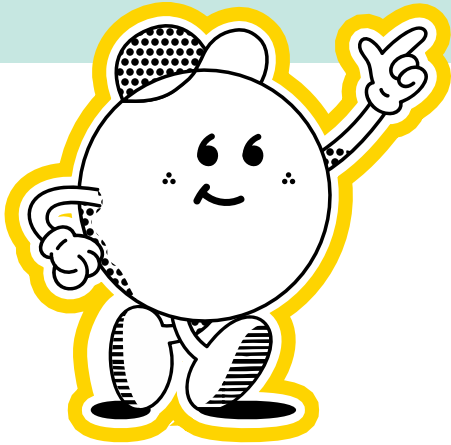
Symbol: Equal (the same as)

↓

48 inches = 4 feet

units of measure

- math vocabulary with clear definitions

- symbols that have meaning

- context labels

- units of measure

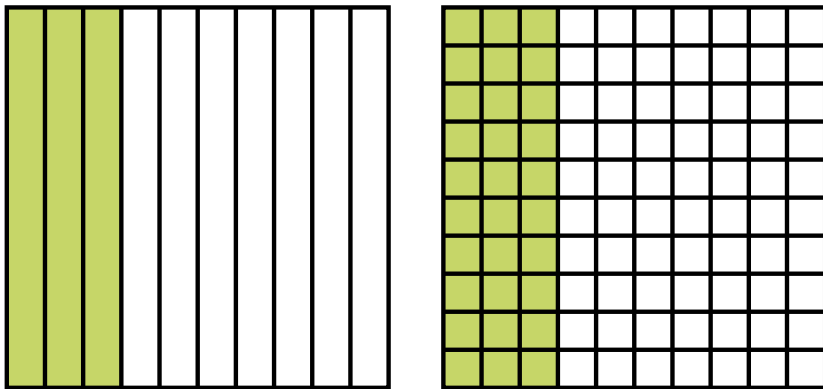- calculations that are accurate and efficient

Look for and Make Use of Structure.

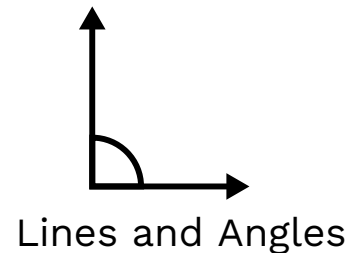I can see and understand how numbers and shapes are put together as parts and wholes.

Numbers

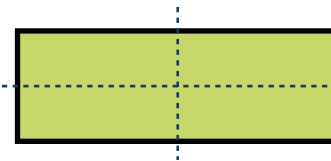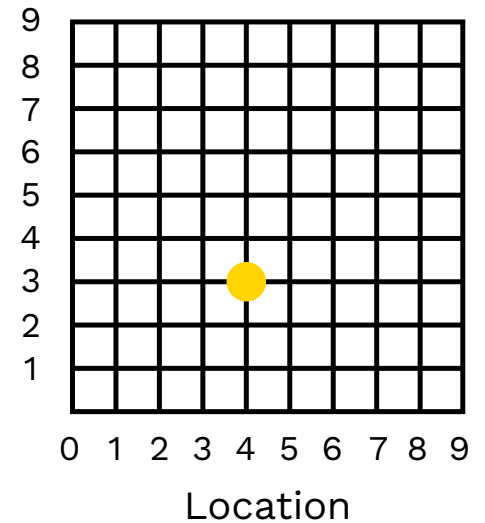I know that 3/10 is equal to 30/100

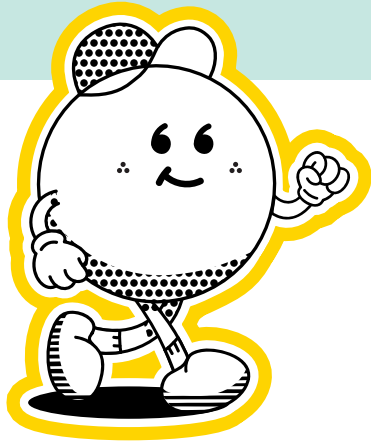Equivalent Fractions

Spaces

Lines and Angles

Symmerty

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.
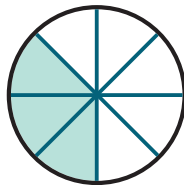
As I Work...

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 3/8 because it is composed of repeated 1/8's. I CAN...

draw a whole and shade in three 1/8's parts.

add eigths.

$$3/8 = 1/8+1/8+1/8$$

count by eighths
(one-eighth, two eighths, three eighths)

$$3/8 = 1/8, 1/8, 1/8$$

jump three 1/8 size jumps on a number line.

$$\frac{0}{8} \quad \frac{1}{8} \quad \frac{2}{8} \quad \frac{3}{8} \quad \frac{4}{8} \quad \frac{5}{8} \quad \frac{6}{8} \quad \frac{7}{8} \quad \frac{8}{8}$$