1 2 3 4 5 6 7 8 9 10

ALGEBRA

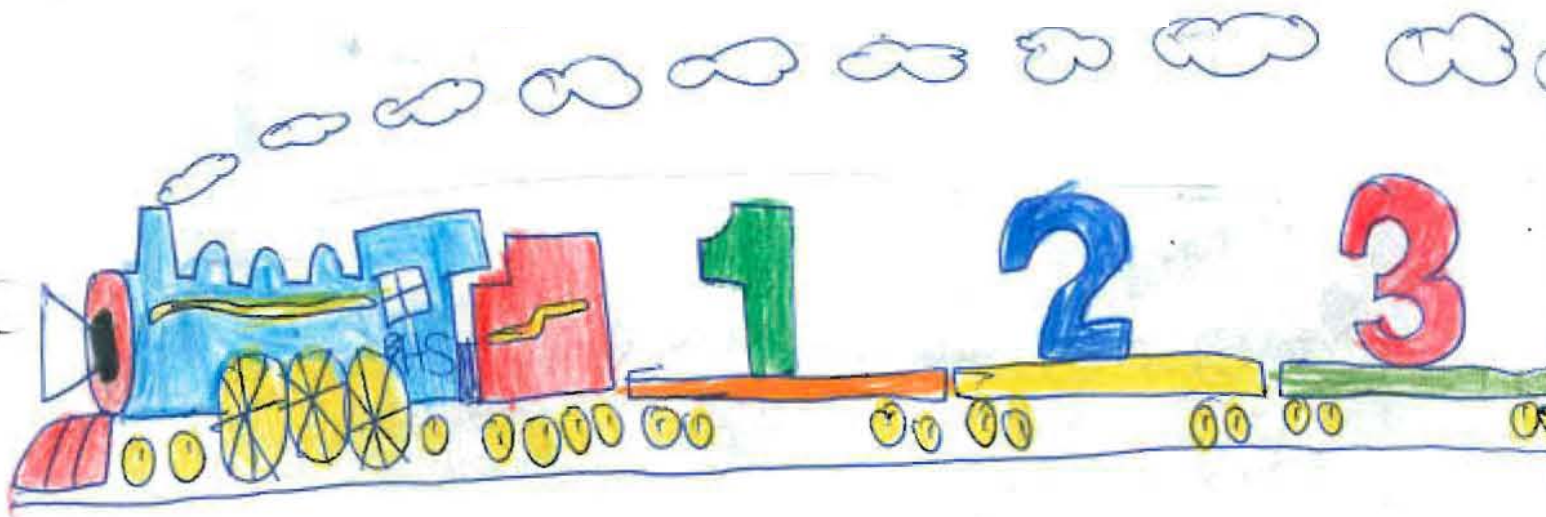
$50 > 8$ OF $3 < 8$

EXCITEMENT

$10 \times 600 = 6000$

$$5\overline{)200}\quad 40$$

Designed and Created by



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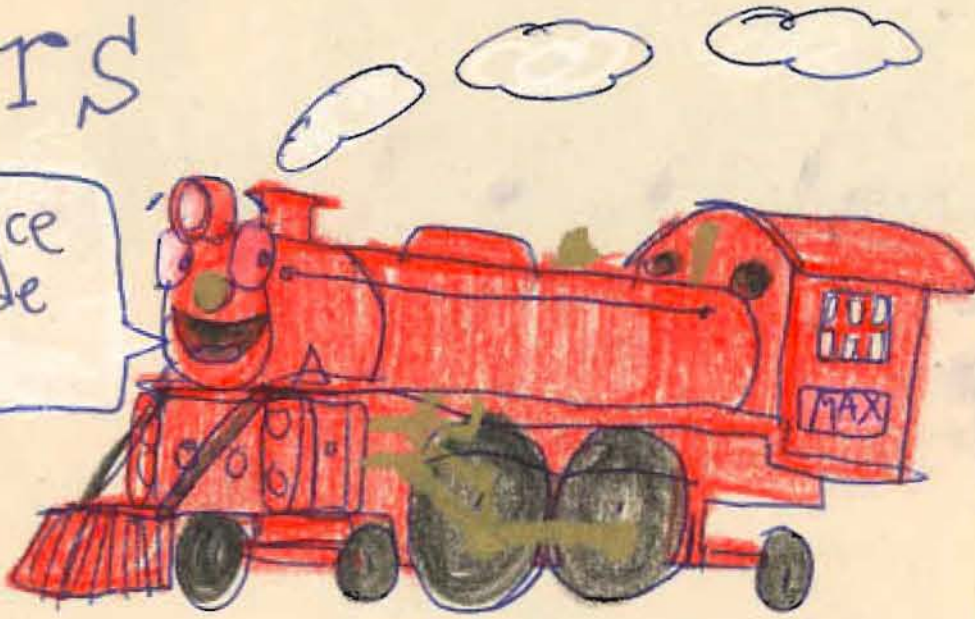
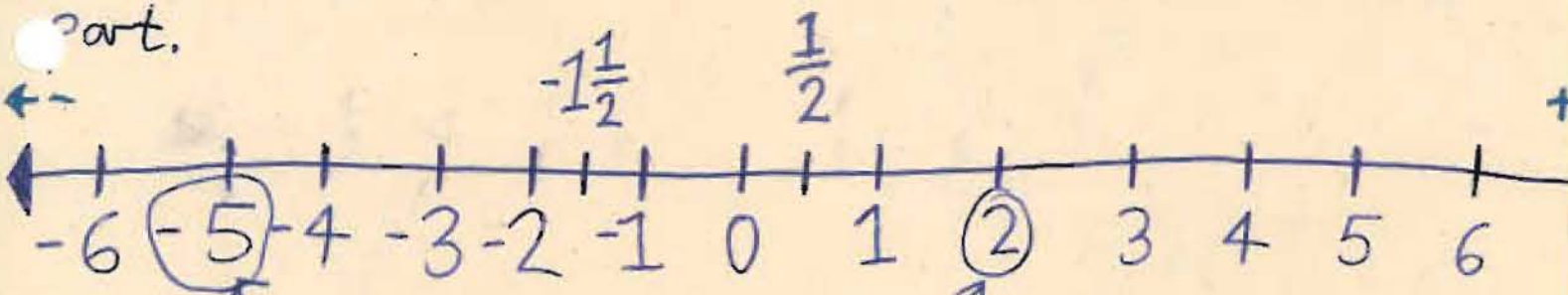
1 Positive/Negative Numbers

Below me is a nice number line. I made it myself.



* Integers don't have a fraction part.



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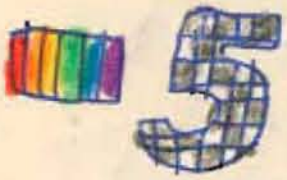
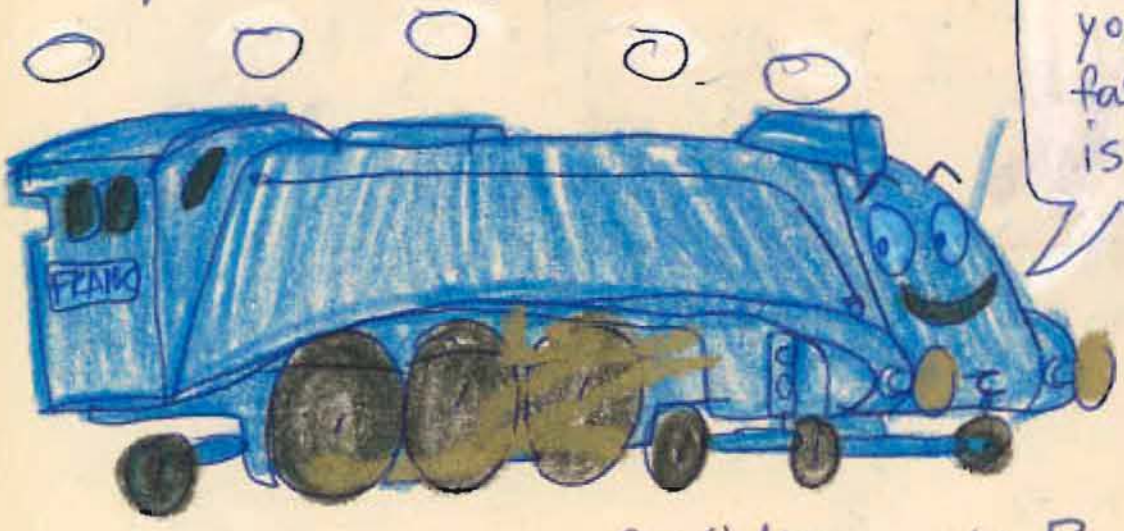
-  goes here

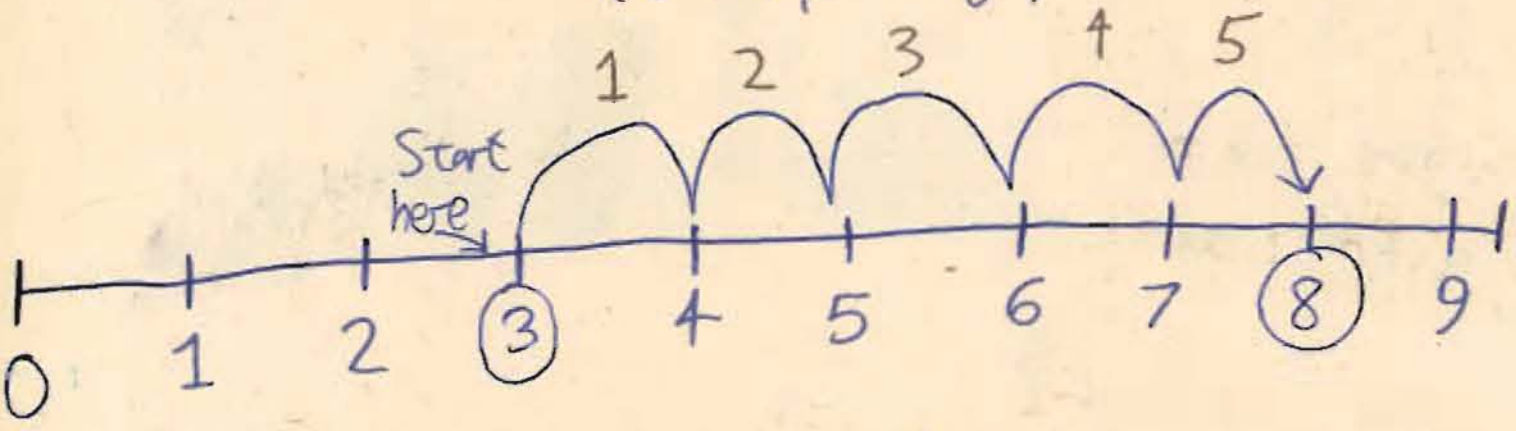
I was constantly decorating those things.

ADDITION



The more that you learn the faster your brain is as I am!

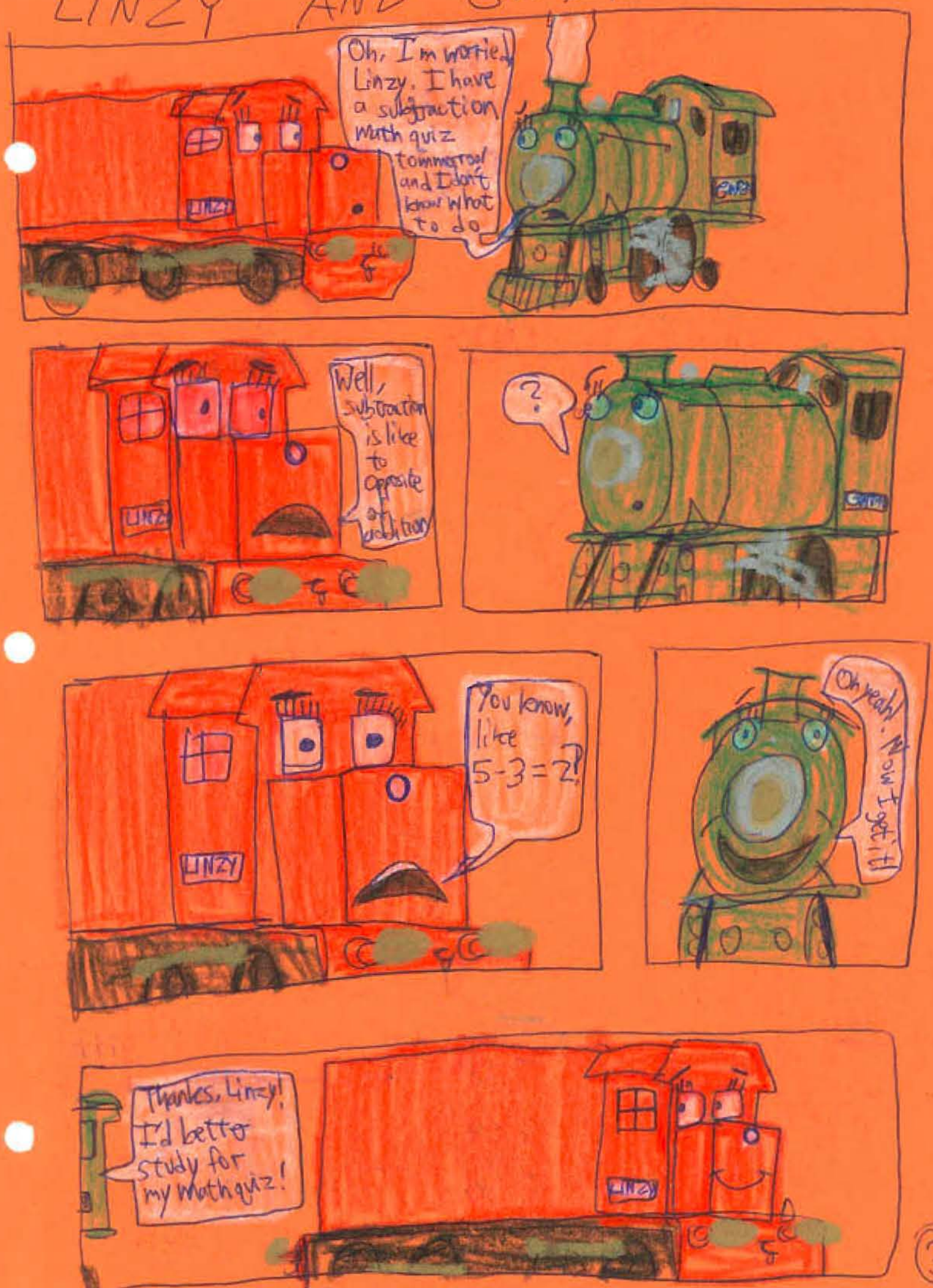
COUNT UP



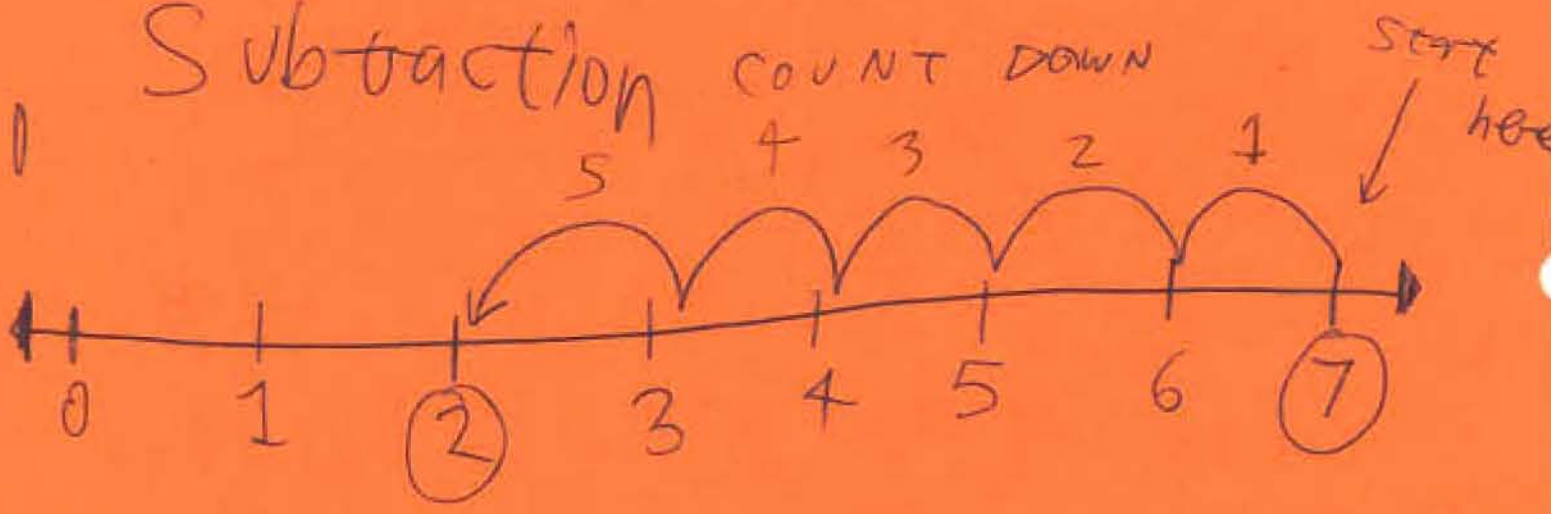
$3 + 5 = 8$

It's one of the easiest math assignment first invented in the subject.

LINZY AND GWEN

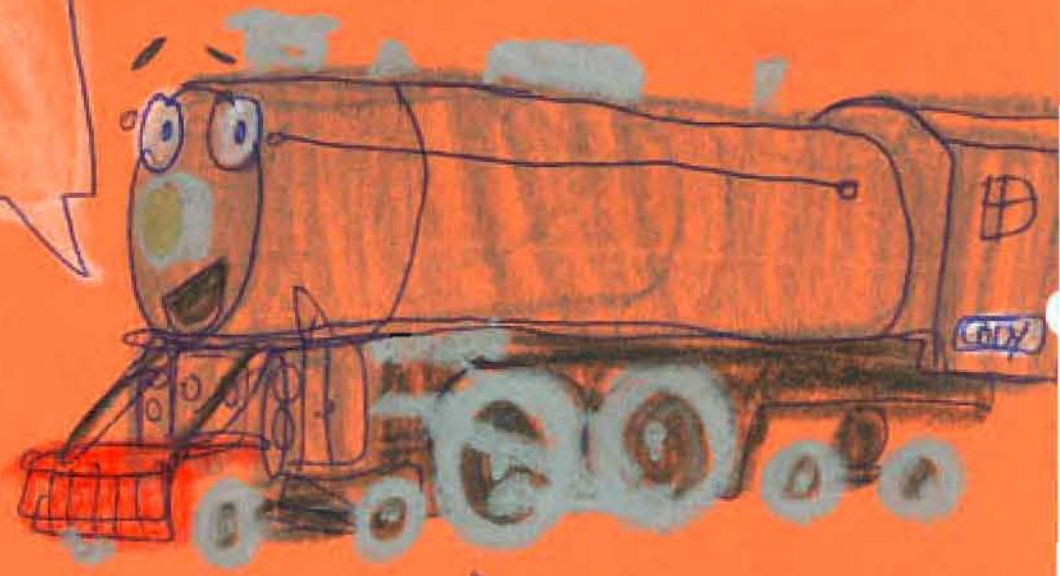


Subtraction



$7 - 5 = 2$

It's kind of like the opposite of addition.



Here's a way on how to regroup in subtraction.

$$\begin{array}{r} {}^{2}\cancel{3}\,{}^{14}\cancel{4} \\ -\ 1\ 8 \\ \hline 1\ 6 \end{array}$$

ADD + and - Numbers

+	+	=	+
−	−	=	−
+	−	=	STEP I: TAKE DIFFERENCE
−	+	=	STEP II: TAKE SIGN OF LARGER NUMBER

ADD:

MORE THAN 2 NUMBERS: GROUP +, − THEN ADD

SUBTRACT → CHANGE TO ADDITION

① $5 - 3 = 5 + -3 = 2$

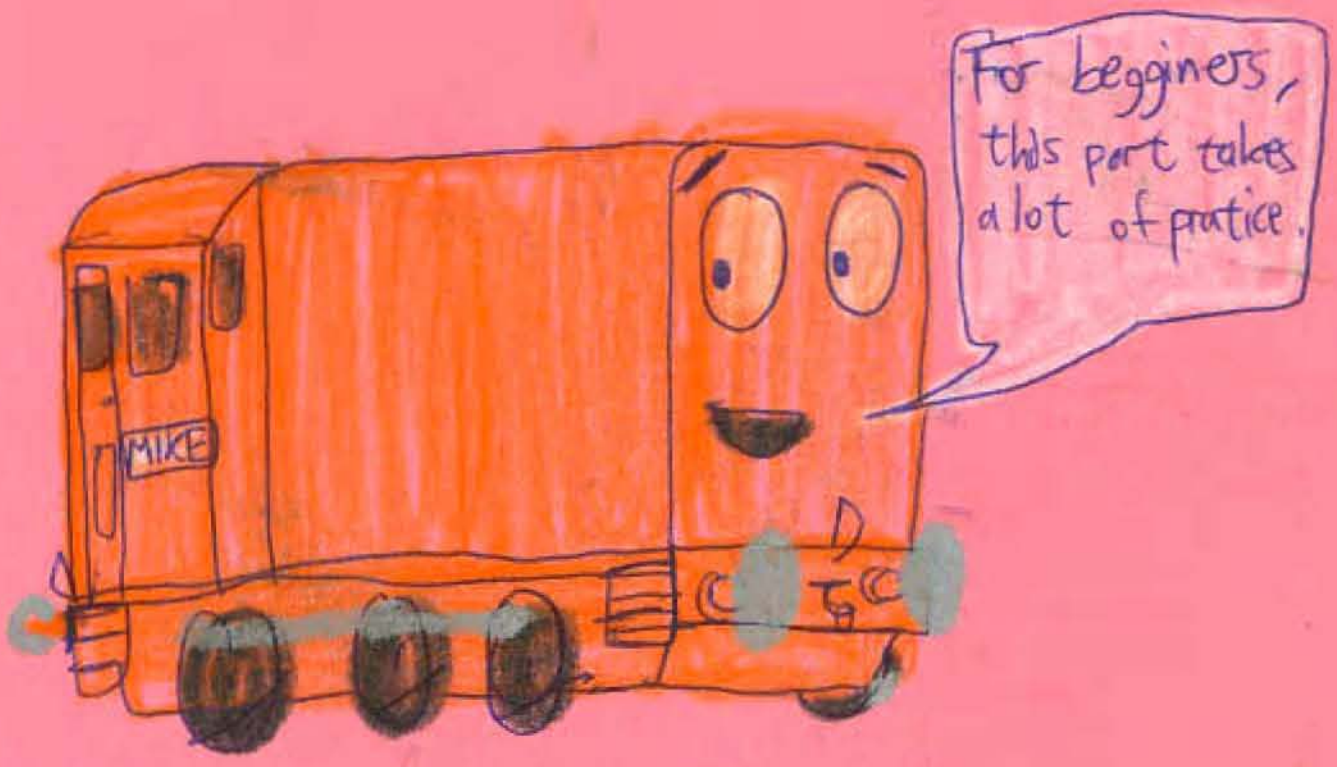
② $-4 - 2 = -4 + -2 = -6$

③ $6 - (-4) = 6 + 4 = 10$

Multiplication

oops!

$2 \times 3 = 6$



Division

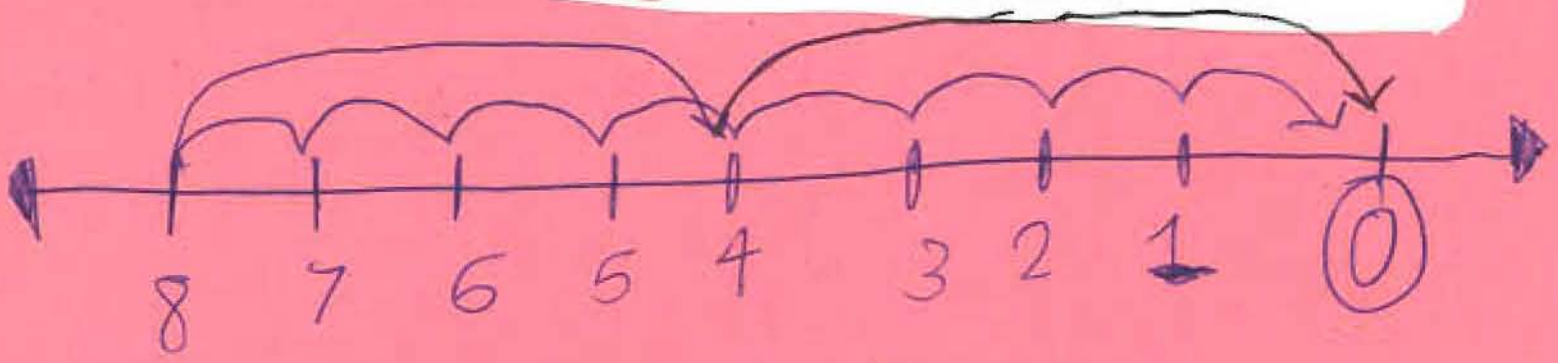
MULTIPLY/Divide: + and − Numbers

+ • + = +	10/-5 = (-2)
+ • − = −	-10/5 = (-2)
− • + = −	-10/-5 = (2)
− • − = +	

MULTIPLY SEVERAL NEGATIVE NUMBERS:

① ODD NUMBER (OF − NUMBERS) = (−)

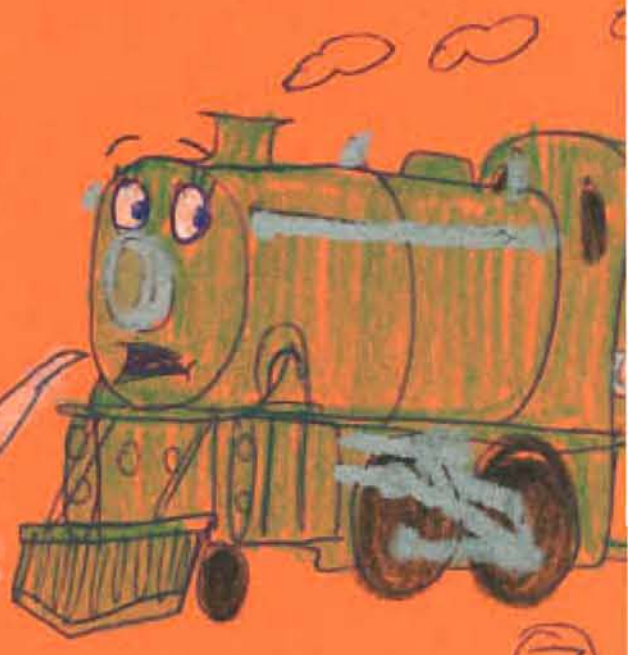
② EVEN NUMBER (OF − NUMBERS) = (+)



$8 \div 4 = 2$

2 PEMDAS

Parethesis ()
Exponents (5^2)
Multiplacation (x)
Division (÷)
Addision (+)
Subtraction (-)



$$(3\times6)+2^2\div2-4=16$$

18

4

2

20

16

3

Simplifying Algebraic Expressions

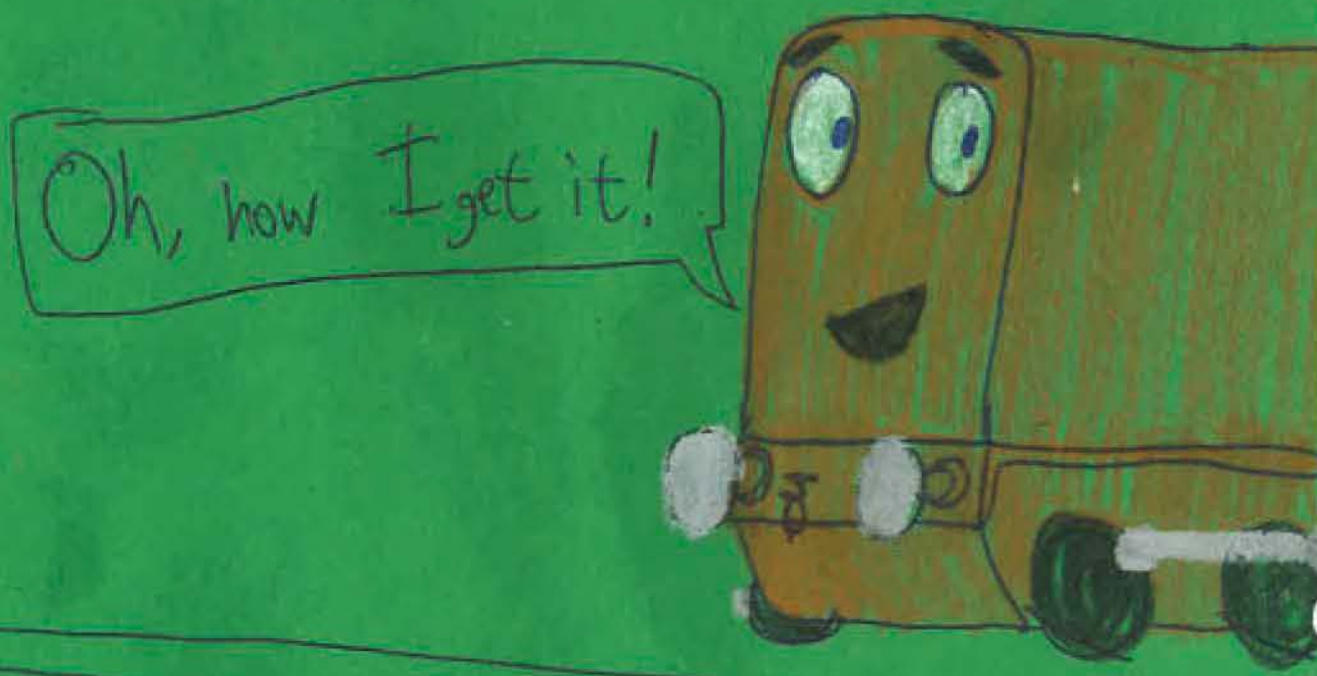
- Collecting Like Terms

$2x + 3x = 5x$ But, $2x + 3y = 2x + 3$

Well, it's because $x + y$ are never like terms.

So, $3x + 2y + y + 5 + 7x + 8y$

$= 10x + 11y + 5$



• Using the distributive property is like $a(b+c) = ab + ac$

This means $a \times b$ or $a \cdot b$.

So,

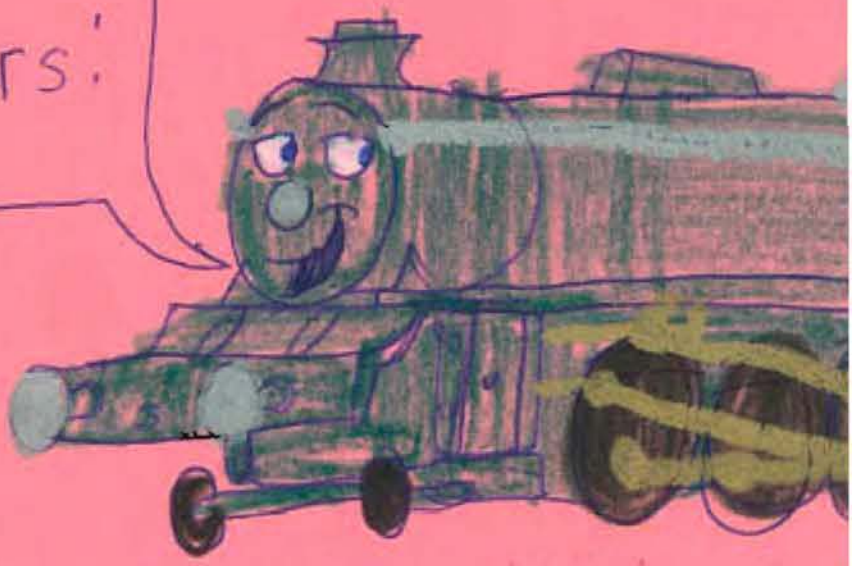
$5(2x-4) = 5 \cdot 2x + 5(-4) =$

$10x - 20$

4

- First

1 steppers:



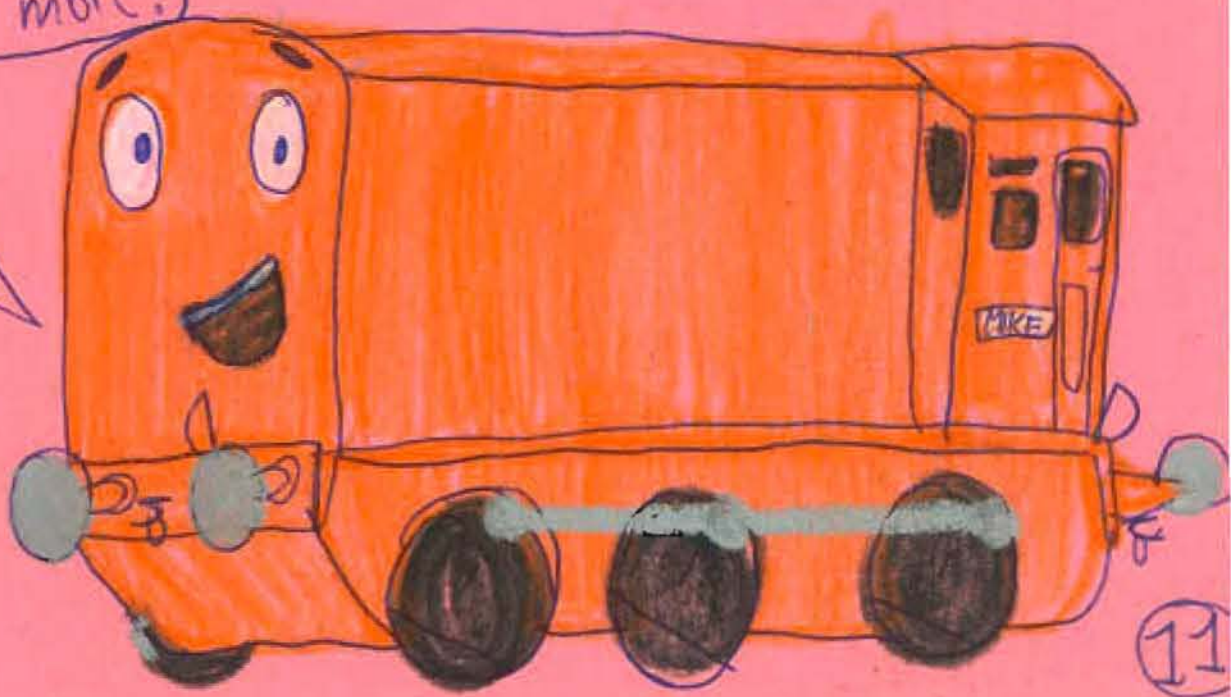
$6 + x = 12$ $x = 6$

$7 - x = 10$ $x = 3$

$5x = 10$ $x = 2$

$24 \div 6 = x$ $x = 4$

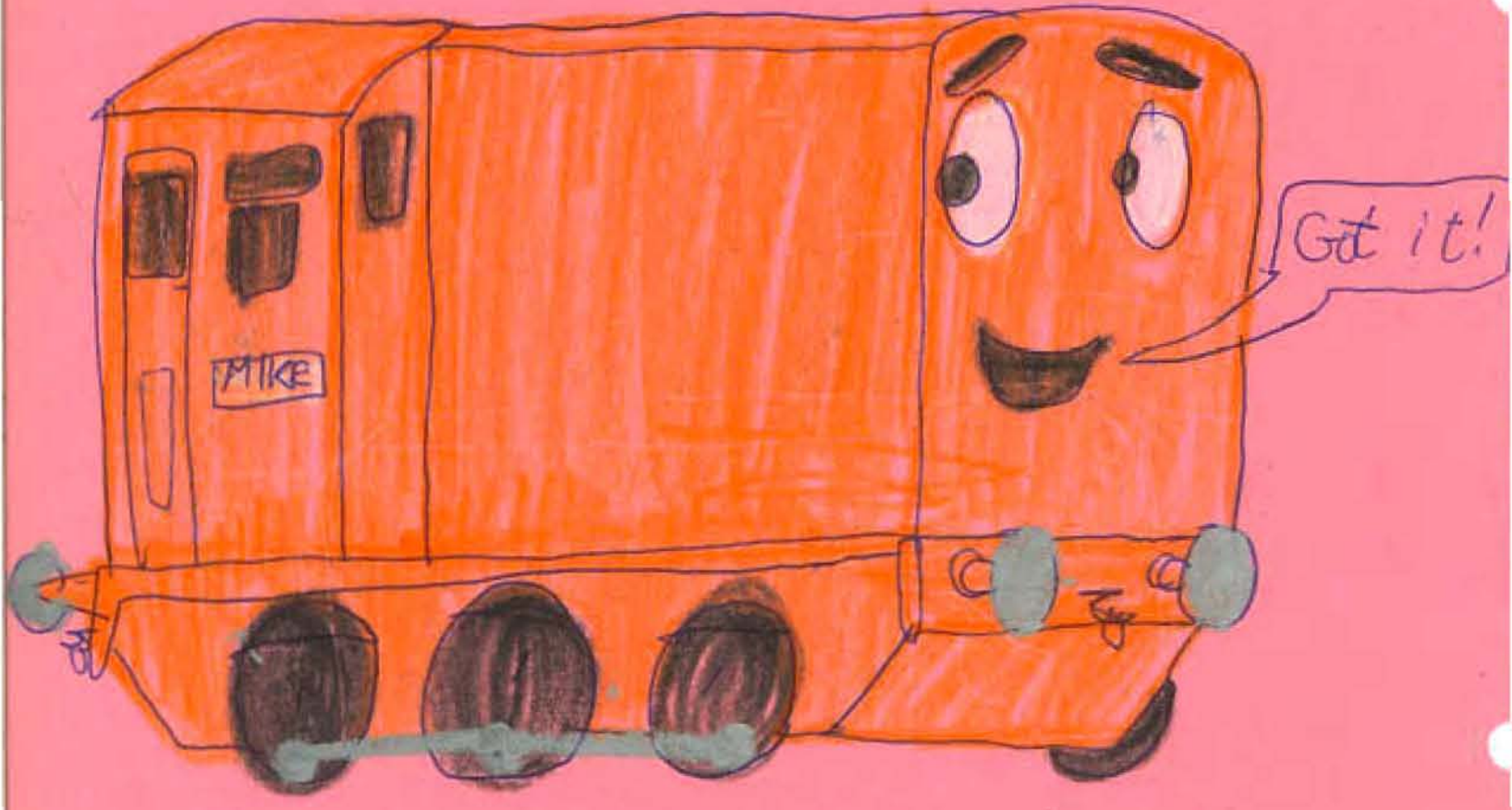
Okay, tell me more!



• Okay now how about 2 steppers!

$6 - 5 + 4 = X$

$10 - 5 = X$ $\boxed{X = 5}$



What about when the variable is on both side?

$12 - x + 4 = 18 + x$

$-x \quad +12 \qquad -x$

① Simplify
② Get x on 1 side

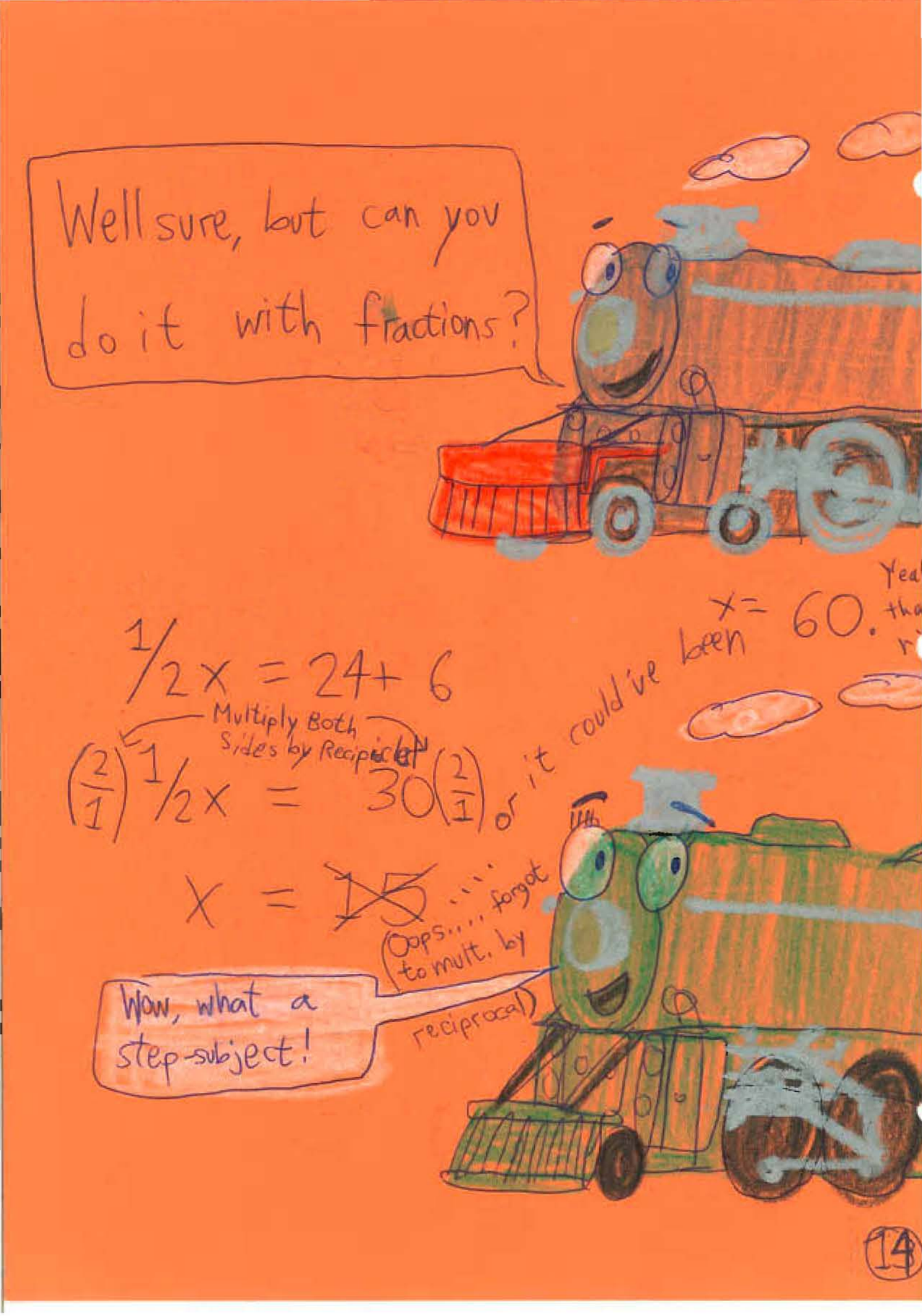
$16 = 18 + 2x$

$-18 \qquad -18$

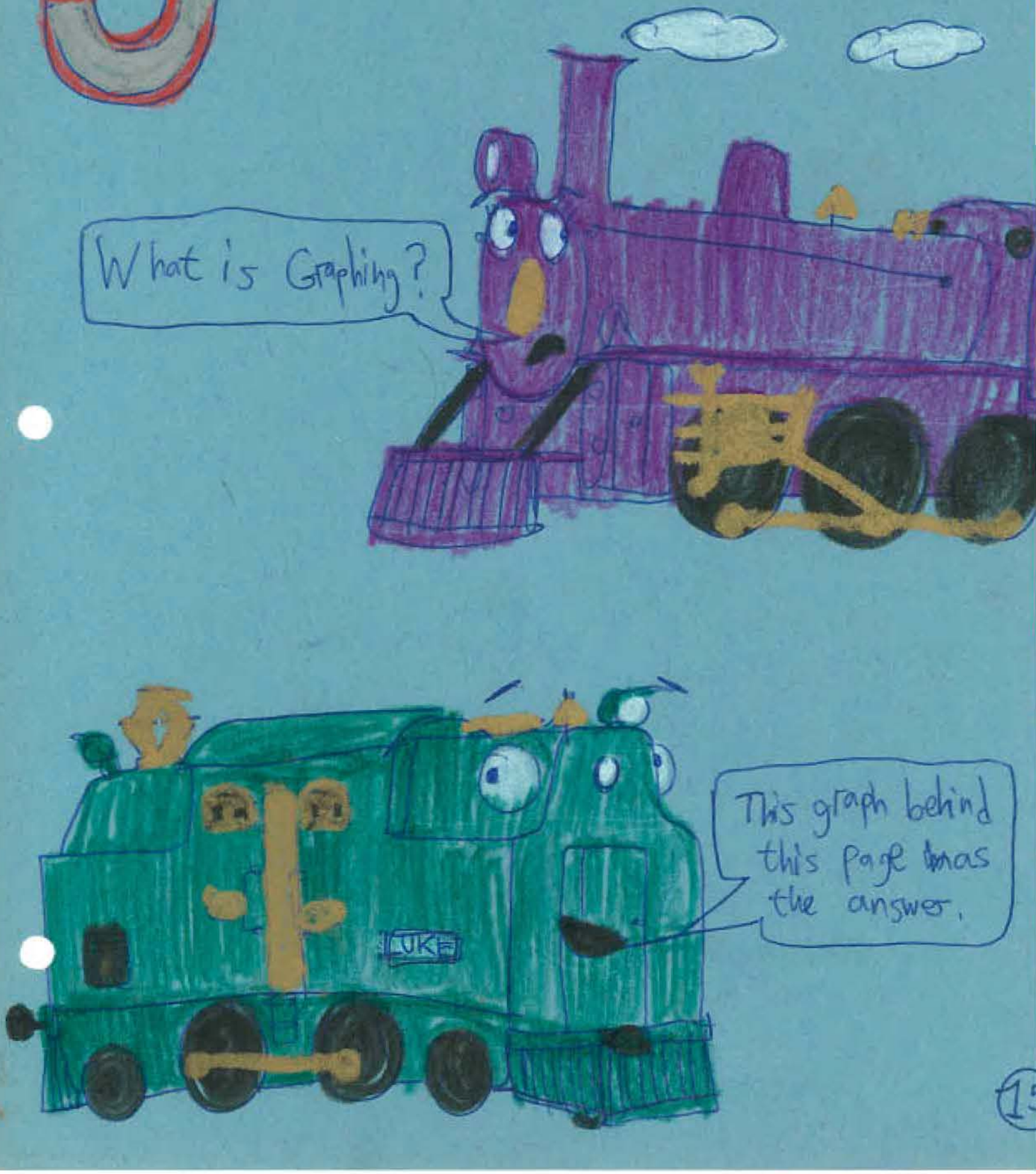
$\frac{-2}{2} \qquad \frac{-2}{2}$

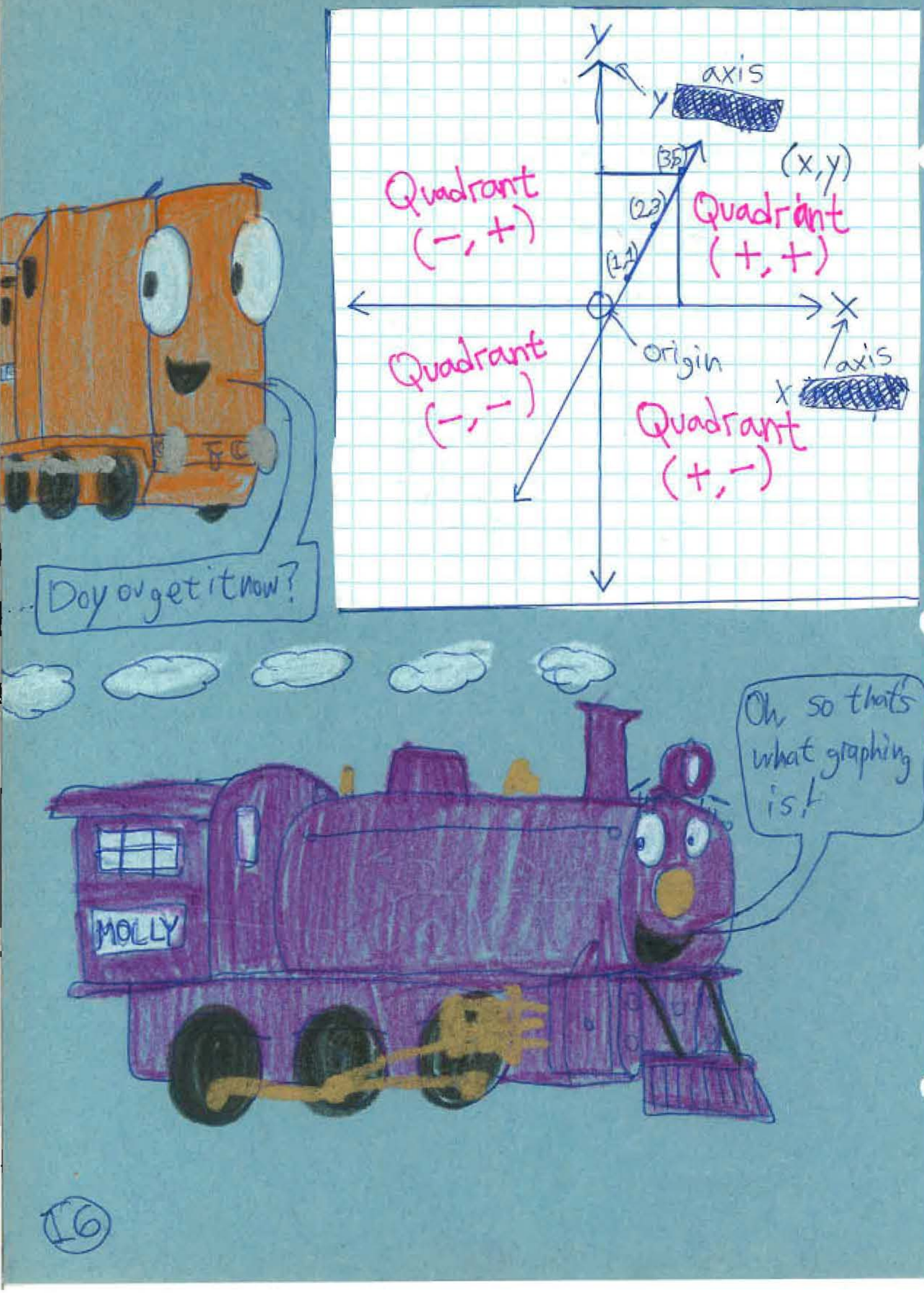
$x = -1$

Notice this is how a 2 stepper


Well sure, but can you do it with fractions?
1/2 x = 24 + 6
Multiply Both Sides by Reciprocal
(2/1) 1/2 x = 30 (2/1)
x = 15 ....
(Oops.... forgot to mult. by reciprocal)
Wow, what a step-subject!
or it could've been x = 60.
Yea
tha
r

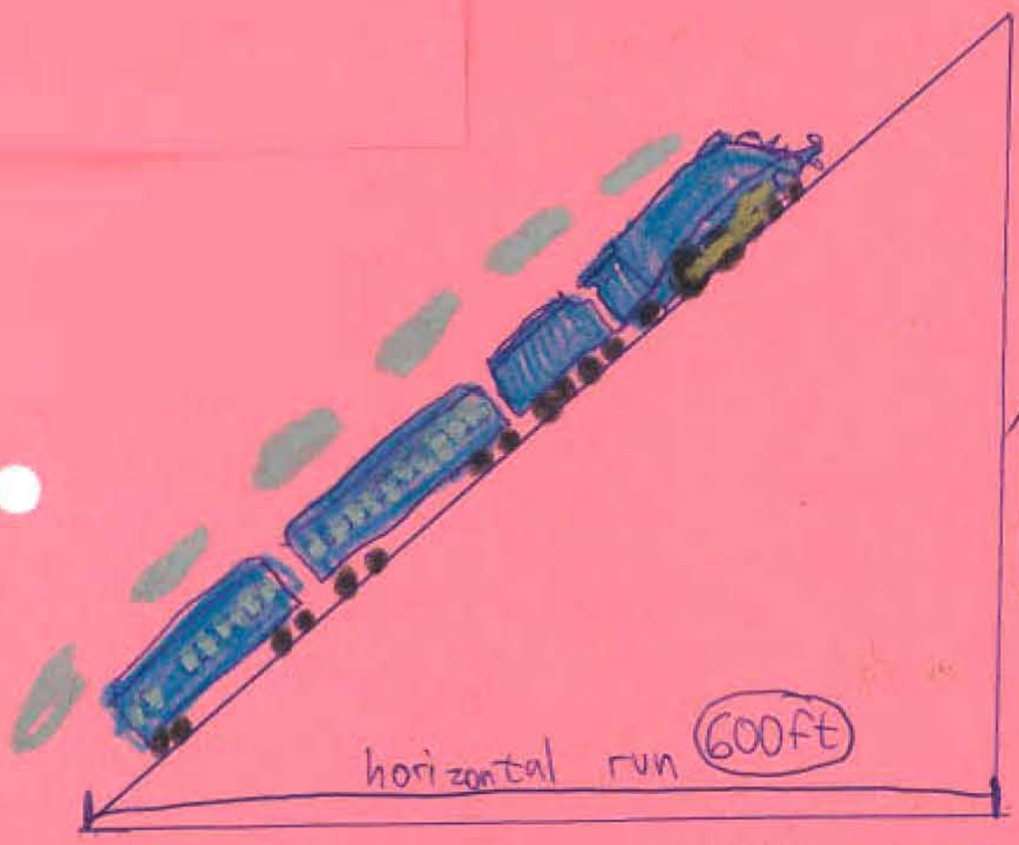
5 Graphing




y
axis
y
(3,5)
(x,y)
Quadrant
(−,+)
(2,3)
Quadrant
(+,+)
(1,1)
x
origin
axis
x
Quadrant
(−,−)
Quadrant
(+,−)
...Day or get it now?
Oh, so that's what graphing is!
MOLLY

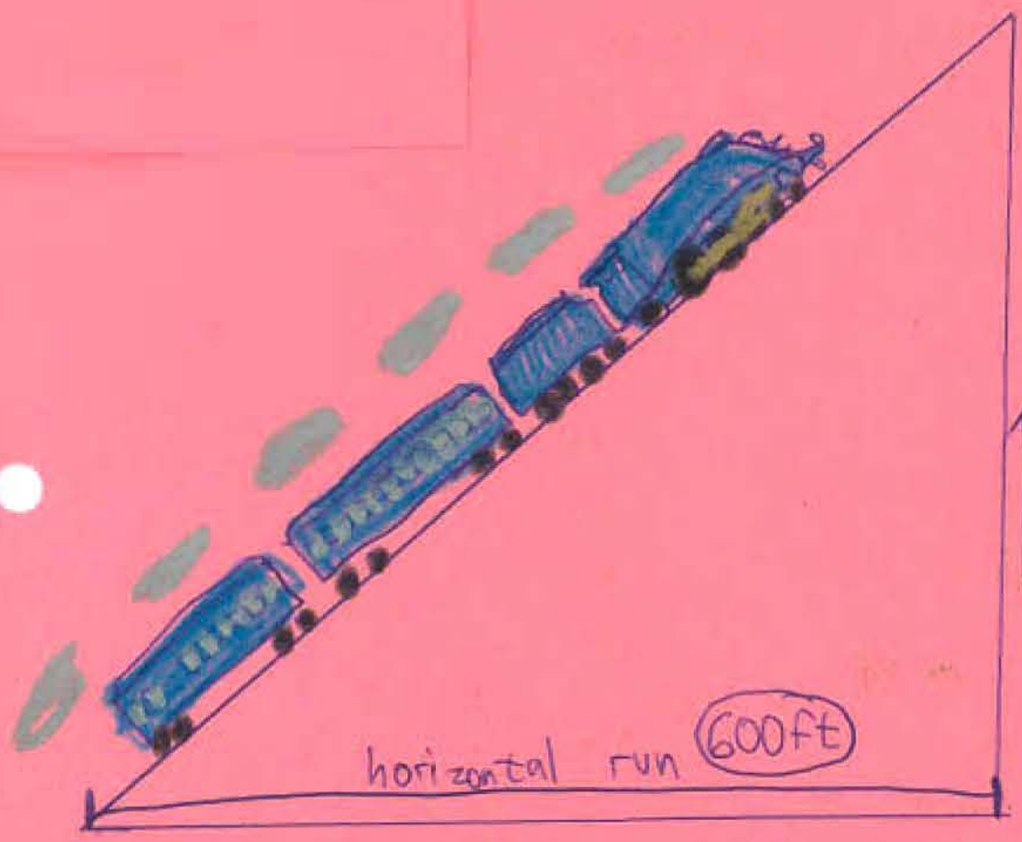
$m = \frac{rise}{run}$

Slope = steepness (m)



$m = \frac{rise}{run}$

Slope = Steepness (m)

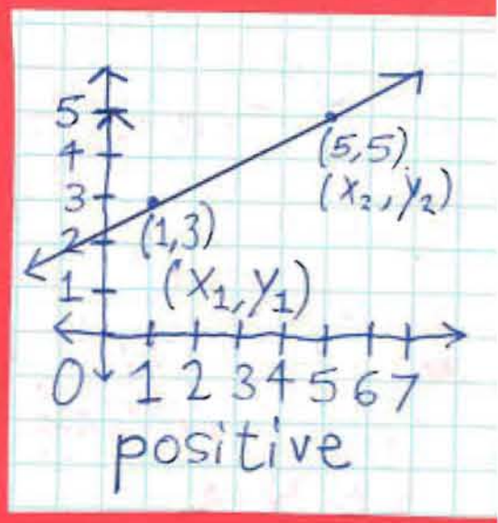


Look at this triangle above me.

$$m = \frac{\text{vertical rise}}{\text{horizontal run}}$$

So here, $\frac{50}{600} = \frac{1}{12}$ = slope (m)

Positive Slope



$$m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_2} = \frac{5-3}{5-1} = \frac{2}{4} = \frac{1}{2}$$

$$\frac{\text{Change in y coordinates}}{\text{Change in x coordinates}}$$

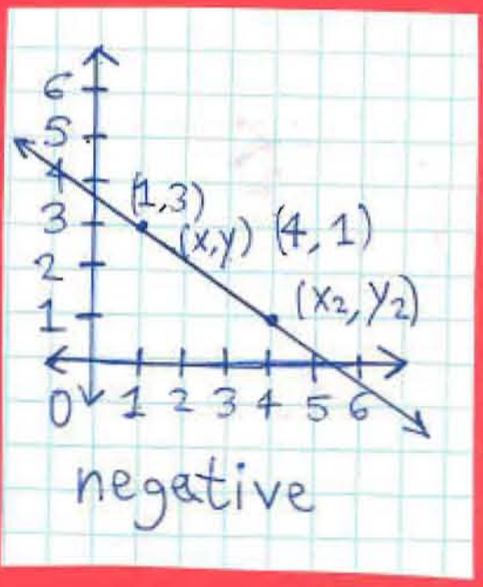
It's like going up hill.

Negative Slope

It's like going downhill!

$$m = \frac{\text{rise}}{\text{run}}$$

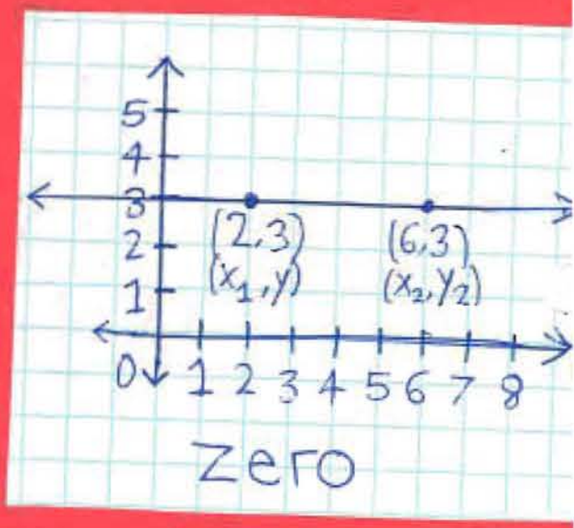
$$\frac{y_2 - y_1}{x_2 - x_1}$$



$$\frac{1-3}{4-1} = \frac{-2}{3}$$

See it's negative or down hill.

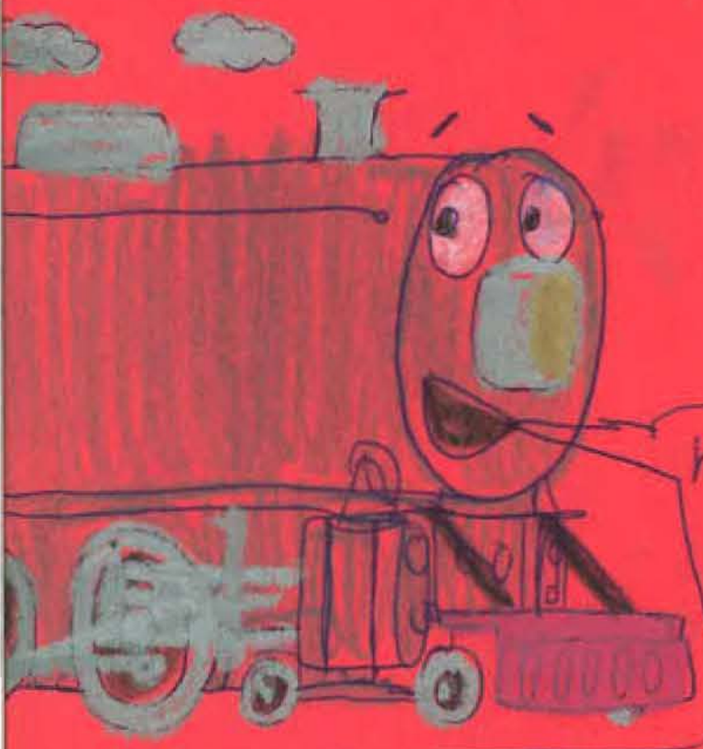
Zero Slope

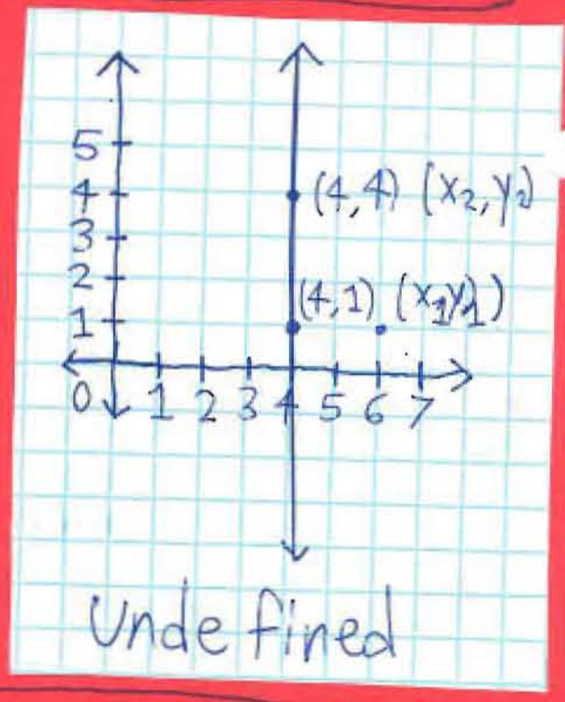


$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\frac{3-3}{6-2} = \frac{0}{4} = 0$$; Its flat!

Undefined Slope





$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4-1}{4-4} = \frac{3}{0}$$

When you divide by zero, the fraction has no meaning, so the slope is undifined (and it looks straight up and down.

X- intercept and y- intercept to Graph a Line

The y-intercept is the y-coordinate of a point where a line crosses the y-axis.

Try using $y = Mx + B$.

Here's a solution.

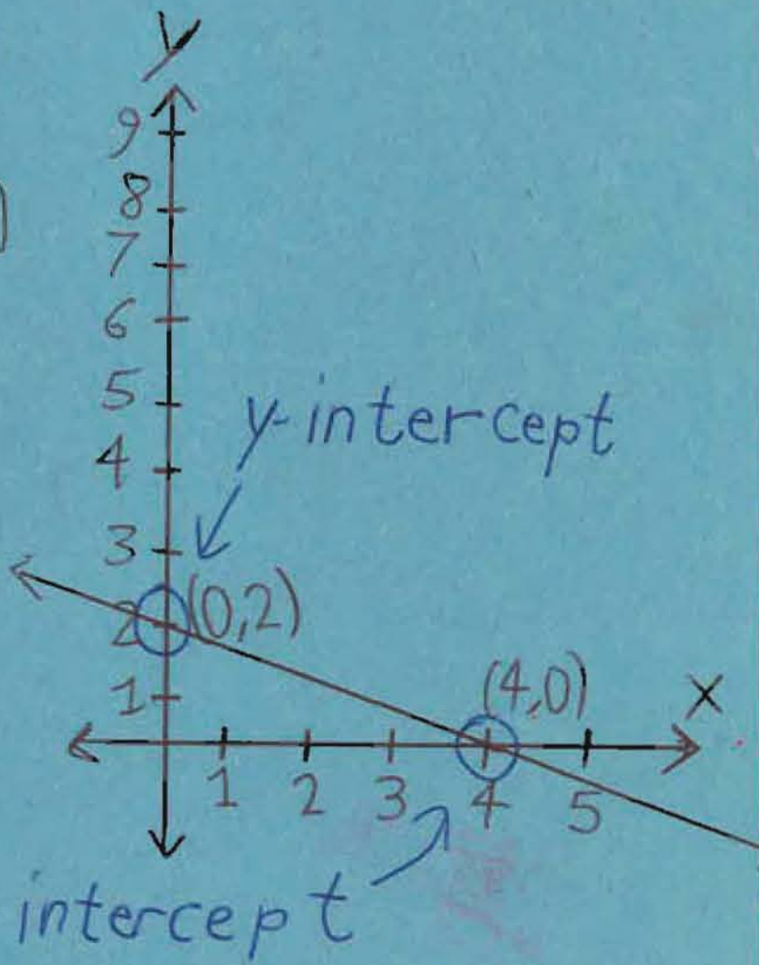
$3x + 6y = 12$

$3x + 6(0) = 12$

$\boxed{x = 4}$

$3(0) + 6y = 12$

$\boxed{y = 2}$



Putting equations in slope-intercept form

$2x - y = -10$

$-2x \quad -2x$

$\frac{-y}{-1} = \frac{-2x}{-1} - \frac{10}{-1}$

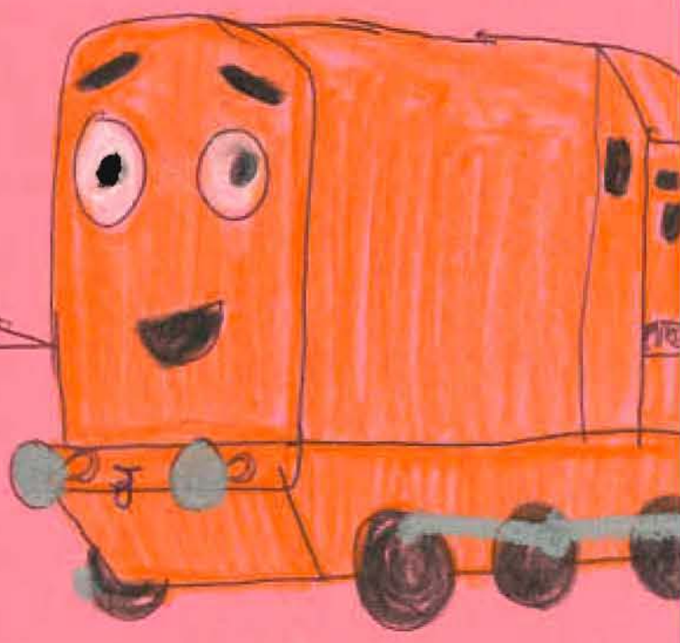
$y = 2x + 10$

Find the slope and y-Intercept

The y-intercept is the value of y when $x = 0$.

Answer: The slope is 2. The y-intercept is 10.

6 Getting a Table into Graph Form



1) Start with an equation

$$-4x + y = -6$$

2) Solve for y (function form)

$$y = 4x - 6$$

3) Choose a point for x

0 → $y = 4(0) - 6$

1 → $y = 4(1) - 6$

2 → $y = 4(2) - 6$

4) Solve for y

0 $y = -6$

1 $y = -2$

2 $y = 2$

5) Make a table

x	0	1	2
y	-6	-2	2

Graphing using a table

Now that we have a table...

x	0	1	2
y	-6	-2	2

1) ... make the table numbers into ordered pairs

x
y

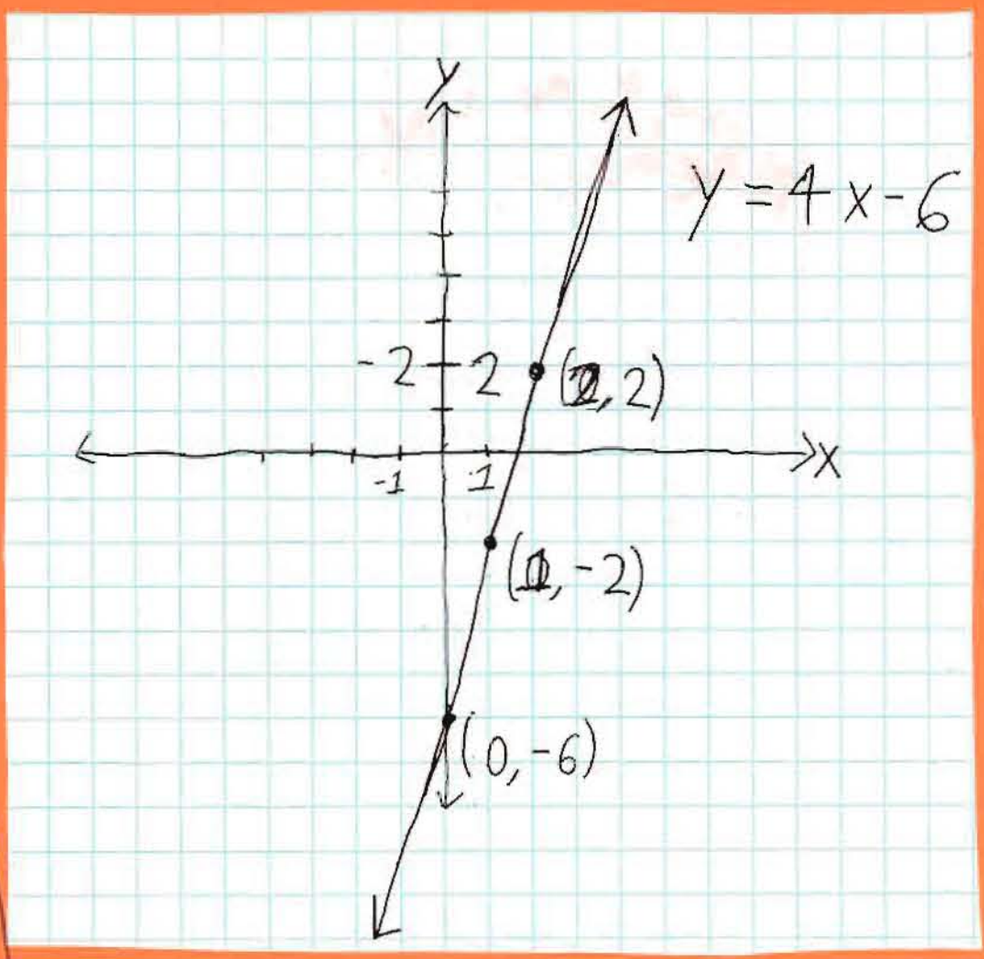
→ (x, y)

x	0	1	2
y	-6	-2	2

(x, y) (0, -6) (1, -2) (2, 2)

2) Graph the ordere

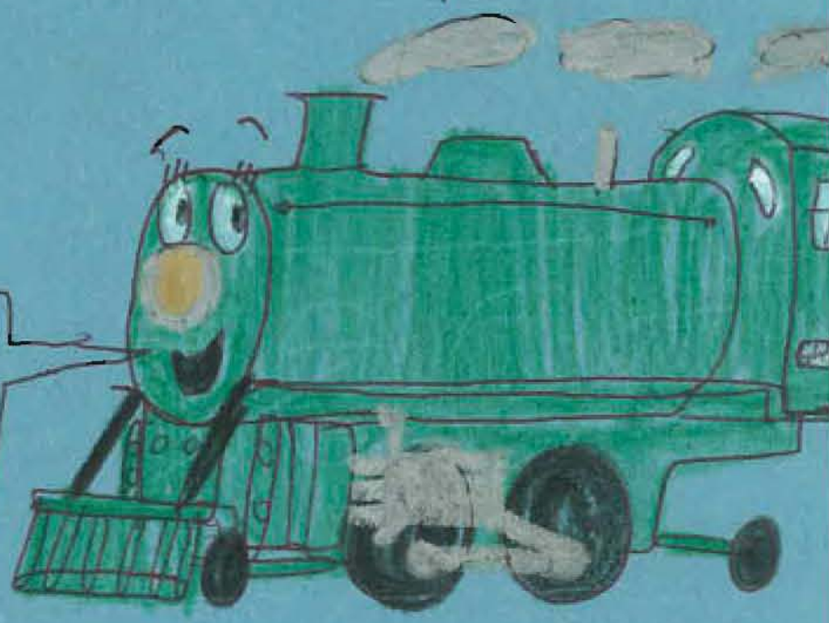
pairs,



3) And graph

the line

Graphing using x- and y- intercept



1) Make y zero to find where the line crosses the x-axis

$3x + 5y = 15$

$3x + 5(0) = 15$ → solve → $\boxed{x = 3}$

↑ $y = 0$

2) Make x zero to find where the line crosses the y-axis

$3x + 5y = 15$

$3(0) + 5y\ 15$ → solve → $y = 3$

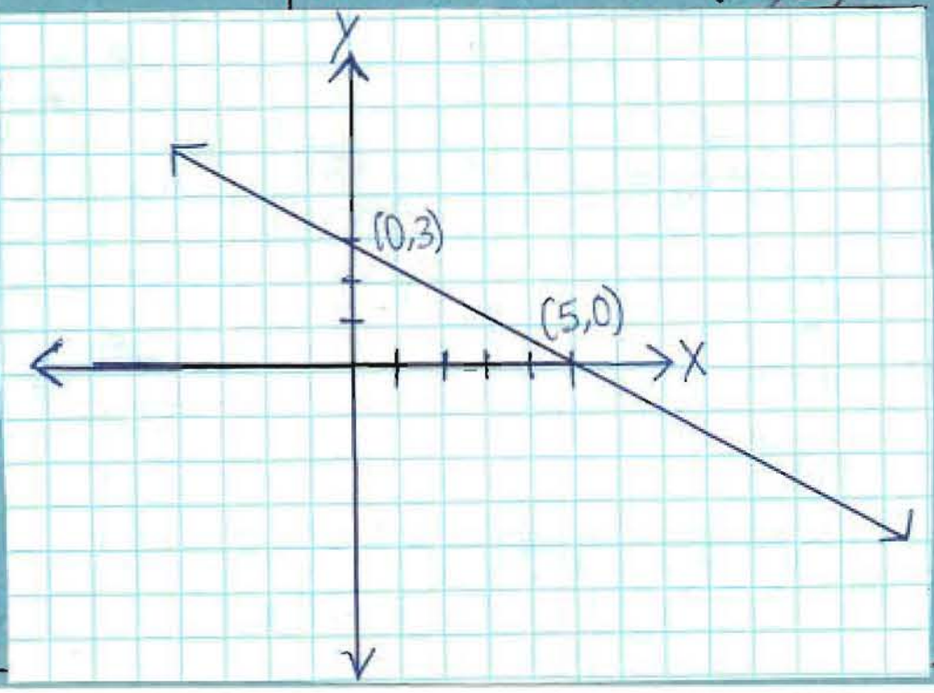
↑ $x = 0$

3) Make ordered pairs out of the intercepts

x - intercept = 5 ⟶ (5,0)

y - intercept = 3 ⟶ (0,3)

4) Graph



Graphing using Slope-Intercept Form

1) Slope-intercept means:

$y = mx + b$

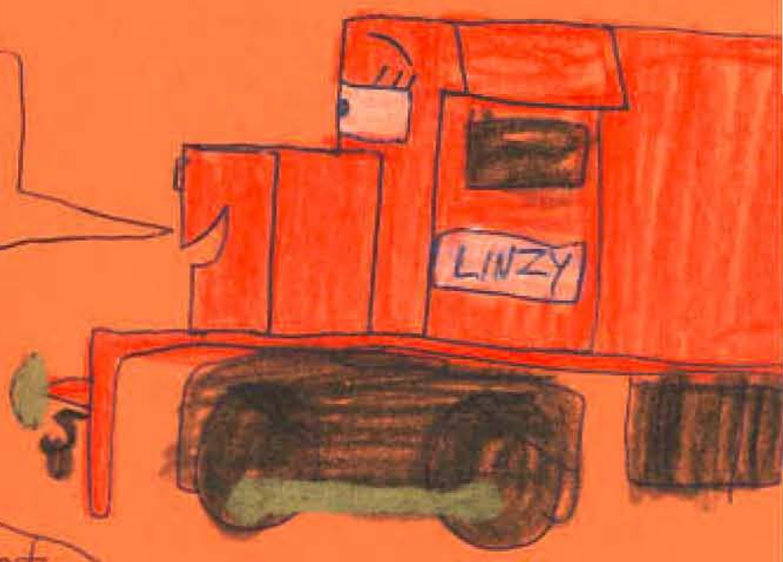
m = slope b = y-intercept

So isolate those:

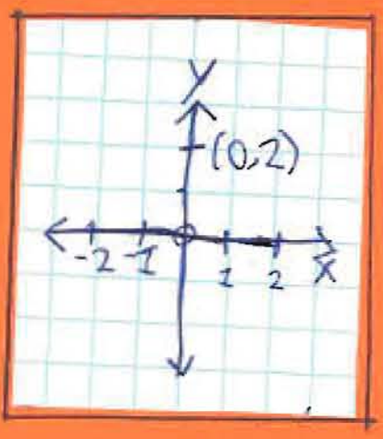
$y = -3x + 2$

$m = -3$

y-intercept = 2

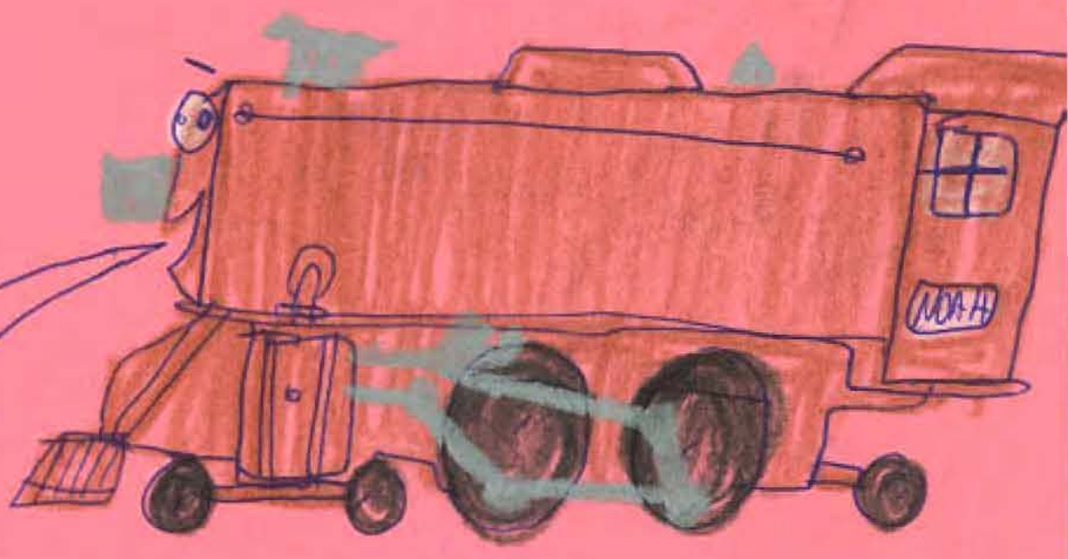


2) Plot the y-intercept

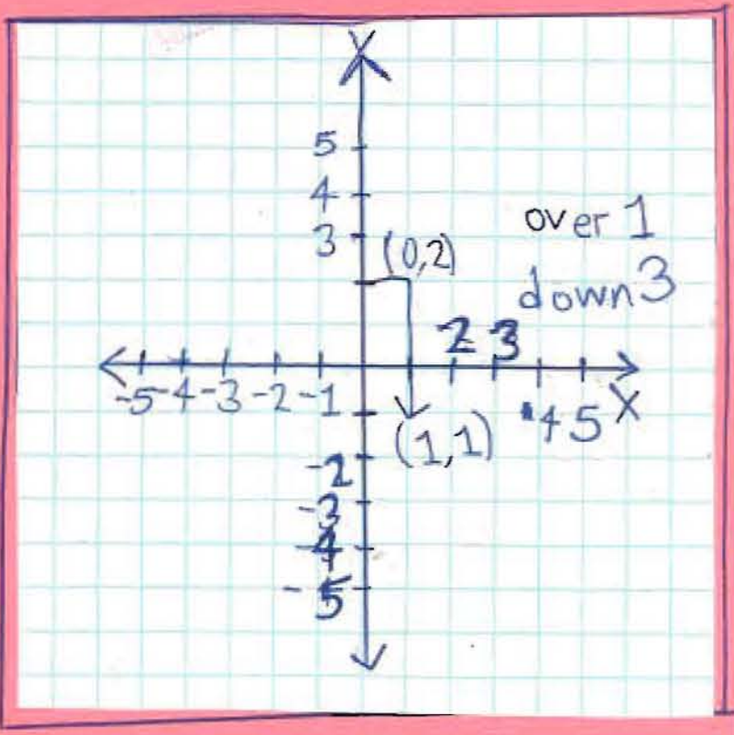


How does that ever get me out of this chicken suit?

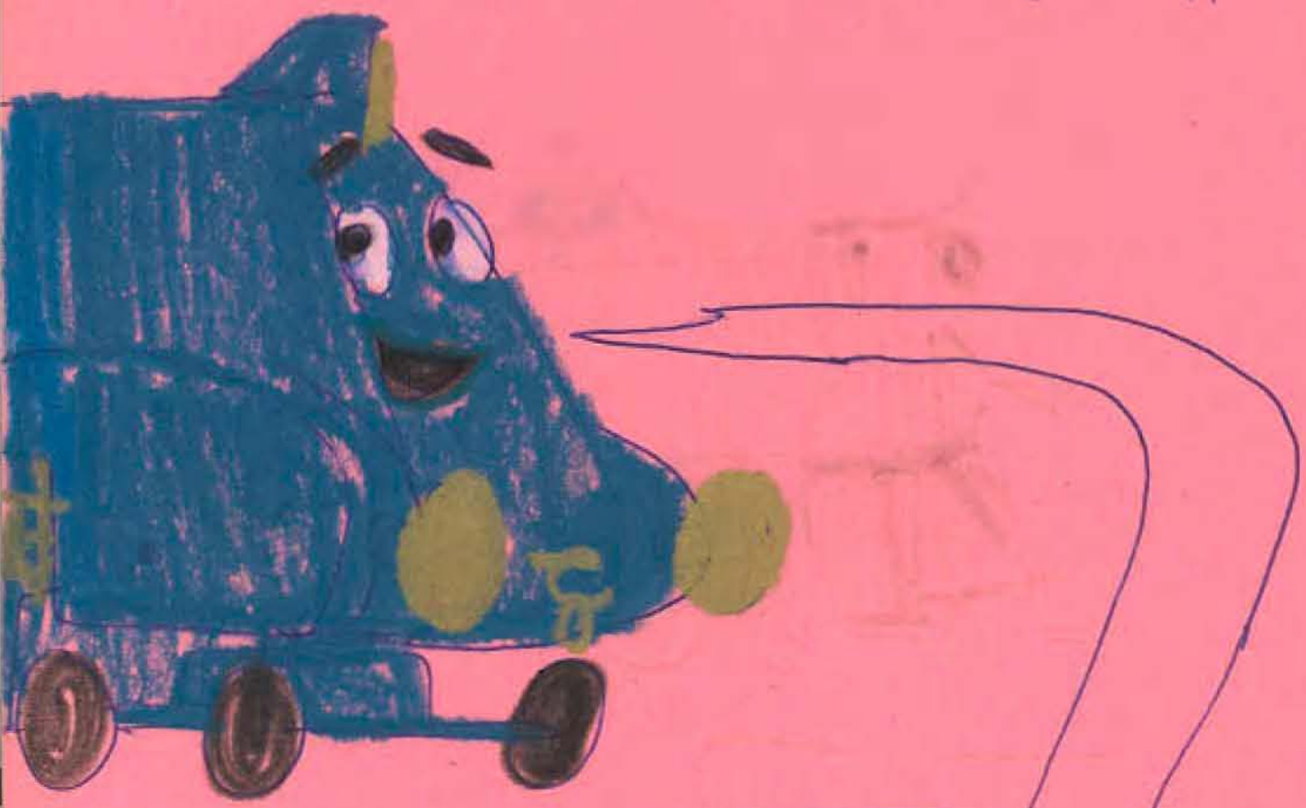
3) Use the slope to find another point

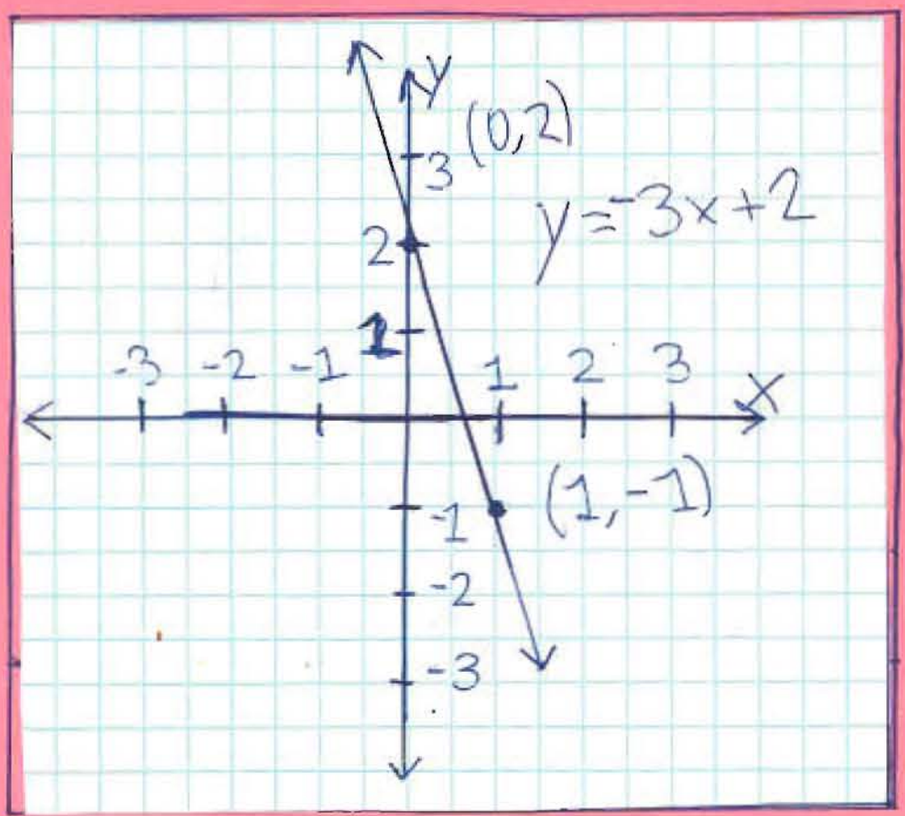


$$m = \frac{-3}{1} = \frac{\text{rise}}{\text{run}}$$



4) Graph the line on top





$$\begin{array}{r} {}^{2}\cancel{3}\,{}^{1}\cancel{4} \\ -\cancel{1}\cancel{8} \\ \hline 16 \end{array}$$

THE END

$$6\overline{)600}\ \ 10$$

$$10 \times 10$$

$$100$$

$$2 + 4 + 6 + 8 + 10 = 30$$