

Let's Talk! Assisting Struggling Learners to Successfully Engage in Mathematical Communication



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Writing/Discussion Ideas for Mathematics

The following is a sample list of ideas that can be used in your mathematics classroom to promote discussion and/or writing. Students can use images, manipulatives etc., to assist them with their explanations. You may need to modify the content to suit the learning needs of your students. Encourage students to explain the mathematical reasons for their responses.

Explain why $\frac{1}{2}$ is larger than $\frac{1}{4}$.

Is the following statement, $25 + 18 = 35$ correct or incorrect? Prove it.

What would happen if everybody measured 2 cm in height?

A number is $\frac{1}{3}$ larger than 75. What is the number? How do you know?

Does the following equation make sense? $0.2 + 3.0 = 5.0$ Why? Why not?

Write a poem describing your favorite geometric shape. Remember, you have to include mathematical information.

If mathematics were an animal what type of animal would it be?

What do you like or dislike about mathematics?

Draw a picture to show why $\frac{1}{2}$ of 12 = 6 and $\frac{1}{4}$ of 12 = 4.

Describe different ways to figure out which fraction is larger; $\frac{3}{5}$ or $\frac{6}{8}$.

Represent 0.45 visually in 3 different ways.

Describe two strategies you could use to estimate the answer to the following question:
 $345 + 45 + 67 = 23 =$

Was there anything in today's lesson that you found challenging? Please explain.

Explain why you think you need to know how to divide numbers.

Writing/Discussion Ideas for Mathematics

What is the difference between your strategy and your partner's strategy? What is similar?

If you could change how mathematics is taught in schools, what you do?

Write mathematics autobiography that highlights the experiences in mathematics that you have had in school from as far back as you can remember.

Which of the two strategies we used today do you think is most effective? Why?

Write a word problem for the following; $\frac{1}{2} + \frac{2}{4} =$

Describe the difference between .001 and .1.0

Explain the difference between perimeter and surface area.

What do you think would happen if we got rid of all of decimals in mathematics?

What is probability?

How many different ways can you solve $25 - 18 =$?

If you could be a number which number would you be and why?

Complete the following sentence:

I need to learn more about..., I know I have learned something when... If I could change one thing about this project it would be....

The solution is $X = 6$. What might the equation have been?

What do you think your partner has learned?

What do you think is the most important idea you learned today?

What strategies did you use to solve this problem? Why did you choose this strategy?

My Math Talk

- ☐ Can I explain my ideas well?
- ☐ Do I listen well?
- ☐ Do I use math words?
- ☐ Can I explain other people's ideas in my own words?
- ☐ Do I ask questions that help others learn?

Math Expressions: Developing Student Thinking and Problem Solving Through Communication

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My Math Reading: Word Problems

- ☐ Do I read the problem at least two times?
- ☐ Do I retell the problem in my own words?
- ☐ Do I create pictures in my mind to make the problem clearer?
- ☐ Do I relate the problem to my daily life?
- ☐ Do I check whether my answer makes sense?

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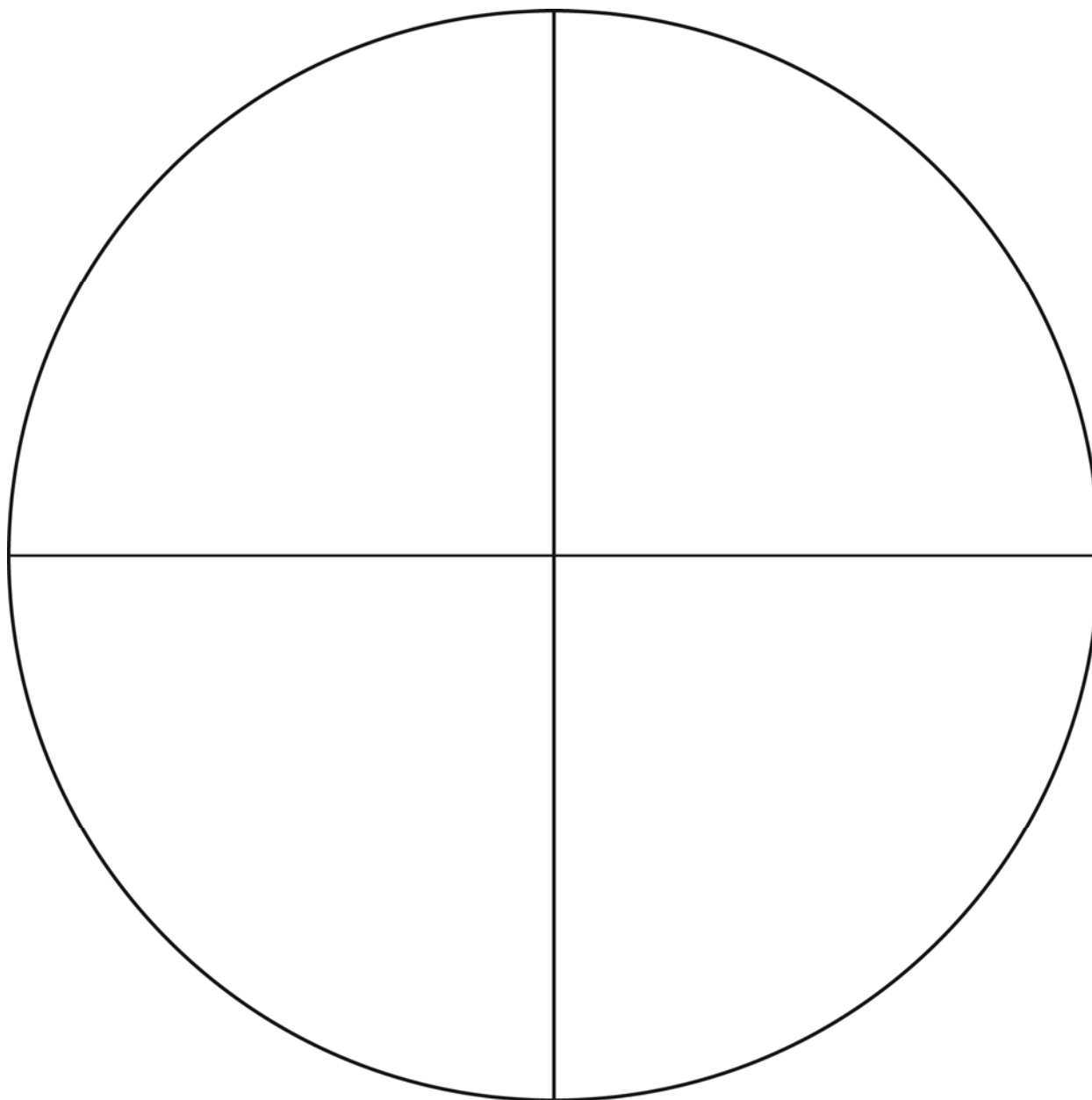
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Four-Part Concept Circle

Name _____

Date _____

Concept: _____

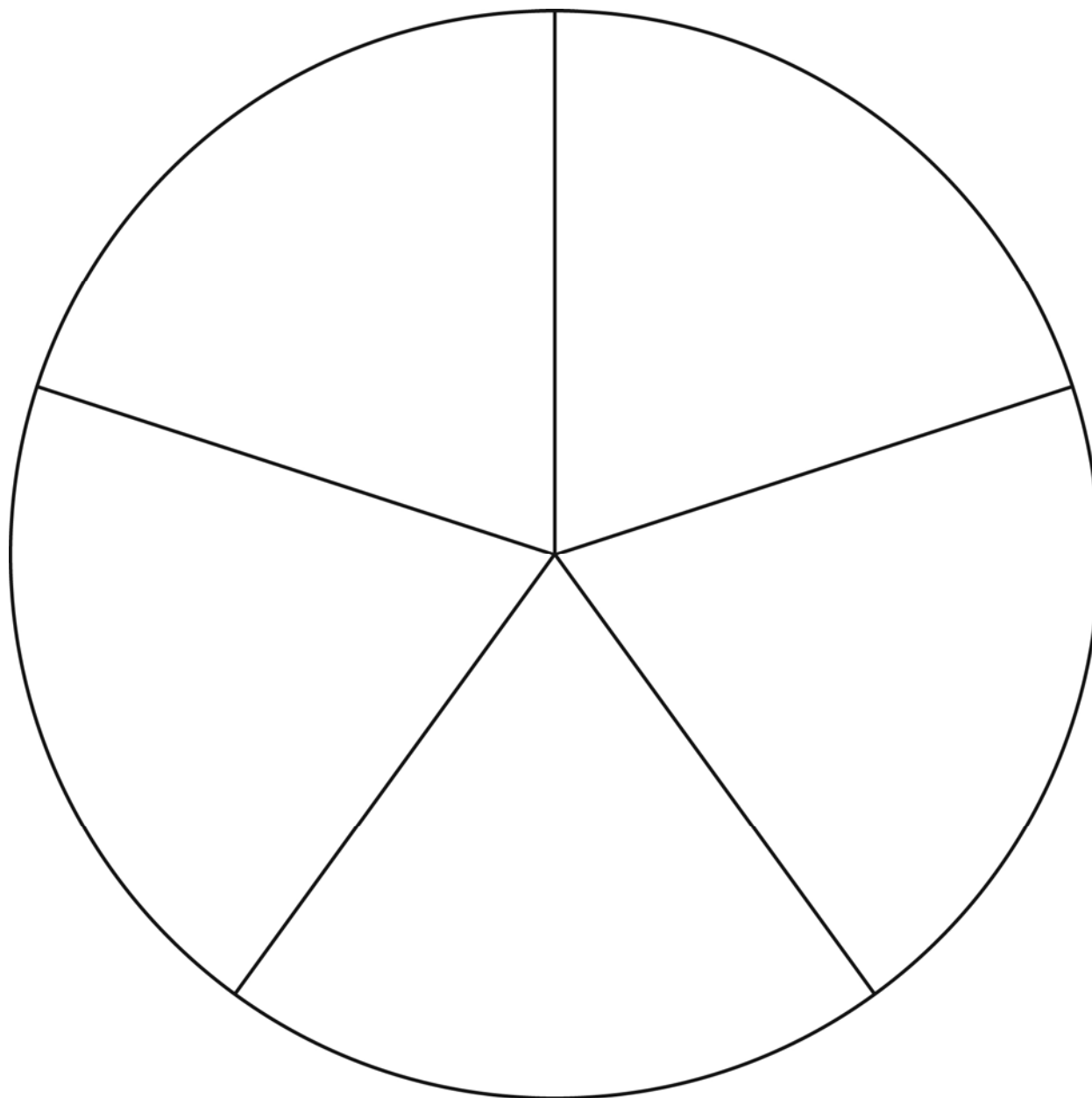


Five-Part Concept Circle

Name _____

Date _____

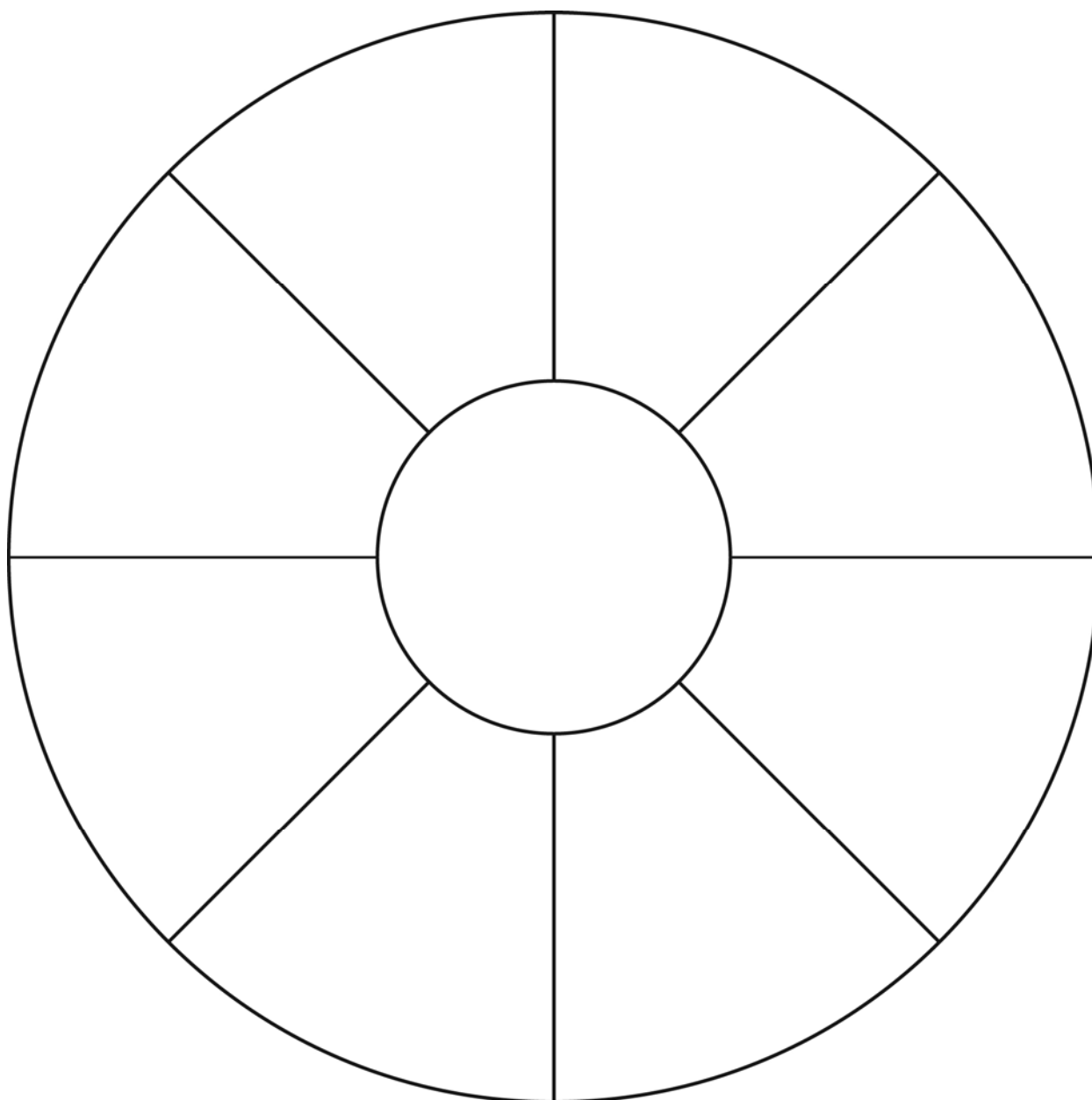
Concept: _____



Eight-Part Concept Circle

Name _____

Date _____



Mathematical Recipes



Algebra Recipe 1

$$\begin{aligned} r &= 2p + 1 \\ p &= 2(b - 1) \\ b &= 3 \end{aligned}$$

r = number of red cubes
 p = number of pink cubes
 b = number of blue cubes

Algebra Recipe 2

$$\begin{aligned} r &= y^2 - 4 \\ y &= b + 2 \\ b &= 1 \\ p &= 3b - 2 \end{aligned}$$

r = number of red cubes
 y = number of yellow cubes
 b = number of blue cubes
 p = number of pink cubes

Algebra Recipe 3

$$\begin{aligned} g &= b^2 - 6y \\ b &= 2y \\ y &= 2(6 - 5) \end{aligned}$$

g = number of green cubes
 b = number of blue cubes
 y = number of yellow cubes

Algebra Recipe 4

$$\begin{aligned} b &= 2(y^2 + 5) - 12 \\ y &= 2g - 2 \\ g &= 2 \\ p &= b - 4 \end{aligned}$$

b = number of blue cubes
 y = number of yellow cubes
 g = number of green cubes
 p = number of pink cubes

Mathematical Recipes

**Recipe 1**

6 yellow cubes
3 fewer green cubes than yellow cubes
2 fewer black cubes than green cubes
3 more red cubes than black cubes

Recipe 2

5 red cubes
3 fewer grey cubes than red cubes
2 more black cubes than red cubes
5 more green cubes than red cubes

Recipe 3

2 more black cubes than green cubes
3 more green cubes than grey cubes
2 grey cubes
1 more red cube than grey cubes

Recipe 4

3 more red cubes than orange cubes
3 more green cubes than pink cubes
5 orange cubes
3 pink cubes



Mathematical Recipes

Train Recipe

5 more blue cubes than yellow cubes

6 green cubes

4 more white cubes than green cubes

2 yellow cubes



Train Recipe

There are twice as many green cubes as blue cubes.

4 blue cubes

2 fewer pink cubes than black cubes

1 fewer black cube than blue cubes

Mathematical Recipes

Fraction Train Recipe

$\frac{1}{2}$ of the train is yellow cubes

$\frac{1}{3}$ of the train is green cubes

The train is made up of 12 cubes

$\frac{1}{6}$ of the train is black cubes

Make the train.



Fraction Train Recipe

$\frac{1}{2}$ of the cubes are red

2 grey cubes

1 more black cube than grey cubes

Mathematical Recipes

**Fraction Recipe 1**

$\frac{1}{15}$ of the train is grey
 $\frac{9}{15}$ of the train is red
 $\frac{5}{15}$ of the train is green

Fraction Recipe 2

$\frac{1}{2}$ of the train is green
 2 cubes are black
 $\frac{3}{10}$ of the train is grey
 10 cubes in all

Percent Recipe 1

10% of the train is blue
 30% of the train is green
 20% of the train is black
 40% of the train is yellow

**Percent Recipe 2**

50% of the train is blue
 20% of the train is yellow
 20% of the train is red
 10% of the train is pink



Mathematical Recipes

**Recipe 1**

6 yellow cubes
3 fewer green cubes than yellow cubes
2 fewer black cubes than green cubes
3 more red cubes than black cubes

Recipe 2

5 red cubes
3 fewer grey cubes than red cubes
2 more black cubes than red cubes
5 more green cubes than red cubes

Recipe 3

2 more black cubes than green cubes
3 more green cubes than grey cubes
2 grey cubes
1 more red cube than grey cubes

Recipe 4

3 more red cubes than orange cubes
3 more green cubes than pink cubes
5 orange cubes
3 pink cubes



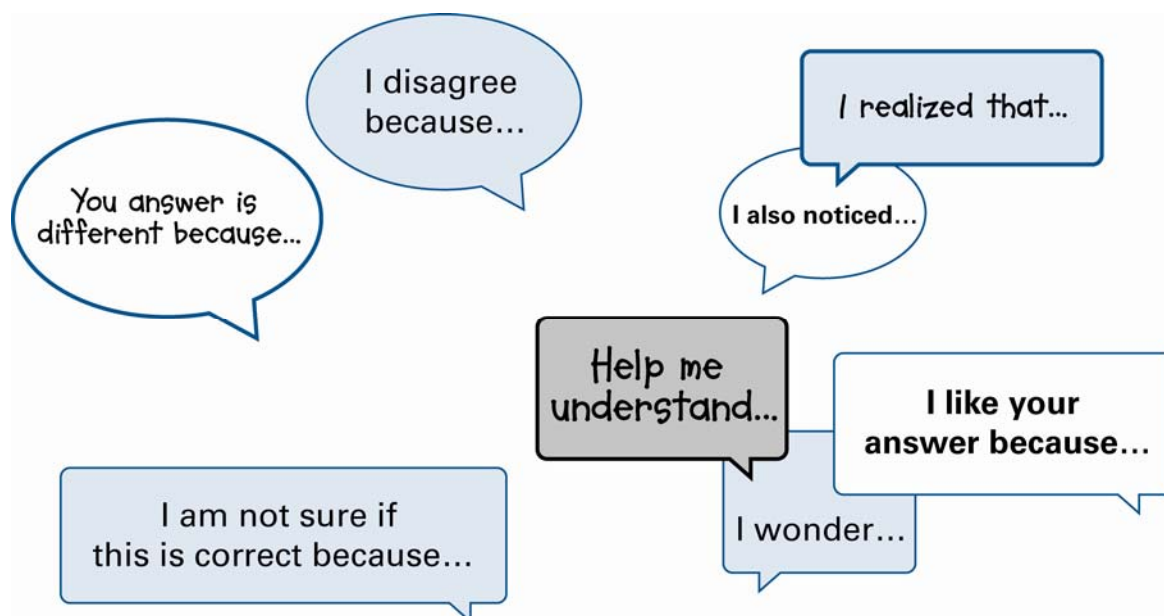
Sample Number Clues

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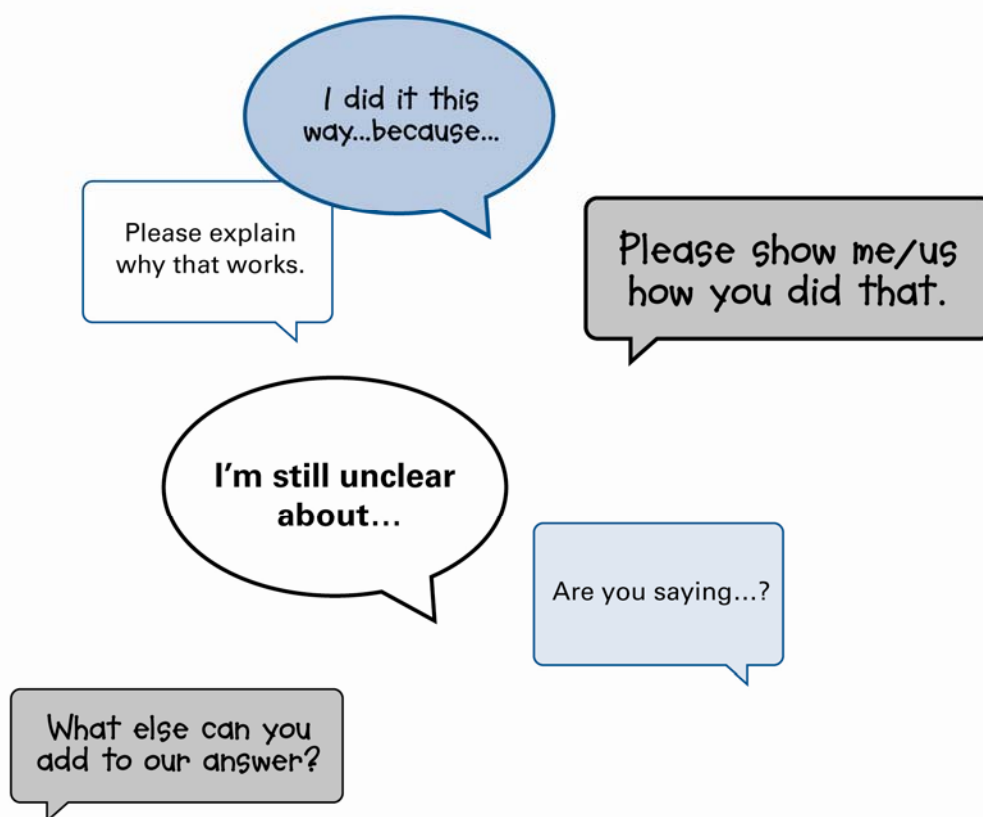
- It is a two-digit number
- It is an odd number.
- It is less than 40.
- The number contains one prime digit
- It is a number with no repeating digits
- An even number is in the 10s place.
- It is a prime number.
- Its digits add up to 11.
- IT is a number between 25 and 30.

325

- It is a three-digit number.
- It is an odd number.
- The number is not a multiple of 10.
- Two of its digits are prime.
- No digits repeat.
- The digit in the 10s place is less than the digit in the ones place.
- An even number is in the 10s place.
- Two of its digits are odd.
- There is an odd number in the 100s place.
- The number is divisible by 5.



Talk Prompts

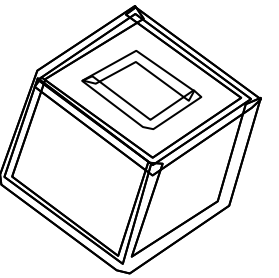


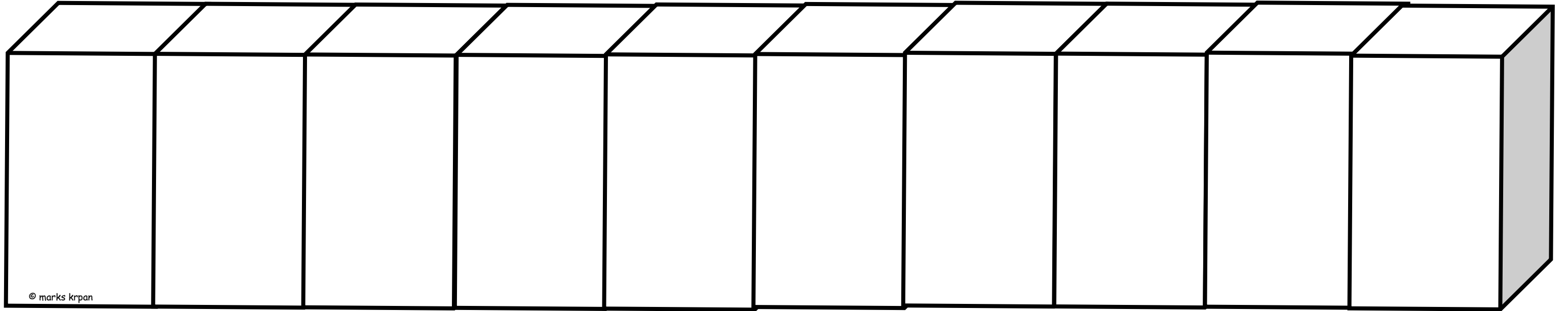
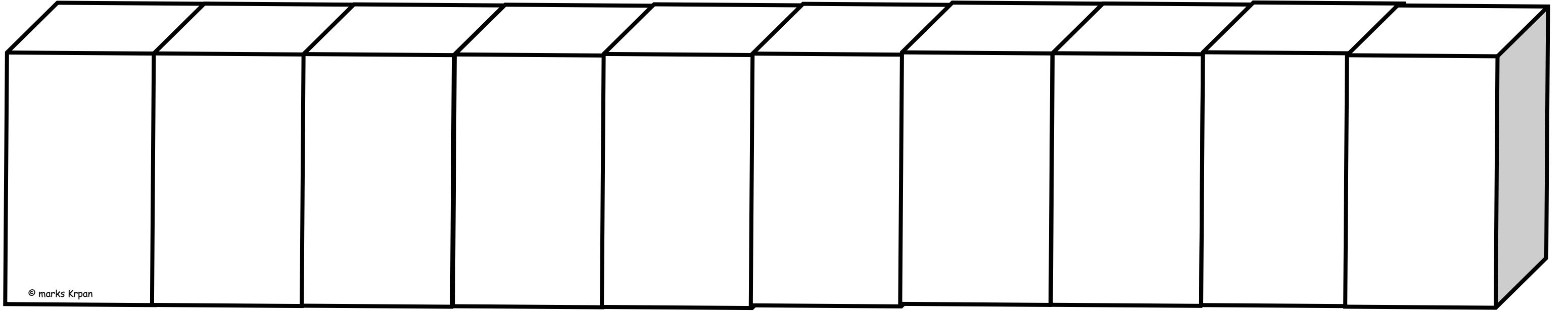
Cooperative Math Chart

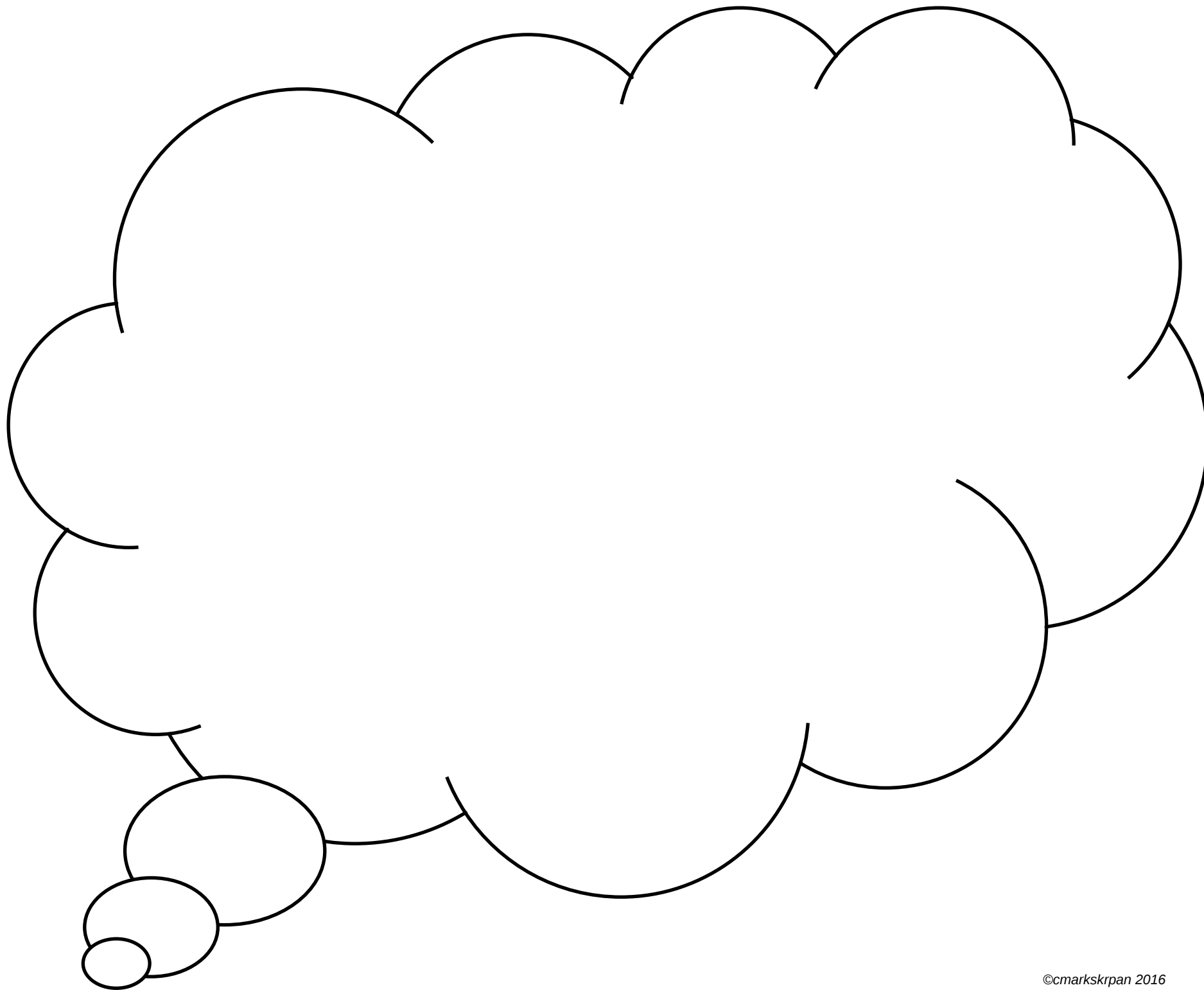
Skill	Looks Like 	Sounds Like 	Feels Like 				
Listening to others							
Sharing my thinking							
Disagreeing in a positive way							
Including everyone in the process							
Posing good questions during presentations							

Train Recipe

Name _____

[illegible]

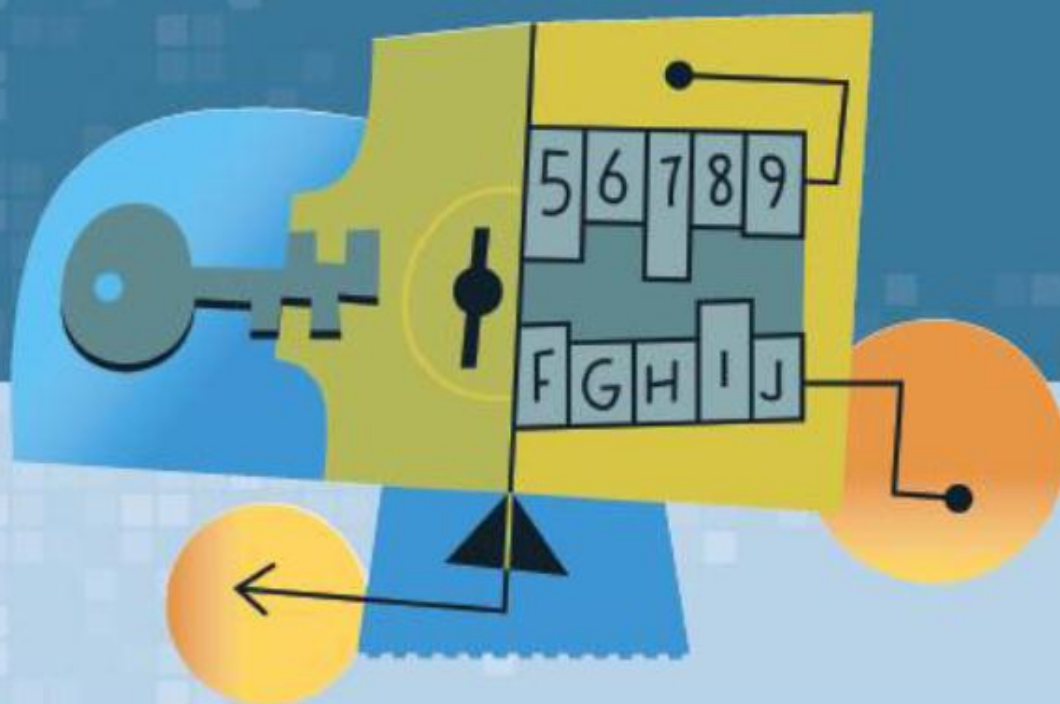




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DEVELOPING STUDENT THINKING
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COMMUNICATION

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