Exploring Mathematics Through Problem-Solving and Student Voice

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Grade 1

Number Sense and Numeration

Grade 1 - Number Sense and Numeration (Skip Counting)

Materials: chart paper, markers, number lines, hundreds chart
Curriculum Expectations: Count forward by 1's, 2's, 5's, and 10's to 100, using a variety of tools and strategies.
Minds On: 5-10 Minutes
• Can you skip count by 2's, 5's and 10's? • Can you count forward? • What can we use to count forward on?
Working On It: 20-25 Minutes
• Arrange students into small groups or pairs. • Paste the "Working On It" task onto chart paper for each group (see template below). • Have students work together in groups or pairs to complete the task.
Consolidation: 10-15 Minutes
• Choose a strategy to have students share their thinking of how they solved the problem. • Highlight key strategies with the class.
Generalization: I can skip count forward.
Extension: Have students work on the "Independent Task" in their Math Journal (see template below).

Working On It

Aileen counted on a number line and stopped at the number 20. What might her number pattern be? Is there more than 1 pattern? Show your work.

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Aileen counted on a number line and stopped at the number 20. What might her number pattern be? Is there more than 1 pattern? Show your work.

Extension (Independent Task for Math Journal)

Start at 10 and skip count forward in as many different ways as you can. Show your work.	Start at 10 and skip count forward in as many different ways as you can. Show your work.
Start at 10 and skip count forward in as many different ways as you can. Show your work.	Start at 10 and skip count forward in as many different ways as you can. Show your work.
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Grade 1 - Number Sense and Numeration (Representing Numbers)

Materials: chart paper, markers, a variety of manipulatives for representing numbers, envelopes, number cards (1-9)

Curriculum Expectations: Represent whole numbers to 50, using a variety of tools.

Minds On: 5-10 Minutes

- Review different types of manipulatives found in the Math Centre.
- Ask students: **How many different ways can you show the number 7?**
- Have students choose manipulatives to use to show the given number.
- Record their responses on chart paper (create an anchor chart).

Sample Responses

- 7 units
- 1 nickel and 2 pennies, 7 pennies
- pictures, words, tallies
- 10-Frames

Working On It: 20-25 Minutes

- Arrange students into small groups or pairs.
- Paste the "Working On It" task onto chart paper for each group (see template below).
- Ask on student from the group to randomly choose a number out of the envelope.
- Ask students: **How many different ways can you make the number _____?**
- Have students work together in groups or pairs to complete the task.

Consolidation: 10-15 Minutes

- Create an anchor chart with students modeling various ways to represent numbers.

Sample Responses

- Numerals and Words
- Addition or subtraction sentences
- Money

Generalization: I can represent numbers in many different ways.

Extension: Have students work on the "Independent Task" in their Math Journal (see template below). Choose a number you would like students to represent or have them choose their own number (use the number cards and have students randomly select a number if they are choosing their own).

Working On It:

How many different ways can you make the number _____?

How many different ways can you make the number _____?

How many different ways can you make the number _____?

How many different ways can you make the number _____?

How many different ways can you make the number _____?

Extension (Independent Task for Math Journal)

How many different ways can you make the number _____?	How many different ways can you make the number _____?
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Grade 1 - Number Sense and Numeration (Comparing Numbers)

Materials: number lines, hundred chart, chart paper, markers, number cards, envelopes

Curriculum Expectations: Compare and order whole numbers to 50, using a variety of tools (e.g., connecting cubes, ten frames, base ten materials, number lines, hundreds charts) and contexts (e.g., real-life experiences, number stories)

Minds On: 5-10 Minutes

- Have a student choose 5 numbers from the envelope.
- Ask: "How can we order these numbers?" (greatest to least, least to greatest)
- What is the greatest number?
- What is the smallest number?
- Students can use a number line or the hundred chart to help them

Working On It: 20-25 Minutes

- Arrange students into small groups or pairs.
- Paste the "Working On It" task onto chart paper for each group (see template below).
- Have students work together in groups or pairs to complete the task.

Consolidation: 10-15 Minutes

- Look for ways students organized their work.
- Choose a strategy to discuss while student share their work.

- **Generalization**: I can order and compare numbers from greatest to least and least to greatest.

Extension: Have students work on the "Independent Task" in their Math Journal (see template below).

Working On It

What 2-digit numbers can you make with the numbers 1 and 2? Which number is the greatest? Which number is the least? How do you know?

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What 2-digit numbers can you make with the numbers 1 and 2? Which number is the greatest? Which number is the least? How do you know?

Extension (Independent Task for Math Journal)
* Put 4-5 numbers in an envelop for each student.

Put the numbers in the envelope in order from greatest to least and then from least to greatest. How do you know which number is greatest and which number is the least?	Put the numbers in the envelope in order from greatest to least and then from least to greatest. How do you know which number is greatest and which number is the least?
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Grade 1 - Number Sense and Numeration (Addition and Subtraction)

Materials: chart paper, markers, number cards, various manipulatives, number cards

Curriculum Expectations: Solve a variety of problems involving the addition and subtraction of whole numbers to 20, using concrete materials and drawings.

Minds On: 5-10 Minutes

- Review 1-digit addition.
- Review 1-digit subtraction.
- Complete sample questions on chart paper.

Working On It: 20-25 Minutes

- Arrange students into small groups or pairs.
- Paste the "Working On It" task onto chart paper for each group (see template below).
- Have students work together in groups or pairs to complete the task.

Consolidation: 10-15 Minutes

- Look for ways students organized their work.
- Focus on a strategy students used while they share their work.
- Create an anchor chart highlighting the different strategies for addition and subtraction.

Sample Strategies

- Base 10 Blocks
- Pictures
- 10-Frames
- 100 Chart
- Number Line

Generalization: I can create and solve 1-digit addition and subtraction problems using different strategies.

Extension: Have students work on the "Independent Task" in their Math Journal (see template below).

Working On It

Make a card for each digit: 3 and 9. Arrange the cards to make addition and subtraction problems. Record your problems.

$$\square + \square = ____ \qquad \square - \square = ____$$

Use the 3 and 9 number cards. Arrange the cards to make addition and subtraction problems. Record your problems.

$$\square + \square = ____ \qquad \square - \square = ____$$

Use the 3 and 9 number cards. Arrange the cards to make addition and subtraction problems. Record your problems.

$$\square + \square = ____ \qquad \square - \square = ____$$

Use the 3 and 9 number cards. Arrange the cards to make addition and subtraction problems. Record your problems.

$$\square + \square = ____ \qquad \square - \square = ____$$

Extension #1 (Independent Task for Math Journal)

Dylan has 8 pencils. He buys 2 more at the store. How many pencils does Dylan have altogether? Show your work and explain how you know.	Dylan has 8 pencils. He buys 2 more at the store. How many pencils does Dylan have altogether? Show your work and explain how you know.
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Extension #2 (Independent Task for Math Journal)

Riley has 7 oranges. She eats 3 of them. How many oranges does Riley have left? Show your work and explain how you know.	Riley has 7 oranges. She eats 3 of them. How many oranges does Riley have left? Show your work and explain how you know.
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Measurement

Grades 1-3 - Measurement (Calendar)

Materials: chart paper, markers, a calendar, calendar template, Student Planner

Curriculum Expectations: Solve problems involving the relationships between minutes and hours, hours and days, days and weeks, and weeks and years, using a variety of tools.

Minds On: 5-10 Minutes

- Review the calendar (purpose, parts, how to read it)
- Ask students: Looking at our classroom calendar, what information does a calendar give you?
- Have students popcorn their answers. Do not record them.

Sample questions:
- How many days in a week?
- How many months in a year?
- How many weeks in a year?
- How many weeks in a month?
- How often does a leap year happen?

Working On It: 20-25 Minutes

- Arrange students into small groups or pairs.
- Paste the "Working On It" task onto chart paper for each group (see template).
- Have students work together in groups or pairs to complete the task.

Consolidation: 10-15 Minutes

- Choose 3 student samples to model and pull key information to create an anchor chart.

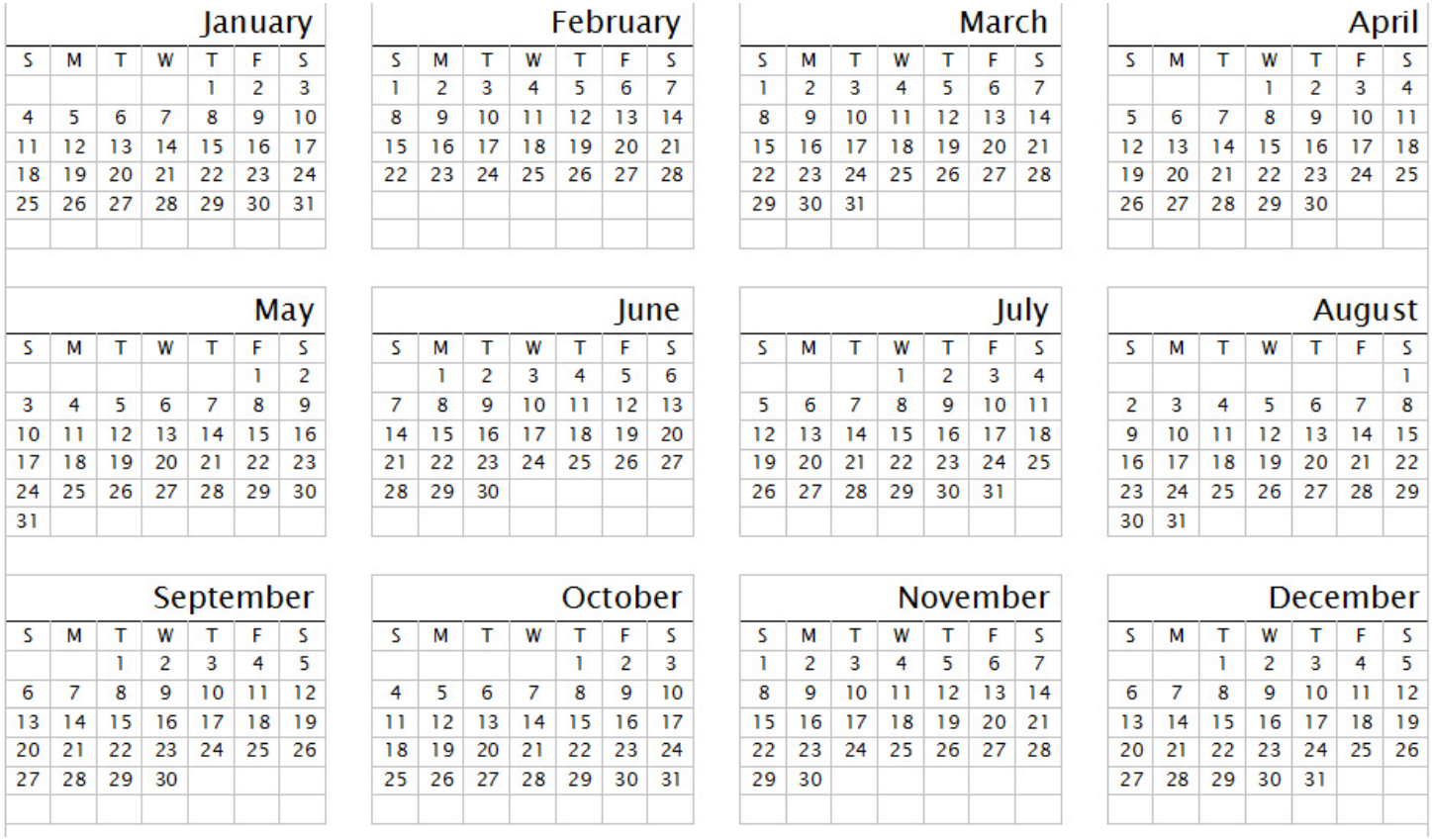
Sample Information:
- The year starts in January, not September
- How many hours in a day.
- How many days in a month, year, etc.
- How many weeks in a month, year, etc.
- Every calendar year changes.
- Leap years.

Generalization: I can use a calendar to record important events in my life.

Extension: Have students work on the "Independent Task" in their Math Journal (see template below). Select days, weeks, or months on the calendar you would like the students to identify or be aware of.

Working On It

Write everything you know about a calendar.



January

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

February

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

March

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

April

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

May

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

June

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

July

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

August

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

September

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

October

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

November

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

December

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Extension (Independent Task for Math Journal)

Fill in the blanks for your class based on the current month.

Use your Class Calendar to find: - 8 days after _____. - 11 days before _____. - 7 days after _____. - 3 days before _____.	Use your Class Calendar to find: - 8 days after _____. - 11 days before _____. - 7 days after _____. - 3 days before _____.
Use your Class Calendar to find: - 8 days after _____. - 11 days before _____. - 7 days after _____. - 3 days before _____.	Use your Class Calendar to find: - 8 days after _____. - 11 days before _____. - 7 days after _____. - 3 days before _____.
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Grades 1-3 - Measurement (Linear Measurement)

Materials: chart paper, markers, a variety of manipulatives for measuring, rulers

Curriculum Expectations: Estimate, measure, and record length, height, and distance, using standard units.

Minds On: 5-10 Minutes

- What tools can we use to measure with?
- Brainstorm ideas on chart paper.
- Show students the objects or tools that they suggested as visuals for the rest of the class.
- Record the units they mentioned (standard and non-standard) using a T-Chart.

Working On It: 20-25 Minutes

- Arrange students into small groups or pairs.
- Paste the "Working On It" task onto chart paper for each group (see template below).
- Have students work together in groups or pairs to complete the task.

Consolidation: 10-15 Minutes

- Ask groups what part of the desk they measured, and what they used to measure with and how.
- From their responses, introduce and define linear measurement terms (length, width, height)
- Some students may have measured perimeter and area. Introduce and define these terms.
- Determine whether the tools used were non-standard or standard.

Generalization: I can use a variety of tools to measure things.

Extension: Have students work on the "Independent Task" in their Math Journal (see below).

Working On It

How many different ways can you measure the width of your desk?

How many different ways can you measure the width of your desk?

How many different ways can you measure the width of your desk?

How many different ways can you measure the width of your desk?

Extension

Choose a measurement tool and measure the length, width, height, distance, etc. of _____.	Choose a measurement tool and measure the length, width, height, distance, etc. of _____.
Choose a measurement tool and measure the length, width, height, distance, etc. of _____.	Choose a measurement tool and measure the length, width, height, distance, etc. of _____.
Choose a measurement tool and measure the length, width, height, distance, etc. of _____.	Choose a measurement tool and measure the length, width, height, distance, etc. of _____.
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Grade 1 - Measurement (Perimeter)

Materials: chart paper, markers, popsicle sticks, cubes, straws

Curriculum Expectations: Estimate, measure and record lengths, heights, and distances.

Minds On: 5-10 Minutes

- Review terms.
- What are the characteristics of a rectangle?
- How many steps does it take to walk around the carpet? Have a few different students measure.
- Discuss the different results and why they might be different.

Working On It: 20-25 Minutes

- Arrange students into small groups or pairs.
- Paste the "Working On It" task onto chart paper for each group (see template below).
- Have students work together in groups or pairs to complete the task.

Consolidation: 10-15 Minutes

- Ask groups to share their solutions.
- Discuss patterns they found.
- Discuss how they found the perimeter of their object.
- Discuss which unit needed more or less to measure around with.
- Look for some sort of methodical strategy to show their work.

Generalization: I can use non-standard units to find the perimeter of rectangles.

Extension: Have students work on the "Independent Task" in their Math Journal (see template below).

Working On It

Measure the distance around your desk using the units listed in the chart. Which unit had the longest distance around? Which unit had the shortest distance around? Why do you think that is?

Desk	Perimeter
Hand Widths	
Popsicle Sticks	
Cubes	

Extension # 1 (Independent Task for Math Journal)

Find objects in the room where the distance around is greater than 10 straws. Measure each object.	Find objects in the room where the distance around is greater than 10 straws. Measure each object.
Find objects in the room where the distance around is greater than 10 straws. Measure each object.	Find objects in the room where the distance around is greater than 10 straws. Measure each object.
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Grade 1 - Measurement (Area)

Materials: grid chart paper, markers, pattern blocks

Curriculum Expectations: Estimate, measure, and describe area, through investigation using non-standard units.

Minds On: 5-10 Minutes

- Show a hexagon.
- How many triangles will it take to cover the hexagon?
- Have students estimate. Have a student use the manipulatives to check.
- Define area

Working On It: 20-25 Minutes

- Arrange students into small groups or pairs.
- Paste the "Working On It" task onto chart paper for each group (see template below).
- Have students work together in groups or pairs to complete the task.

Consolidation: 10-15 Minutes

- Have students share their results.
- Look for which pattern blocks students use to find the area and discuss which are the best options and why.
- Look for how students are placing the pattern blocks.
- Discuss why students need to use the same pattern block (all triangles, etc.) when finding area.
- Discuss how the students placed the pattern blocks (side-by-side and touching). Why is this important?

Generalization: I can use pattern blocks to find the area of different shapes and objects.

Extension: Have students work on the "Independent Task" in their Math Journal (see template below). Choose a number you would like the students to represent or have them choose a number.

Working On It

Use pattern blocks to cover a book in as many different ways as you can.

Use pattern blocks to cover a book in as many different ways as you can.

Use pattern blocks to cover a book in as many different ways as you can.

Use pattern blocks to cover a book in as many different ways as you can.

Use pattern blocks to cover a book in as many different ways as you can.

Extension (Independent Task for Math Journal)

Draw 4 different rectangles on chart paper. Find the area of these rectangles using pattern blocks.	Draw 4 different rectangles on chart paper. Find the area of these rectangles using pattern blocks.
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Grade 1 - Measurement (Elapsed Time)

Materials: chart paper, markers, demonstration clocks

Curriculum Expectations: Estimate, measure, and describe the passage of time, through investigation using non-standard units.

Minds On: 5-10 Minutes

- Model counting forward by 5's on a demonstration clock.
- Review key words in time problems (arrive at, leave at)

Working On It: 20-25 Minutes

- Arrange students into small groups or pairs.
- Paste the "Working On It" task onto chart paper for each group (see template below).
- Have students work together in groups or pairs to complete the task.

Consolidation: 10-15 Minutes

- Review and document on an anchor chart the students' strategies

Strategy Examples:

- Counting by 5's
- Addition and subtraction
- Diagrams

Generalization: I can use a variety of strategies to solve word problems involving time.

Extension: Have students work on the "Independent Task" in their Math Journal (see template below).

Working On It

If Ms. Scalzo left her house at 7:00 a.m. and it took her 30 minutes to get to school, at what time did she arrive there? Show how you solved the problem.

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Extension (Independent Task for Math Journal)

Charlie and Frank were going to the mall. They left their house at 5:00 p.m. It took both boys half an hour to get to the mall. What time did they get there?	Charlie and Frank were going to the mall. They left their house at 5:00 p.m. It took both boys half an hour to get to the mall. What time did they get there?
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Geometry and Spatial Sense

Grade 1 – Geometry and Spatial Sense (2-D Shapes)

Materials: grid chart paper, markers, Pattern Blocks, Attribute Blocks, Deci-blocks

Curriculum Expectations: Identify and describe common two-dimensional shapes, and sort and classify them by their attributes, using concrete materials and pictorial representations.

Minds On: 5-10 Minutes

Show students a triangle.

- Tell me everything you know about this triangle
- Highlight key words (vertices, sides, angles)
- Correct any misused terms as needed (e.g., corners, lines, points, etc.)

Working On It: 20-25 Minutes

- Arrange students into small groups or pairs.
- Paste the "Working On It" task onto chart paper for each group (see template below).
- Have students work together in groups or pairs to complete the task.

Consolidation: 10-15 Minutes

- Have students share their results.
- Highlight the shapes they made and their names.

Generalization: I can name and describe different two-dimensional shapes.

Extension: Have students work on the "Independent Task" in their Math Journal (see template below).

Working On It

How many different 2-dimensional shapes can you make? Can you name them?

How many different 2D shapes can you make? Can you name them?

How many different 2D shapes can you make? Can you name them?

How many different 2D shapes can you make? Can you name them?

How many different 2D shapes can you make? Can you name them?

Extension (Independent Task for Math Journal)

Look around the classroom for 2-dimensional shapes. Draw the objects and name the 2-dimensional shapes you see. Write what you know about the 2-dimensional shapes you drew.	Look around the classroom for 2-dimensional shapes. Draw the objects and name the 2-dimensional shapes you see. Write what you know about the 2-dimensional shapes you drew.
Look around the classroom for 2-dimensional shapes. Draw the objects and name the 2-dimensional shapes you see. Write what you know about the 2-dimensional shapes you drew.	Look around the classroom for 2-dimensional shapes. Draw the objects and name the 2-dimensional shapes you see. Write what you know about the 2-dimensional shapes you drew.
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Grade 1 – Geometry and Spatial Sense (3-D Shapes)

Materials: chart paper, markers, geometric solids, toothpicks, plasticine

Curriculum Expectations: Build three-dimensional structures using concrete materials, and describe the two-dimensional shapes the structures contain.

Minds On: 5-10 Minutes

- Have students use toothpicks and plasticine to build a 3-dimensional shape.
- Ask students to name and describe their solid.
- Highlight key words (vertices, faces, edges).
- Create an anchor chart highlighting the characteristics of various 3-dimensional solids (name of solid, number of faces, number of vertices, number of edges, etc.).

Working On It: 20-25 Minutes

- Arrange students into small groups or pairs.
- Paste the "Working On It" task onto chart paper for each group (see template below).
- Have students work together in groups or pairs to complete the task.

Consolidation: 10-15 Minutes

- Have students share and describe their solids.
- Identify the different shapes that students have created by their names and characteristics.
- Identify the 2-dimensional faces they see.

Generalization: Using my knowledge of 2-dimensional shapes, I can build 3-dimensional shapes and describe them.

Working On It

Construct a 3-dimensional shape with 12 edges. What shape is it? How do you know? What 2-dimensional shapes can you see?

Construct a 3-dimensional shape with 12 edges. What shape is it? How do you know? What 2-dimensional shapes can you see?

Construct a 3-dimensional shape with 12 edges. What shape is it? How do you know? What 2-dimensional shapes can you see?

Patterning and Algebra

Grade 1 – Patterning and Algebra (Repeating Patterns)

Materials: chart paper, markers, Pattern Blocks, Attribute Blocks, Deci-blocks, Power Polygons

Curriculum Expectations: Identify, describe, and extend, through investigation, geometric repeating patterns involving one attribute.

Minds On: 5-10 Minutes

- Display Pattern Blocks, Attribute Blocks, Power Polygons and Deci-blocks
- Discuss their attributes.
- Review and record what attributes are and what patterns are.
- Look for patterns around the classroom.
- How do you know it's a pattern? (It repeats).

Working On It: 20-25 Minutes

- Arrange students into small groups or pairs.
- Paste the "Working On It" task onto chart paper for each group (see template below).
- Have students work together in groups or pairs to complete the task.

Consolidation: 10-15 Minutes

- Have students share their patterns.
- Point out the changing attributes in the patterns (colour, shape, position, size – deci-blocks, etc.)
- Create an anchor chart highlighting key words (core, pattern rule, growing, shrinking, naming, number, etc.)

Generalization: I can create different repeating patterns using Pattern Blocks, Attribute Blocks or Deci-blocks.

Extension: Have students work on the "Independent Task" in their Math Journal (see template below).

Working On It

Choose Pattern Blocks, Attribute Blocks, Power Polygons or Decablocks to make as many different repeating patterns as you can. Tell what attributes are changing.

Choose Pattern Blocks, Attribute Blocks, Power Polygons or Decablocks to make as many different repeating patterns as you can. Tell what attributes are changing.

Choose Pattern Blocks, Attribute Blocks, Power Polygons or Decablocks to make as many different repeating patterns as you can. Tell what attributes are changing.

Extension (Independent Task for Math Journal)

Create a repeating pattern with 1 changing attribute and describe your pattern.	Create a repeating pattern with 1 changing attribute and describe your pattern.
Create a repeating pattern with 1 changing attribute and describe your pattern.	Create a repeating pattern with 1 changing attribute and describe your pattern.
Create a repeating pattern with 1 changing attribute and describe your pattern.	Create a repeating pattern with 1 changing attribute and describe your pattern.
Create a repeating pattern with 1 changing attribute and describe your pattern.	Create a repeating pattern with 1 changing attribute and describe your pattern.
Create a repeating pattern with 1 changing attribute and describe your pattern.	Create a repeating pattern with 1 changing attribute and describe your pattern.
Create a repeating pattern with 1 changing attribute and describe your pattern.	Create a repeating pattern with 1 changing attribute and describe your pattern.

Data Management and Probability

Grade 1 – Data Management (Creating Graphs)

Materials: grid chart paper, markers, ruler

Curriculum Expectations: Collect and organize categorical or discrete primary data and display the data in charts, tables, and graphs, with appropriate titles and labels, and with labels ordered appropriately along horizontal axis, as needed, using many-to-one correspondence.

Minds On: 5-10 Minutes

- Present the class with the following question: *What is your favourite season?* (Spring, Summer, Winter, Autumn)
- Create a T-Chart to organize student responses.
- Review the purpose of a T-Chart.
- Define the word survey and its purpose.
- How can we display our results? (pictograph, bar graph).

Working On It: 20-25 Minutes

- Arrange students into small groups or pairs.
- Paste the "Working On It" task onto chart paper for each group (see template below).
- Have students work together in groups or pairs to complete the task.

Consolidation: 10-15 Minutes

- Highlight the proper ways to create a pictograph and a bar graph.
- Discuss the significance of the "key" when creating pictographs.
- Introduce students to a bar graph template (you can create your own)
- Correct any attempts if needed.

Generalization: I can collect, organize and graph data.

Extension: Have students work on the "Independent Task" in their Math Journal (see template below).

Working On It

Ms. Scalzo asked her class, “What is your favourite food"? What does the tally chart tell you? Graph the data using a pictograph.

Food	Votes
Pizza	𝍸 𝍸 |
Burger	𝍸 ||||
Pasta	𝍸 𝍸
Hot Dog	𝍸

Ms. Scalzo asked her class, “What is your favourite food"? What does the tally chart tell you? Graph the data using a pictograph.

Food	Votes
Pizza	𝍸 𝍸 |
Burger	𝍸 ||||
Pasta	𝍸 𝍸
Hot Dog	𝍸

Extension (Independent Task for Math Journal)

Conduct a survey. Organize your data and graph the results. What did you learn after conducting your survey?	Conduct a survey. Organize your data and graph the results. What did you learn after conducting your survey?
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Grade 1 – Data Management (Interpreting Graphs)

Materials: grid chart paper, markers, sample graphs

Curriculum Expectations: Interpret and draw conclusions from data presented in charts, tables, and graphs.

Minds On: 5-10 Minutes

- Display a variety of graphs (pictograph, bar graph) and charts (tally chart) on chart paper.
- Name the different types of graphs and their purpose.
- Discuss the purpose of graphs and charts. (to display and organize data)
- How do we read each of the graphs?

Working On It: 20-25 Minutes

- Arrange students into small groups or pairs.
- Paste the "Working On It" task onto chart paper for each group (see template below).
- Have students work together in groups or pairs to complete the task.

Consolidation: 10-15 Minutes

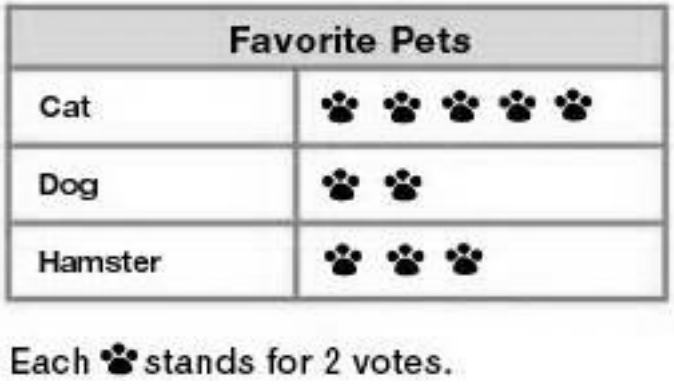
- Have groups share their work.
- Highlight important information by creating an anchor chart.
- Look for students' interpretation of the graph.
- Look for comparative language (most, least, how many more, total number)
- Look for strategies for interpreting data.
- Ask: How does the title help you figure out what question was asked?

Generalization: I can interpret data on a graph.

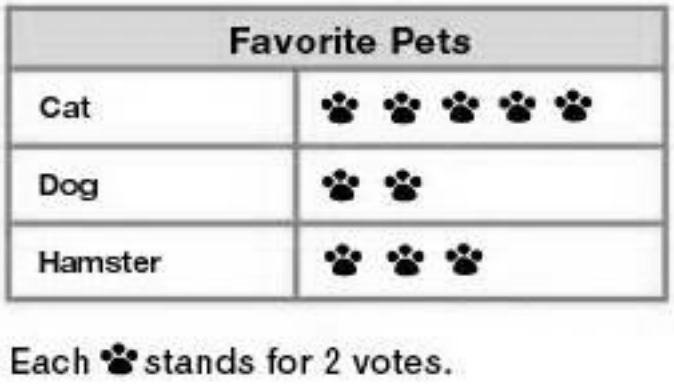
Extension: Have students work on the "Independent Task" in their Math Journal (see template below).

Working On It

Tell everything you know about this graph.



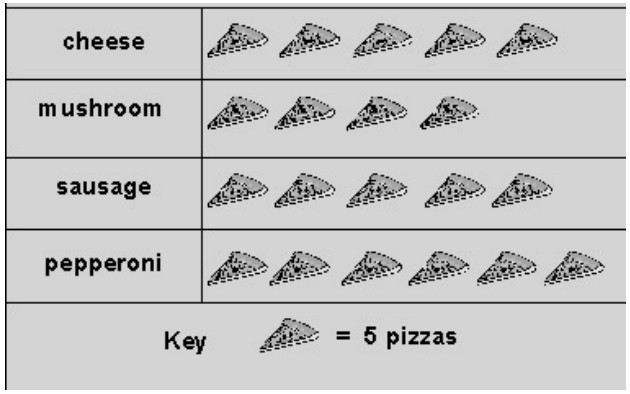
Tell everything you know about this graph.



Extension (Independent Task for Math Journal)

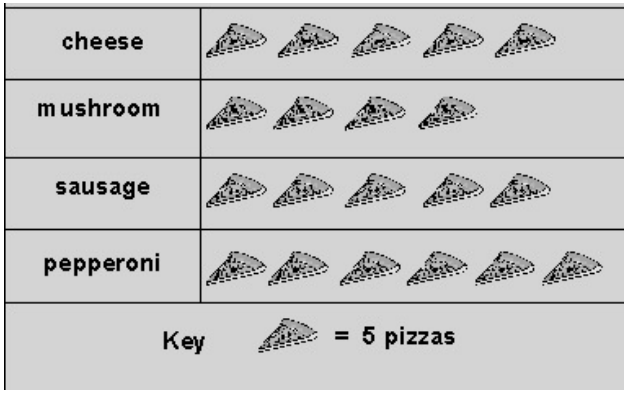
Interpret this graph.

Favourite Pizza Toppings



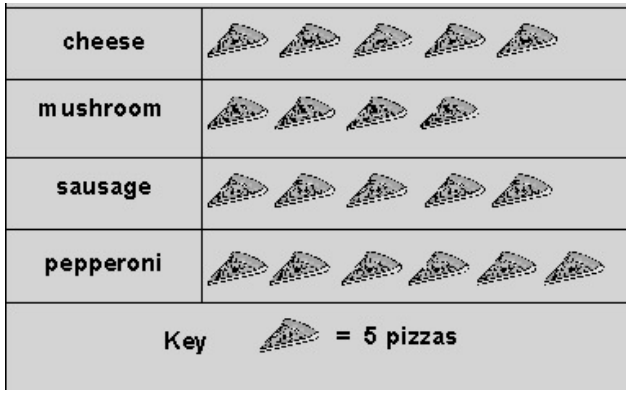
Interpret this graph.

Favourite Pizza Toppings



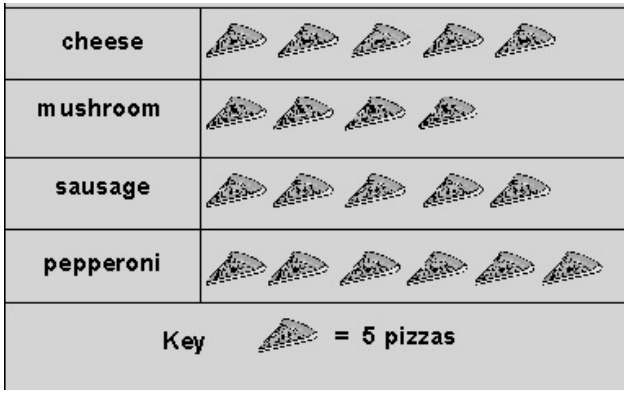
Interpret this graph.

Favourite Pizza Toppings



Interpret this graph.

Favourite Pizza Toppings

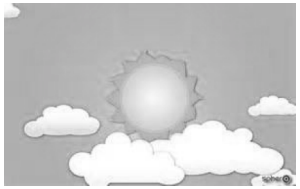
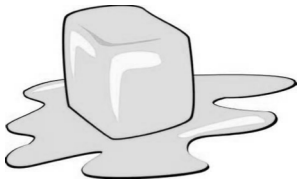
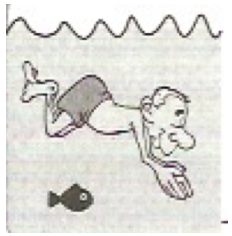


Grade 1 – Data Management (Probability)

Materials: grid chart paper, markers, glue, scissors
Curriculum Expectations: Describe the likelihood that everyday events will occur, using mathematical language (i.e., *impossible*, *unlikely*, *less likely*, *more likely*, *certain*)
Minds On: 5-10 Minutes
• Discuss probability terms *impossible*, *unlikely*, *less likely*, *more likely*, *certain* • Have students share some everyday examples for each term.
Working On It: 20-25 Minutes
• Arrange students into small groups or pairs. • Paste the "Working On It" task onto chart paper for each group (see template below). • Have students work together in groups or pairs to complete the task.
Consolidation: 10-15 Minutes
• Have students share their charts. • Note their explanations for why they chose a particular probability term.
Generalization: I understand and can give examples of different likelihoods in my daily life.
Extension: Have students work on the "Independent Task" in their Math Journal (see template below).

Working On It

Sort these events:

Unlikely	Less likely	More Likely	Impossible	Certain
I will get younger.	It will rain in the desert.	It will be sunny in the summer. 	Heat will melt ice. 	School will be closed for a snow day.
The first day of school is after Labour Day.	I will have a birthday every year.	I will be in Grade 2 next year.	I can breathe under water. 	I will win the contest on the cereal box.

Extension (Independent Task for Math Journal)

Write sentences using 3 different probability terms (*impossible*, *unlikely*, *less likely*, *more likely*, *certain*). Illustrate your sentences.	Write sentences using 3 different probability terms (*impossible*, *unlikely*, *less likely*, *more likely*, *certain*). Illustrate your sentences.
Write sentences using 3 different probability terms (*impossible*, *unlikely*, *less likely*, *more likely*, *certain*). Illustrate your sentences.	Write sentences using 3 different probability terms (*impossible*, *unlikely*, *less likely*, *more likely*, *certain*). Illustrate your sentences.
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Write sentences using 3 different probability terms (*impossible*, *unlikely*, *less likely*, *more likely*, *certain*). Illustrate your sentences.	Write sentences using 3 different probability terms (*impossible*, *unlikely*, *less likely*, *more likely*, *certain*). Illustrate your sentences.

Appendices

Group Members: _____

K	W	C
What you **KNOW**	What you **WANT TO KNOW**	**CONDITIONS**
What information does the problem tell you?	What questions need to be answered?	What conditions need to be met? What information is important to remember?

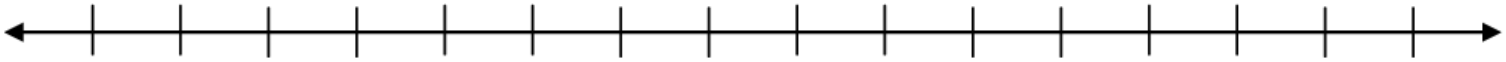
Number Cards

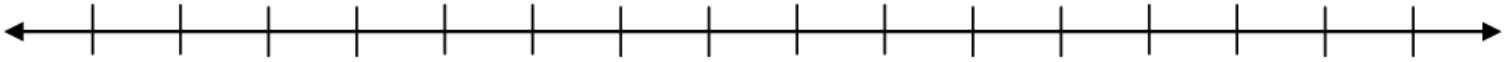
0	1	2	3	4
5	6	7	8	9
0	1	2	3	4
5	6	7	8	9

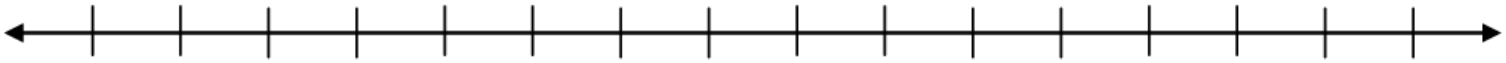
100 – Chart

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

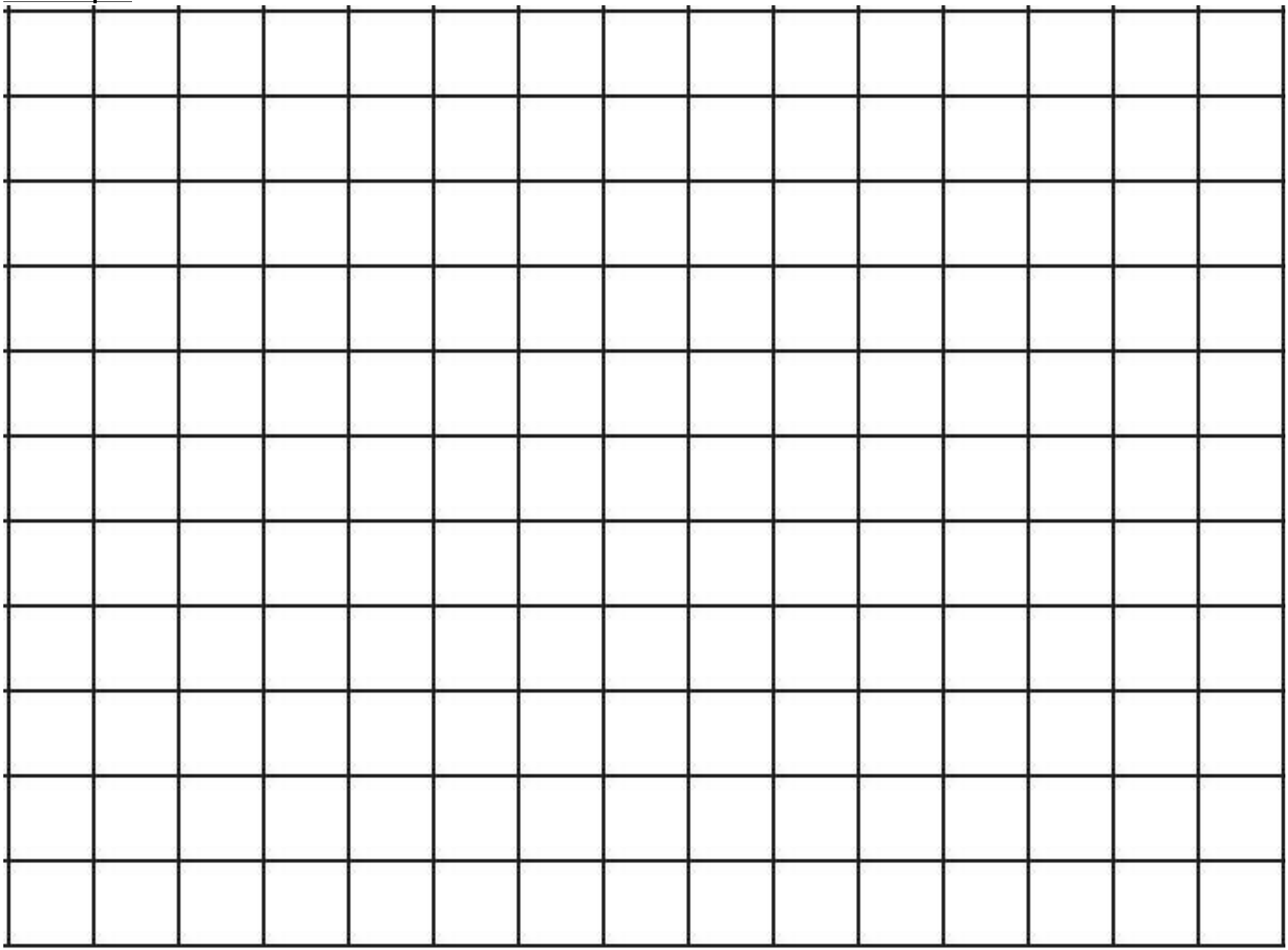
Number Line



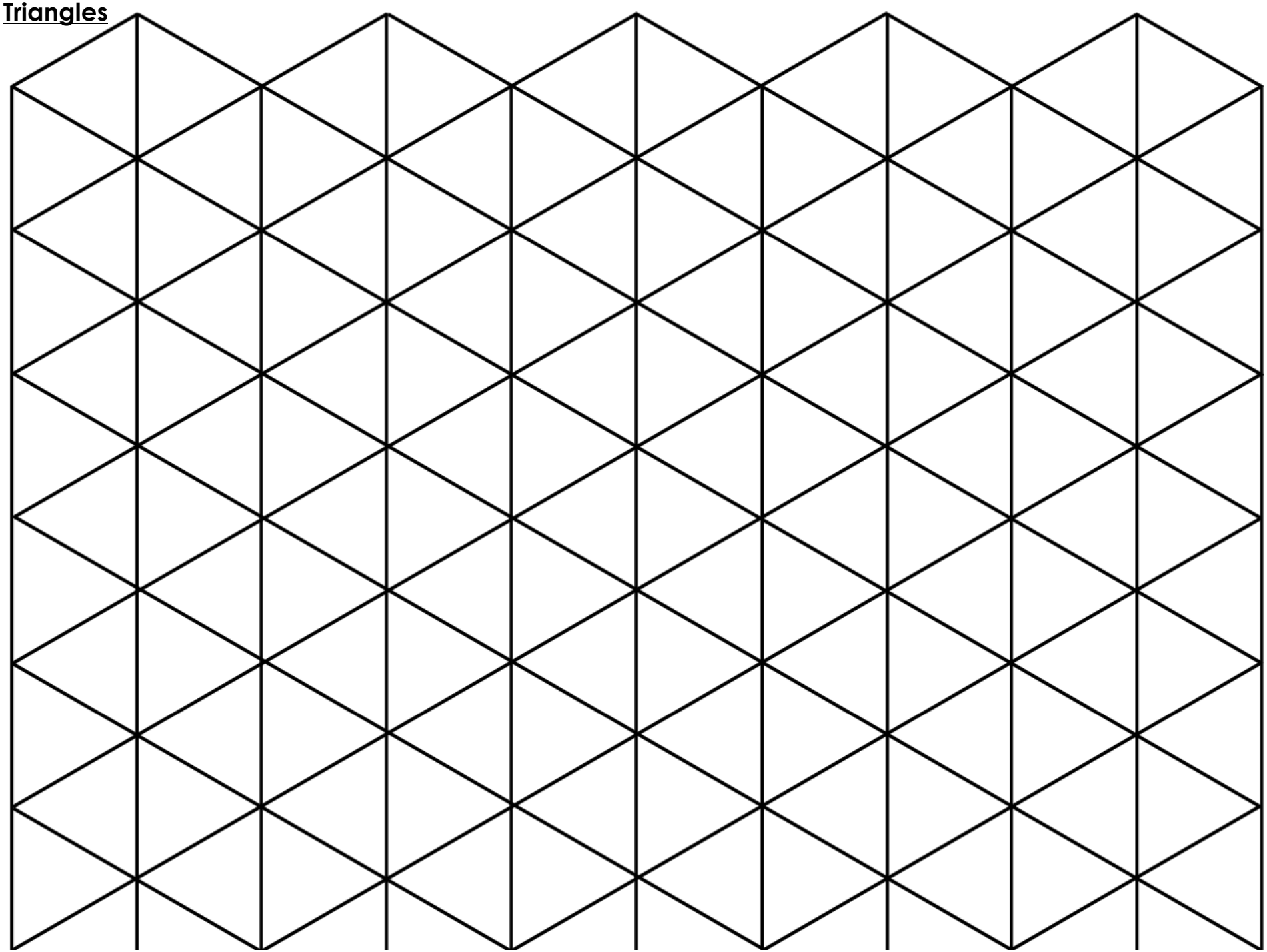




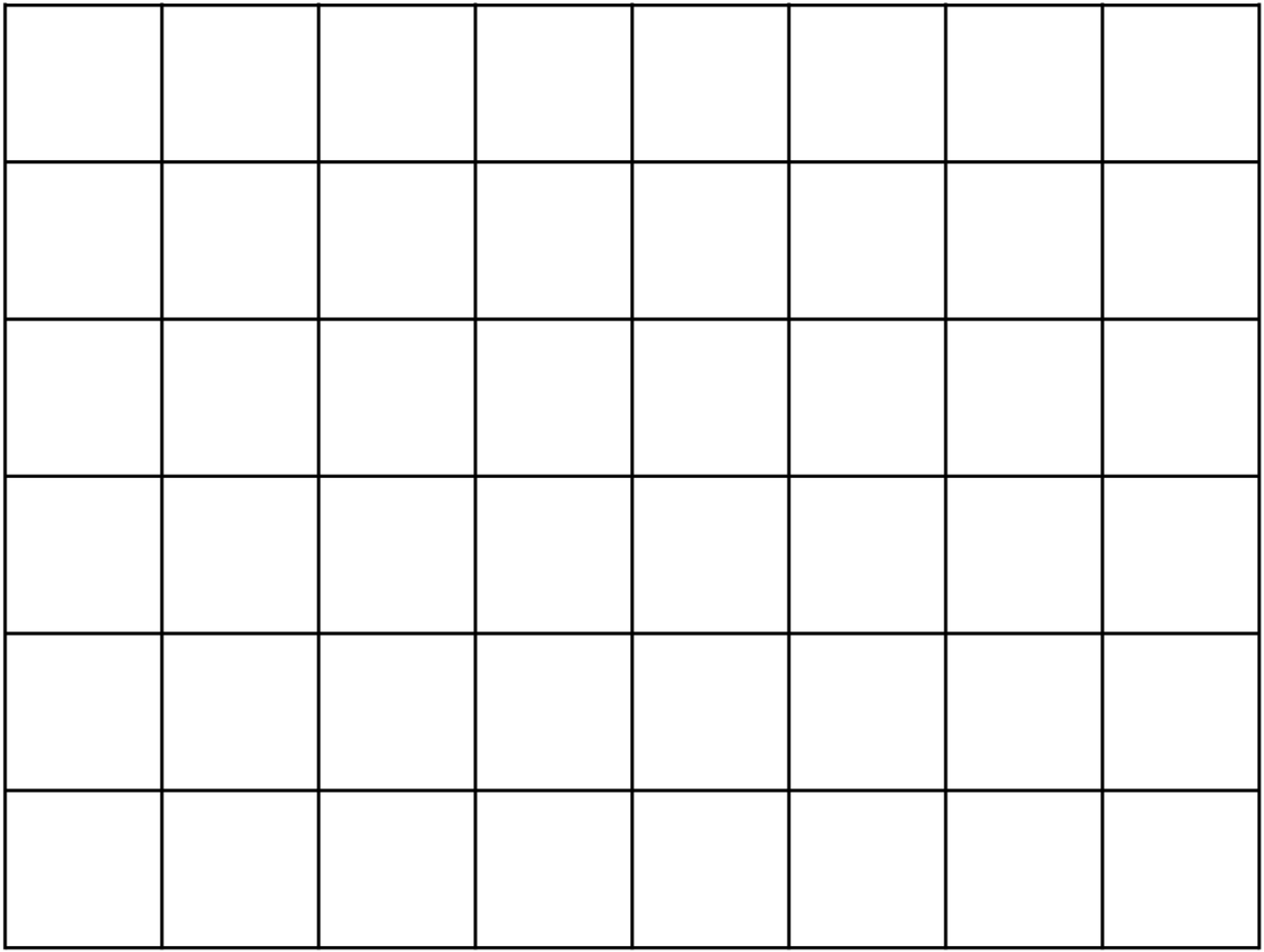
Grid Paper



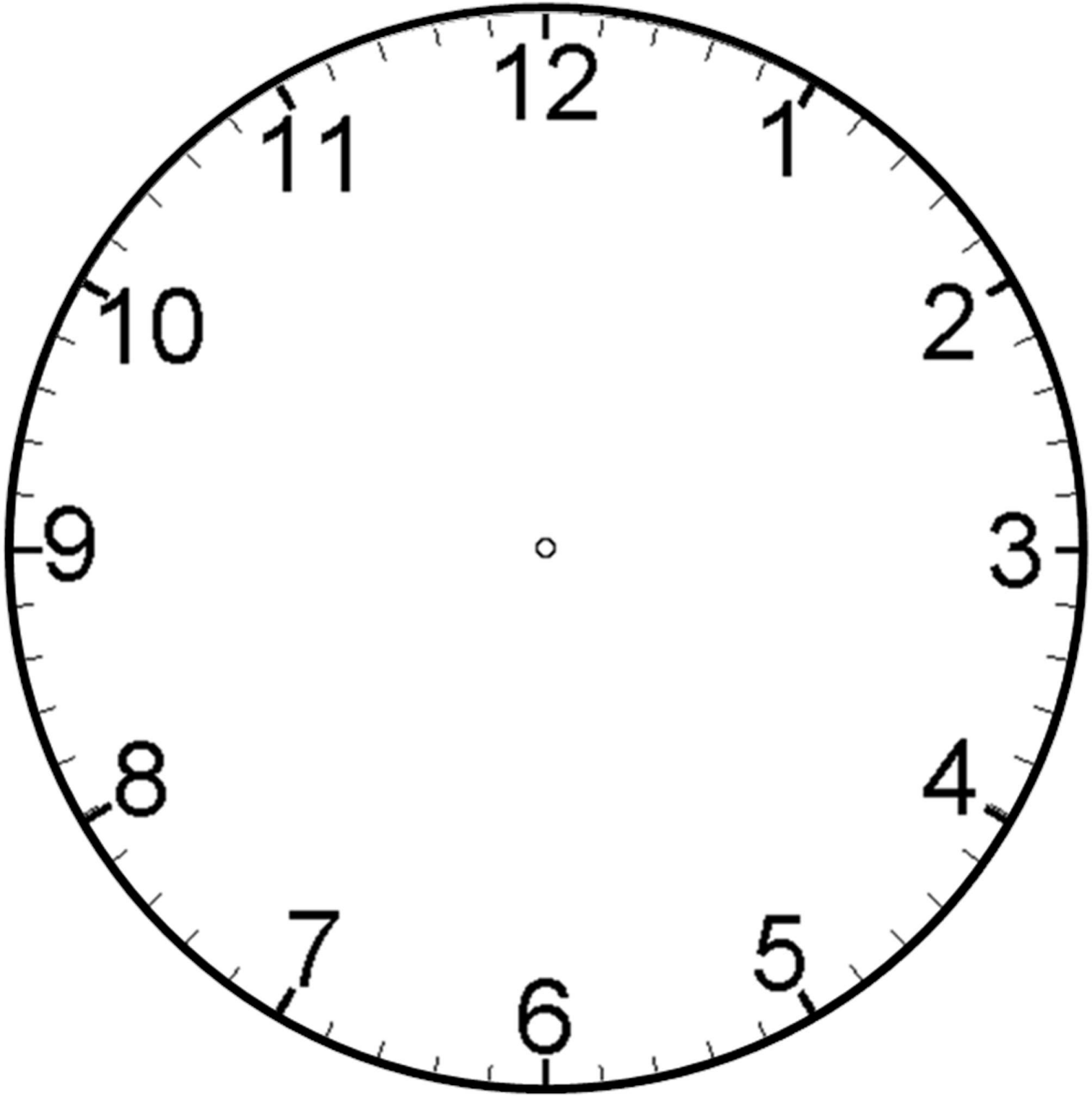
Triangles



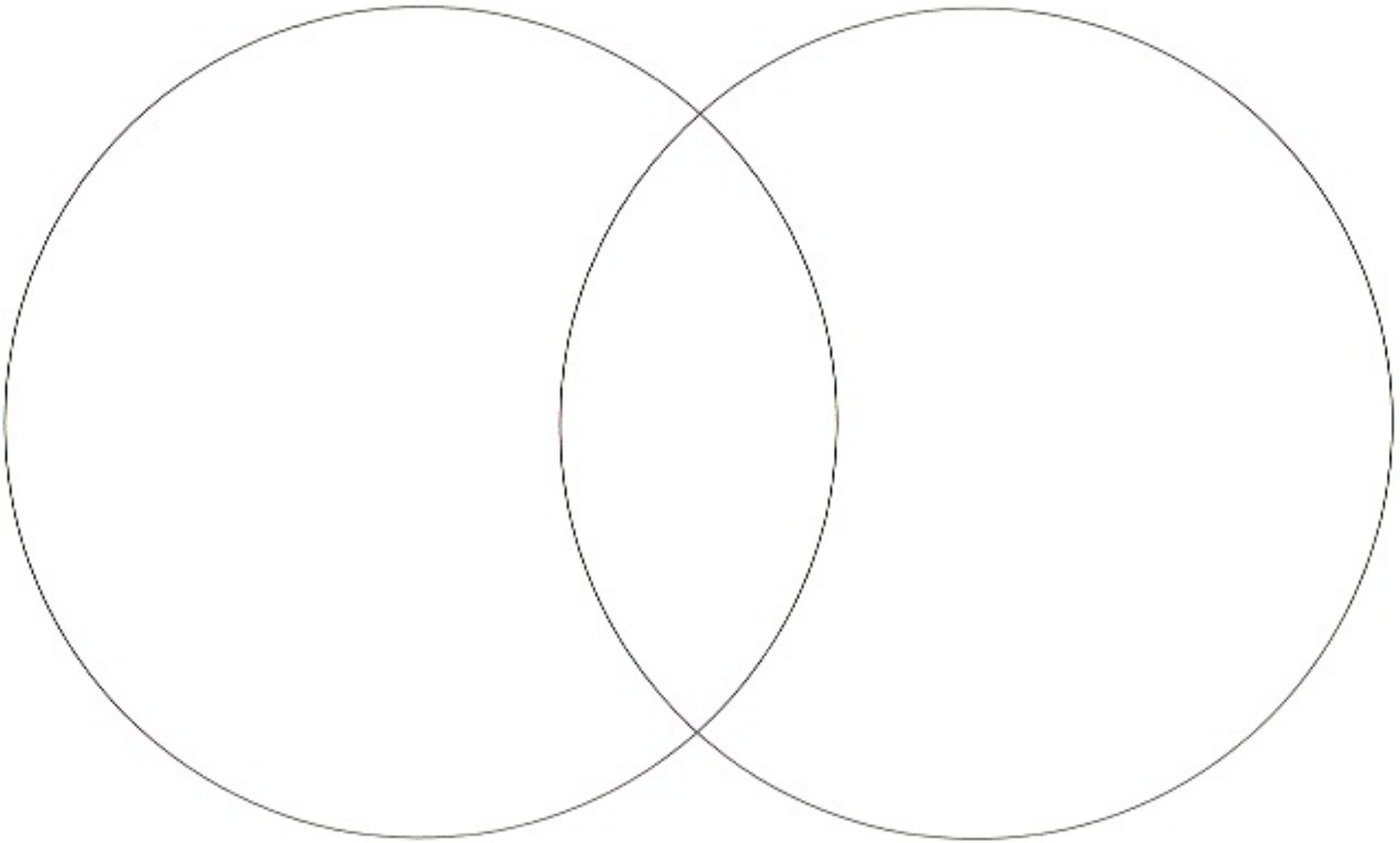
Squares



Clock



Venn Diagram



Pictograph

Key:

_____ **= 1 person**

Glossary of Terms

Glossary For Three-Part Lessons

Minds On (also known as Getting Started) – the teacher activates students' prior knowledge by asking a thought-provoking question to get students engaged in problem solving. Students participate in discussions and they attempt various strategies to solve the problem. As students attempt to answer the question, the teacher sets the expectations and focus for the lesson.

Working On It (also known as Action) – students work in pairs or groups to solve a specific task given to them by the teacher. The groups or pairs develop appropriate strategies to help them solve the problem. They represent their thinking in a variety of ways and reflect upon alternative solutions. Group members discuss their understanding to each other and the teacher. The teacher walks around, observes and assesses the students' work. He/she facilitates learning by answering students questions to clarify confusion; encouraging groups to show and explain their thinking; encouraging students to test their solution to the problem by checking their work; and by providing hints and suggestions without giving solutions away.

Consolidation and Debrief (also known as Reflect and Connect) – the teacher gathers students together and facilitates a whole group discussion about the "Working On It" task. He/she encourages students to share their solutions to the problem, explain strategies used to get to the solution, and to justify their answer. At this time, the teacher addresses any misunderstandings and confusions with the task. There are three ways to conduct the consolidation: gallery walk, math congress and bansho.

Gallery Walk – the teacher and students walk around and observe student solutions to the group task "Working On It". Students read what the groups did and they give oral and written feedback. The teacher observes how students solved the problem. His/her focus is on Mathematical thinking (strategies that were used to get to the solution such as, addition, subtraction, diagram, 10-frame, multiplication, division, count forward, count backwards, etc.). The teacher uses the mathematical thinking of students and discusses strategies during the consolidation period and for next steps.

Math Congress – the teacher selects 2 or 3 students' solutions and has a class discussion about the mathematical thinking used. Students have an opportunity to talk about their solutions and thinking. The teacher uses questioning to prompt student responses and to bring about specific ideas and strategies. He/she uses students' solutions to discuss mathematical concepts/big ideas.

Bansho – students complete the "Working On It" task and the teacher uses a flat surface (chalkboard, whiteboard, etc.) to display students' solutions. Groups present and discuss their solutions and strategies, while the teacher makes comparisons to students' work by asking questions to address specific math ideas. Group work is sorted and displayed based on the mathematical strategies used and its complexity. Students then compare their solutions with other groups.

Highlight (also known as Summary) – after the consolidation, the teacher facilitates a class discussion and reflection of the "Working On It" task, and relates it to the learning goal for the lesson. He/she prompts students to discuss key mathematical concepts resulting from the activity. The teacher then records key mathematical concepts, vocabulary, algorithms, strategies, etc. using a list, chart, anchor chart, etc. so students can make reference to and make connections to key concepts when completing group and/or independent tasks.

Independent Task (also known as Practice) – the teacher provides an opportunity for students to practice their understanding of key mathematical concepts and strategies by giving them a similar task to complete independently in their Math Journal. Students will apply what they learned during the "Working On It" task, consolidation and highlight discussion, and refer to any anchor charts, lists, charts, etc. developed to assist them in completing the independent task.

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