Exploring Mathematics Through Problem-Solving and Student Voice

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Grade 3

Number Sense and Numeration

Grade 3 - Number Sense and Numeration (Skip Counting)

Materials: chart paper, markers, number lines, hundreds chart

Curriculum Expectations: Count forward and backwards by 1's, 2's, 5's, 10's, and 100's to 1000 from various starting points, and by 25's to 1000 starting from multiples of 25, using a variety of tools and strategies.

Minds On: 5-10 Minutes

- Can you skip count by 2's, 5's, 10's and 25's?
- Can you count forward?
- Can you count backwards?
- What can we use to count forward on?
- What can we use to count backwards 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 and backwards from different starting points.

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 120. What might her number pattern be? Is there more than 1 pattern? Show your work.

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Extension (Independent Task for Math Journal)

Start at 50 and skip count forward and backwards in as many different ways as you can. Show your work.	Start at 50 and skip count forward and backwards in as many different ways as you can. Show your work.
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Grade 3 - Number Sense and Numeration (Representing Numbers)

Materials: chart paper, markers, a variety of manipulatives for representing numbers

Curriculum Expectations: Represent whole numbers to 1000, 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 56?**
- Have students choose manipulatives to use to show the given number.
- Record their responses on chart paper (create an anchor chart).

Sample Responses

- 5 rods and 6 units
- 50 + 6
- 5 dimes and 6 pennies
- 10+10+10+10+10+6
- pictures, words, tallies
- 56 < 100
- 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).
- **Tell everything you know about the number 103.**
- 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

- Base 10 models and name
- Expanded Form
- 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:

Tell everything you know about the number 103.

Tell everything you know about the number 103.

Tell everything you know about the number 103.

Tell everything you know about the number 103.

Tell everything you know about the number 103.

Extension (Independent Task for Math Journal)

Tell everything you know about the number _____. Show you work.	Tell everything you know about the number _____. Show you work.
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Grade 3 - Number Sense and Numeration (Place Value & Comparing Numbers)

Materials: chart paper, markers, number cards, envelopes
Curriculum Expectations: Compare, and order whole numbers to 1,000, using a variety of tools.
Minds On: 5-10 Minutes
• Put 3 numbers in a bag and pull them out. • How many different 3-digit numbers can you make? • What is the greatest number? • What is the smallest number?
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 have students share their work. • If students do not use a T-Chart, show them how to use a T-Chart to organize their work. • Point out the patterns in the T-Chart.
• **Generalization**: I can compare numbers by first looking at the 100's digit, the 10's digit, and the 1's digit.
Extension: Have students work on the "Independent Task" in their Math Journal (see template below).

Working On It

The number of toy cars in each box has 3 digits: 1, 4 and 7. The rectangular box has fewer toy cars than the cylinder box. How many toy cars could there be in each box? How do you know? How many ways can you find? Show your work.

The number of toy cars in each box has 3 digits: 1, 4 and 7. The rectangular box has fewer toy cars than the cylinder box. How many toy cars could there be in each box? How do you know? How many ways can you find? Show your work.

The number of toy cars in each box has 3 digits: 1, 4 and 7. The rectangular box has fewer toy cars than the cylinder box. How many toy cars could there be in each box? How do you know? How many ways can you find? Show your work.

Extension (Independent Task for Math Journal)

* Put 3 numbers in an envelop for each student.

Using the number cards in your envelope, make as many 3-digit numbers you can. List the numbers from greatest to least. How do you know you have listed your numbers from greatest to least? Explain your thinking.	Using the number cards in your envelope, make as many 3-digit numbers you can. List the numbers from greatest to least. How do you know you have listed your numbers from greatest to least? Explain your thinking.
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Grade 3 - Number Sense and Numeration (Addition and Subtraction)

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

Curriculum Expectations: Solve problems involving the addition and subtraction of two-digit numbers, using a variety of mental strategies.

Minds On: 5-10 Minutes

- Review 2-digit addition with and without regrouping.
- Review 2-digit subtraction with and without regrouping.
- 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 various strategies for addition and subtraction.

Sample Strategies

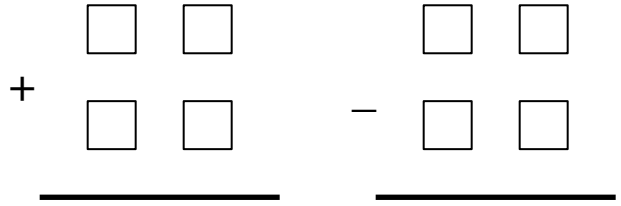
- Base 10 Blocks
- Pictures
- 10-Frames
- 100 Chart
- Number Line
- Add the 10's first and then the 1's
- Standard Form

Generalization: I can create and solve 2-digit addition and subtraction problems using different strategies.

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

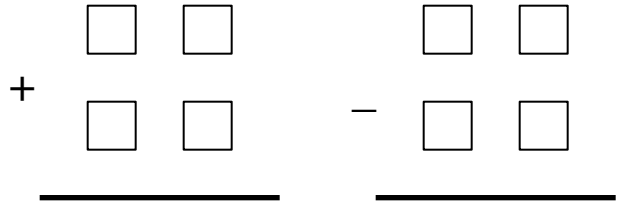
Working On It

Use the 2, 6, 3, and 9 number cards. Arrange the cards to make addition and subtraction problems. Record your problems.



How many sums and differences can you find? What is the greatest sum? What is the least difference? Show your work.

Use the 2, 6, 3, and 9 number cards. Arrange the cards to make addition and subtraction problems. Record your problems.



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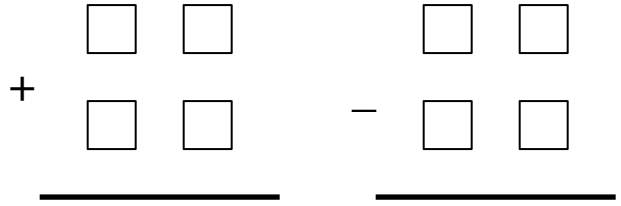

How many sums and differences can you find? What is the greatest sum? What is the least difference? Show your work.

Extension (Independent Task for Math Journal)

Arrange the numbers: 1, 3, 5, and 6 to create 2-digit addition problems. Find the greatest sum. Using the same numbers, create 2-digit subtraction problems. Find the least difference. Show your work and explain how you know.	Arrange the numbers: 1, 3, 5, and 6 to create 2-digit addition problems. Find the greatest sum. Using the same numbers, create 2-digit subtraction problems. Find the least difference. Show your work and explain how you know.
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Grade 3 - Number Sense and Numeration (Multiplication)

Materials: chart paper, markers, counters

Curriculum Expectations: Relate multiplication of one-digit numbers and division by one-digit divisors to real life situations, using a variety of tools and strategies (e.g., place objects in equal groups, use arrays, write repeated addition or subtraction sentences).

Minds On: 5-10 Minutes

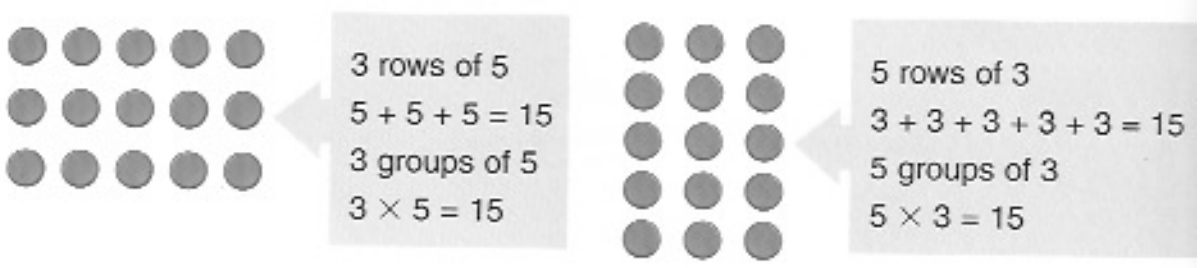
- How can we arrange ourselves into equal rows on the carpet?
- Relate this to an array in multiplication.
- Draw an array on chart paper with the multiplication sentence.
- Review the terms rows and columns.
- Relate this to repeated addition, arrays and equal rows.

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 to discuss while student share their work.
- Create an anchor chart highlighting different strategies for multiplication.



Generalization: I know that multiplication is repeated addition.

- I know that not all numbers can be put into equal groups.
- I can create arrays to show multiplication facts.

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

Working On It

How many ways can you arrange 24 counters in equal rows? How do you know you have found all the ways? Arrange 23 counters in equal rows. How many ways can you do this? Show and explain your thinking.

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Extension (Independent Task for Math Journal)

There are 12 singers and 15 dancers. Can they form equal rows of 2? How do you know? Can they form equal rows of 3? How do you know? What other equal rows can they form? Show your work.	There are 12 singers and 15 dancers. Can they form equal rows of 2? How do you know? Can they form equal rows of 3? How do you know? What other equal rows can they form? Show your work.
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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.

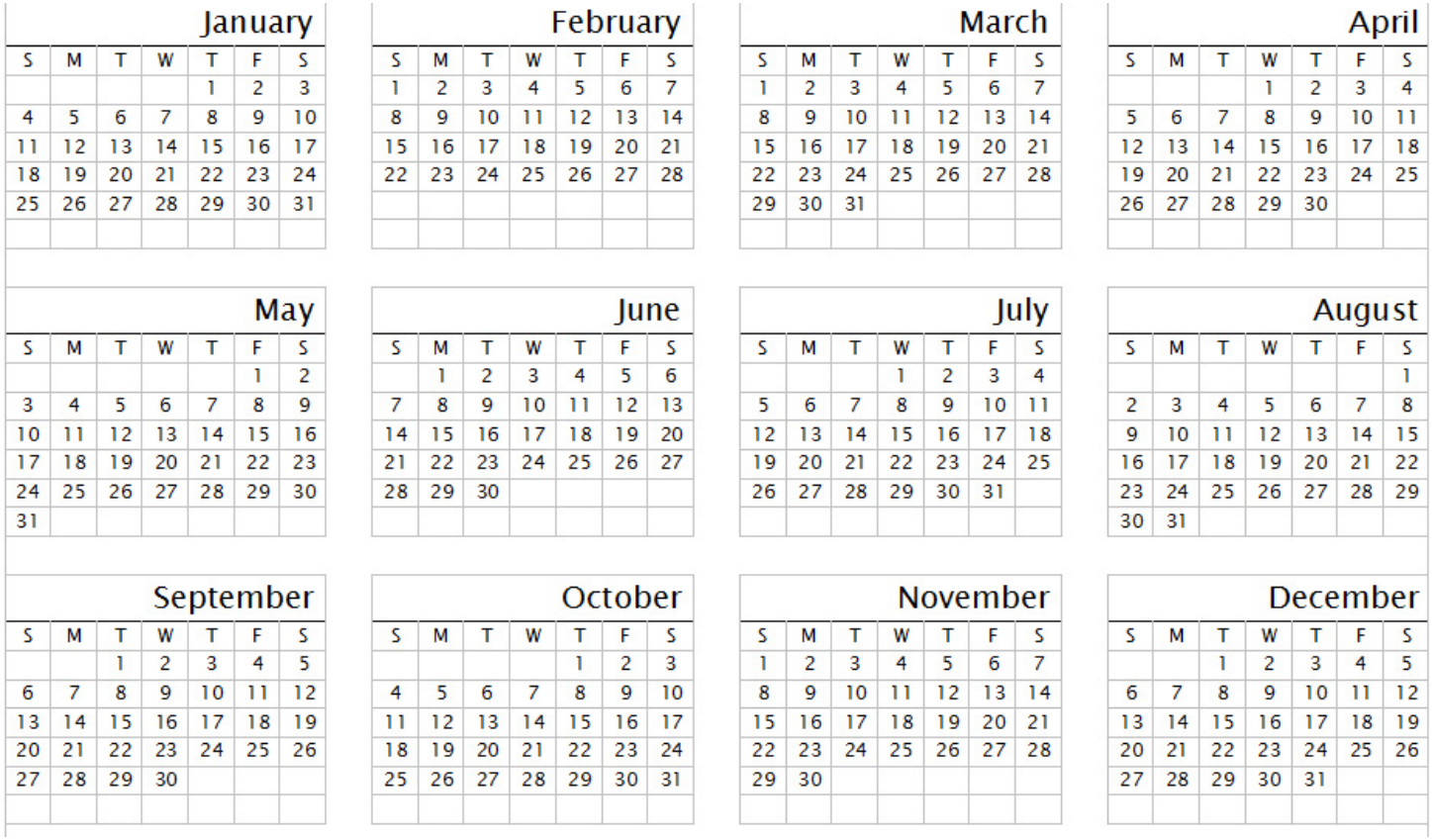
Sample Information:
- The year starts in January, not September
- How many hours in a day.
- How many days in a month, year, etc.
- How many weeks in a month, year, etc.
- Every calendar year changes.
- Leap years.

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		

<u>Grade 2/3 Extension # 1</u> (Independent Task for Math Journal)

Use your Student Planner to find: - 8 days after January 8th. - 11 days before Halloween. - 7 days after the first day of school. - 3 weeks after Remembrance Day. - 5 weeks before June 18th. - 4 months before May 25th.	Use your Student Planner to find: - 8 days after January 8th. - 11 days before Halloween. - 7 days after the first day of school. - 3 weeks after Remembrance Day. - 5 weeks before June 18th. - 4 months before May 25th.
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Grade 2/3 Extension # 2 (Independent Task for Math Journal)

Riddle: Use the clues to find the date.

1. The date falls on a month with 31 days.
2. It is in the 8th month.
3. It is on an even date.
4. It is on the third Sunday.

What date is it?

Riddle: Use the clues to find the date.

1. The date falls on a month with 31 days.
2. It is in the 8th month.
3. It is on an even date.
4. It is on the third Sunday.

What date is it?

Riddle: Use the clues to find the date.

1. The date falls on a month with 31 days.
2. It is in the 8th month.
3. It is on an even date.
4. It is on the third Sunday.

What date is it?

Riddle: Use the clues to find the date.

1. The date falls on a month with 31 days.
2. It is in the 8th month.
3. It is on an even date.
4. It is on the third Sunday.

What date is it?

Riddle: Use the clues to find the date.

1. The date falls on a month with 31 days.
2. It is in the 8th month.
3. It is on an even date.
4. It is on the third Sunday.

What date is it?

Riddle: Use the clues to find the date.

1. The date falls on a month with 31 days.
2. It is in the 8th month.
3. It is on an even date.
4. It is on the third Sunday.

What date is it?

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 ________________________.
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Grade 3 - Measurement (Perimeter)

Materials: chart paper, markers, square tiles, rulers

Curriculum Expectations: Estimate, measure, and record the perimeter of two-dimensional shapes, through investigation using standard units.

Minds On: 5-10 Minutes

- Review terms.
- What is perimeter?
- What are the characteristics of a rectangle?
- Make a rectangle with the class using 4 squares (2 ways)
- Discuss measuring around and different perimeters.

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 know if they found all of the possible rectangles.
- Look for some sort of methodical strategy to show their work.
- Demonstrate understanding that you can have many different shaped rectangles with the same perimeter.

Generalization: I can create a variety of rectangles with the same perimeter.

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

Working On It

How many different rectangles can you draw with a perimeter of 18 units? How do you know that you have drawn all of the possible rectangles? Use the grid paper and square tiles provided to show your work.

How many different rectangles can you draw with a perimeter of 18 units? How do you know that you have drawn all of the possible rectangles? Use the grid paper and square tiles provided to show your work.

How many different rectangles can you draw with a perimeter of 18 units? How do you know that you have drawn all of the possible rectangles? Use the grid paper and square tiles provided to show your work.

<u>Extension # 1</u> (Independent Task for Math Journal)

How many different rectangles can you draw with a perimeter of 16 units? How do you know that you have drawn all of the possible rectangles? Use the grid paper and square tiles provided to show your work.	How many different rectangles can you draw with a perimeter of 16 units? How do you know that you have drawn all of the possible rectangles? Use the grid paper and square tiles provided to show your work.
How many different rectangles can you draw with a perimeter of 16 units? How do you know that you have drawn all of the possible rectangles? Use the grid paper and square tiles provided to show your work.	How many different rectangles can you draw with a perimeter of 16 units? How do you know that you have drawn all of the possible rectangles? Use the grid paper and square tiles provided to show your work.
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Extension # 2 (Independent Task for Math Journal)

Mr. Richmond has 12 large squares of tile to make the floor of a pen for his dog. He wants to make a rectangular pen with the least amount of fencing. What are the possible lengths and widths of the pen Mr. Richmond should make?	Mr. Richmond has 12 large squares of tile to make the floor of a pen for his dog. He wants to make a rectangular pen with the least amount of fencing. What are the possible lengths and widths of the pen Mr. Richmond should make?
M Mr. Richmond has 12 large squares of tile to make the floor of a pen for his dog. He wants to make a rectangular pen with the least amount of fencing. What are the possible lengths and widths of the pen Mr. Richmond should make?	Mr. Richmond has 12 large squares of tile to make the floor of a pen for his dog. He wants to make a rectangular pen with the least amount of fencing. What are the possible lengths and widths of the pen Mr. Richmond should make?
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Grade 3 - Measurement (Area)

Materials: grid chart paper, markers, square tiles, grid paper

Curriculum Expectations: Estimate, measure, and record area.

Minds On: 5-10 Minutes

- On grid chart paper draw a polygon.
- How many different ways can we find the area of this figure?
- Have students use manipulatives of their choice to find the area.
- Discuss the manipulatives students chose.
- Test to see which manipulatives would be the easiest to use when finding the area.
- Highlight the fact that the square tile fits the square on the grid paper and is the easiest to use.
- 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

- Look for patterns that students have come up with to find all the possibilities.
- How did you make sure that you didn't count squares twice? What strategies did you use? (dots, highlighter, rows, started at top left)
- Highlight the use of 1/2 squares.

Generalization: I can create a variety of figures with the same area.

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 a number of their own.

Working On It

How many different figures can you make with an area of 20 square units? Use the grid paper and square tiles provided to show your thinking.

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Extension (Independent Task for Math Journal)

How many different figures can you make with an area of 18 square units? Use the grid paper and square tiles provided to show your work. How do you know you have found all of the figures?	How many different figures can you make with an area of 18 square units? Use the grid paper and square tiles provided to show your work. How do you know you have found all of the figures?
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Grade 3 - Measurement (Elapsed Time)

Materials: chart paper, markers, demonstration clocks

Curriculum Expectations: Read time using analogue clocks, to the nearest five minutes, and using digital clocks (e.g., 1:23 means twenty-three minutes after one o'clock), and represent time in 12-hour notation.

Minds On: 5-10 Minutes

- Review counting forward and backwards 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
- Timeline

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 7:55 a.m. and it took her 15 minutes to get to school, at what time did she arrive there? Show how you solved the problem.

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Extension #1 (Independent Task for Math Journal)

Charlie and Frank met at the mall at 5:00 p.m. Charlie took 45 minutes to get to the mall. Frank took 25 minutes. At what time did each boy leave home? How do you know?	Charlie and Frank met at the mall at 5:00 p.m. Charlie took 45 minutes to get to the mall. Frank took 25 minutes. At what time did each boy leave home? How do you know?
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<u>Extension #2</u> (Independent Task for Math Journal)

Ms. Boldoc and Ms. Burke-Tsakmakas met at Starbucks at 4:30 p.m. Ms. Bolduc took 20 minutes to get to Starbucks. Ms. Burke-Tsakmakas took 25 minutes. At what time did each teacher leave home? How do you know?	Ms. Boldoc and Ms. Burke-Tsakmakas met at Starbucks at 4:30 p.m. Ms. Bolduc took 20 minutes to get to Starbucks. Ms. Burke-Tsakmakas took 25 minutes. At what time did each teacher leave home? How do you know?
Ms. Boldoc and Ms. Burke-Tsakmakas met at Starbucks at 4:30 p.m. Ms. Bolduc took 20 minutes to get to Starbucks. Ms. Burke-Tsakmakas took 25 minutes. At what time did each teacher leave home? How do you know?	Ms. Boldoc and Ms. Burke-Tsakmakas met at Starbucks at 4:30 p.m. Ms. Bolduc took 20 minutes to get to Starbucks. Ms. Burke-Tsakmakas took 25 minutes. At what time did each teacher leave home? How do you know?
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Geometry and Spatial Sense

Grade 3 – Geometry and Spatial Sense (2-D Shapes)

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

Curriculum Expectations: Identify and compare various polygons, and sort them by their geometric properties.

Minds On: 5-10 Minutes

Show students a trapezoid.

Tell me everything you know about the trapezoid. How do you know that is everything? Is it reasonable?

- What information are you going to use to help you answer the question?
- What strategy will you use?

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

Bansho

- Which answer is correct? How do you know?
- Chart-Share strategies and post for future use
- Highlight KEY vocabulary

Guiding Questions:

1) How do you know you've found all the possibilities?
2) How is this solution similar or different to others?

Generalization: I can compare different polygons by using my knowledge about their geometric properties.

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

Working On It

A certain shape makes you think of a rectangle, but it is not a rectangle. What could it be? Why?

A certain shape makes you think of a rectangle, but it is not a rectangle. What could it be? Why?

A certain shape makes you think of a rectangle, but it is not a rectangle. What could it be? Why?

A certain shape makes you think of a rectangle, but it is not a rectangle. What could it be? Why?

A certain shape makes you think of a rectangle, but it is not a rectangle. What could it be? Why?

A certain shape makes you think of a rectangle, but it is not a rectangle. What could it be? Why?

Extension (Independent Task for Math Journal)

Compare the figures. 	Compare the figures. 
Compare the figures. 	Compare the figures. 
Compare the figures. 	Compare the figures. 
Compare the figures. 	Compare the figures. 
Compare the figures. 	Compare the figures. 

Grade 3 – Geometry and Spatial Sense (Angles)

Materials: chart paper, markers

Curriculum Expectations: Use a reference tool (e.g., paper corner, pattern block, carpenter's square) to identify right angles and to describe angles as greater than, equal to, or less than a right angle.

Minds On: 5-10 Minutes

- Display different angels.
- Tell me everything you know about angels.
- How can you form angels? (Two lines meeting at a vertex)
- Write what students know on chart paper.
- Highlight key words (vertex, arm, right angle, acute angle, obtuse angle)

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

- Use students' thinking and create an anchor chart defining the different types of angles.

Generalization: I can identify and draw different types of angles.

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

Working On It

Draw 6 different angles. How can you order them? What criteria did you use? Explain how you know.

Draw 6 different angles. How can you order them? What criteria did you use? Explain how you know.

Draw 6 different angles. How can you order them? What criteria did you use? Explain how you know.

Draw 6 different angles. How can you order them? What criteria did you use? Explain how you know.

Draw 6 different angles. How can you order them? What criteria did you use? Explain how you know.

Extension (Independent Task for Math Journal)

Look around the classroom for as many objects as you can find that have right angles, acute angles (less than a right angle), and obtuse angles (greater than a right angle). Draw the objects and label their angles. Which angles were easier to find?	Look around the classroom for as many objects as you can find that have right angles, acute angles (less than a right angle), and obtuse angles (greater than a right angle). Draw the objects and label their angles. Which angles were easier to find?
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Look around the classroom for as many objects as you can find that have right angles, acute angles (less than a right angle), and obtuse angles (greater than a right angle). Draw the objects and label their angles. Which angles were easier to find?	Look around the classroom for as many objects as you can find that have right angles, acute angles (less than a right angle), and obtuse angles (greater than a right angle). Draw the objects and label their angles. Which angles were easier to find?

Grade 3 – Geometry and Spatial Sense (3-D Shapes)

Materials: chart paper, markers, geometric solids, toothpicks, plasticine
Curriculum Expectations: Construct rectangular prisms, and describe geometric properties of the prisms.
Minds On: 5-10 Minutes
• Have students use toothpicks and plasticine to build a 3-dimensional shape with 6 vertices.
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
Gallery Walk • Identify and describe the different prisms that students have created.
Generalization: I can use my knowledge about prisms to construct and describe them.

Working On It

A 3-D shape has exactly 12 edges. What shape could it be? How do you know? Construct the shape. What does the net look like?

A 3-D shape has exactly 12 edges. What shape could it be? How do you know? Construct the shape. What does the net look like?

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A 3-D shape has exactly 12 edges. What shape could it be? How do you know? Construct the shape. What does the net look like?

Patterning and Algebra

Grade 3 – Patterning and Algebra (Repeating Patterns)

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

Curriculum Expectations: Identify, extend, and create a repeating pattern involving two attributes, using a variety of tools.

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 three different Pattern Blocks, Attribute Blocks, Power Polygons or Deci-blocks and take 4 of each block you chose. How many different repeating patterns can you make with these blocks? Record your patterns. Write about your patterns.

Choose three different Pattern Blocks, Attribute Blocks, Power Polygons or Deci-blocks and take 4 of each block you chose. How many different repeating patterns can you make with these blocks? Record your patterns. Write about your patterns.

Extension (Independent Task for Math Journal)

Create repeating patterns with 3 changing attributes. Describe your patterns.	Create repeating patterns with 3 changing attributes. Describe your patterns.
Create repeating patterns with 3 changing attributes. Describe your patterns.	Create repeating patterns with 3 changing attributes. Describe your patterns.
Create repeating patterns with 3 changing attributes. Describe your patterns.	Create repeating patterns with 3 changing attributes. Describe your patterns.
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Grade 3 – Patterning and Algebra (Growing Patterns)

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

Curriculum Expectations: Represent simple geometric patterns using a number sequence, a number line, or a bar graph. Extend repeating, growing, and shrinking number patterns.

Minds On: 5-10 Minutes

- Brainstorm "What is a growing pattern?" as a class.
- Select students to show some growing patterns on chart paper (geometric, numbers, skip counting, etc.)
- Correct only if they have not shown a growing pattern.

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 solutions.
- Highlight the different strategies they used to solve the problem (T-Charts, pictures, pattern rules, diagrams)

Generalization: I can create growing patterns using different strategies.

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

Working On It

Lisa built a tower with pentagons and triangles. There are 5 levels in the tower. Each level has 2 pentagons and 3 triangles. How many pentagons and triangles are in her tower? Explain your thinking.

Lisa built a tower with pentagons and triangles. There are 5 levels in the tower. Each level has 2 pentagons and 3 triangles. How many pentagons and triangles are in her tower? Explain your thinking.

Lisa built a tower with pentagons and triangles. There are 5 levels in the tower. Each level has 2 pentagons and 3 triangles. How many pentagons and triangles are in her tower? Explain your thinking.

Extension (Independent Task for Math Journal)

Your class is having a pizza party. There are 23 students in your class. Everyone will get 2 slices each. Each pizza has 6 slices in total. How many pizzas will your teacher need to order so that there is enough for everyone?

Complete the T-chart below. Justify your answer.

Pizzas	Slices
1	6
2	
	18

The teacher will need to order _____ pizzas.

Your class is having a pizza party. There are 23 students in your class. Everyone will get 2 slices each. Each pizza has 6 slices in total. How many pizzas will your teacher need to order so that there is enough for everyone?

Complete the T-chart below. Justify your answer.

Pizzas	Slices
1	6
2	
	18

The teacher will need to order _____ pizzas.

Data Management and Probability

Grade 3 – Data Management (Comparing Graphs)

Materials: grid chart paper, markers, sample graphs

Curriculum Expectations: Read primary data presented in charts, tables, and graphs, then describe the data using comparative language, and numbers that represent the frequency of the information presented.

Minds On: 5-10 Minutes

- Have 2 students stand at the front of the classroom.
- How can we compare these 2 students?
- Define the word compare (What's the same? What's different?)
- How can we show our comparisons? (T-Chart, Venn Diagram, 3-Column 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

- Share the different ways students have compared their information.
- Discuss a simple way to show their comparisons.
- Model using a 3-Column Chart or Venn Diagram.
- Look for comparative language and the differences.

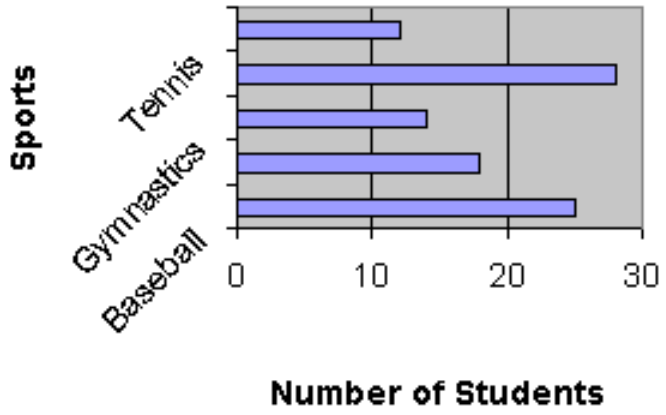
Generalization: I can compare data displayed on different graphs.

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

Working On It

The graphs show the favourite sports of Grade 3 students. Compare the data represented in each of the graphs. Write about the number and kind of sports students prefer.

Favourite Sports of Grade 3 Students



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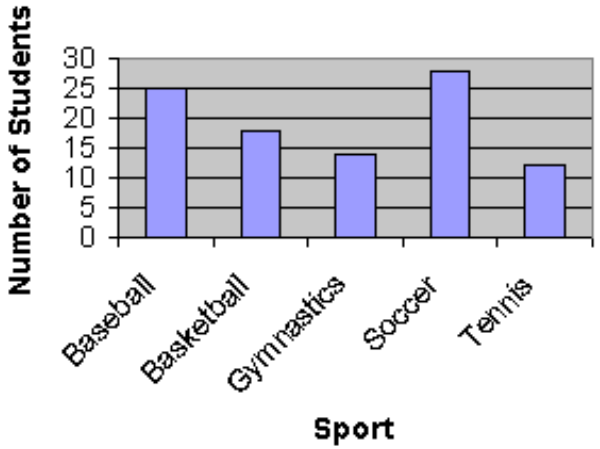

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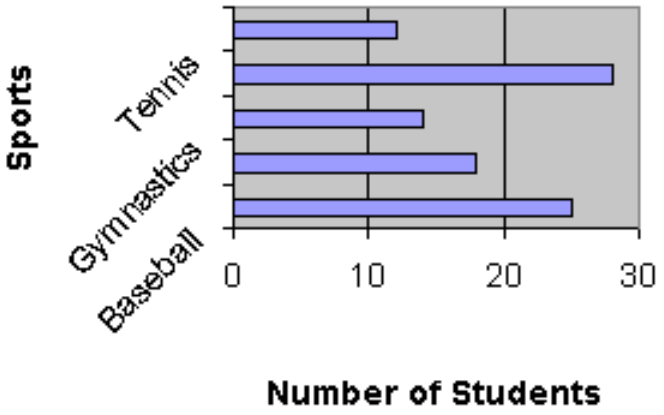
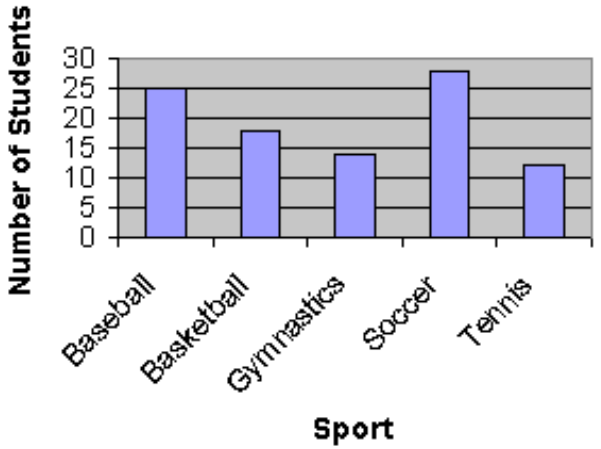
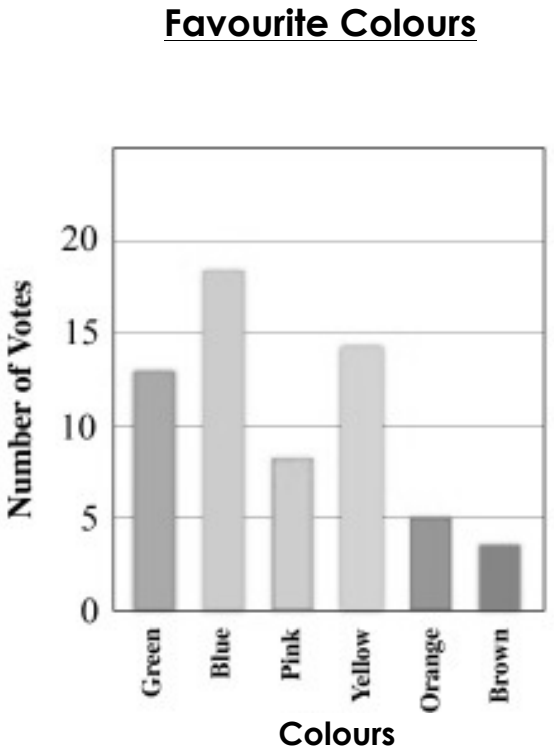


Favourite Sports of Grade 3 Students

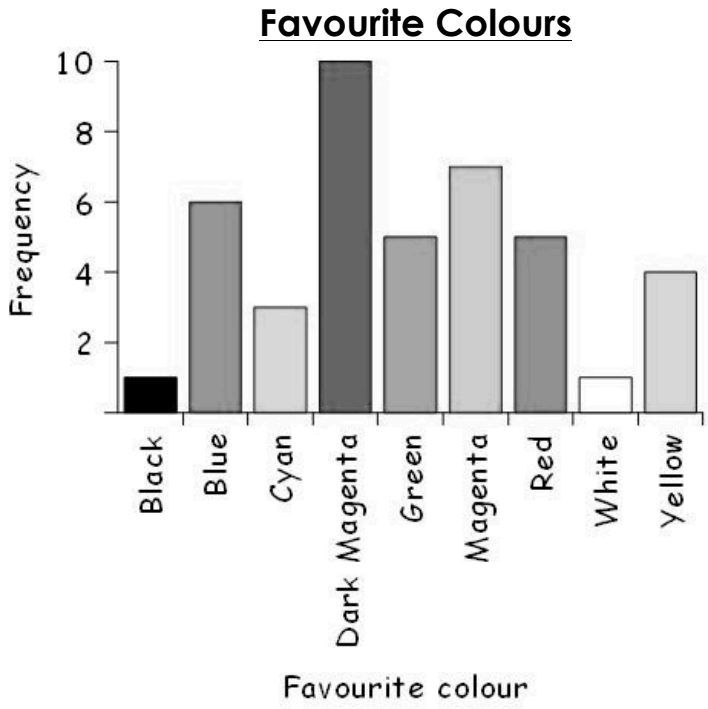


Extension (Independent Task for Math Journal)

Data for the students in Mrs. Ricalis' class:



Data for the students in Mrs. Velman's class:



Compare the data represented in each of the bar graphs.

Grade 3 – 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 on chart paper (pictograph, bar graph, line plot, circle graph).
- Name the different types of graphs and their purpose.
- Discuss the purpose of graphs. (to display 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.
- Review SALTZ (when creating bar graphs)

S – scale (What is it counting by?)
A – Axis
L – Labels
T – Title
Z - Zero

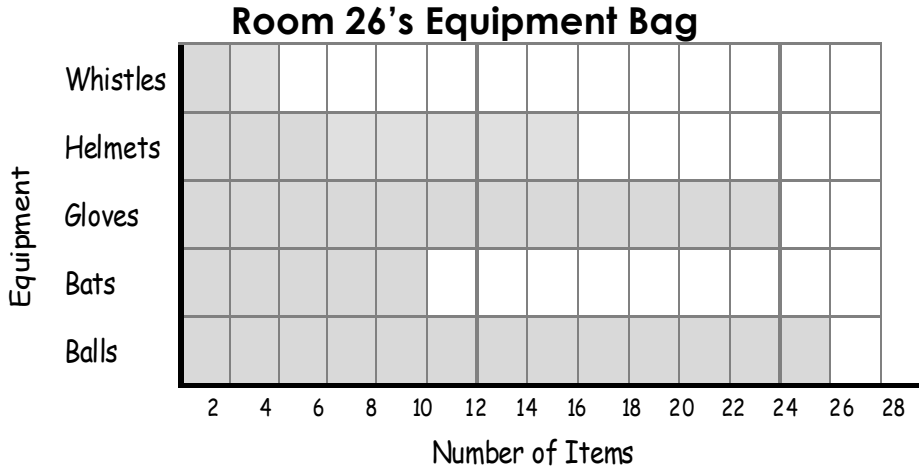
- Look for students' interpretation of the graph.
- Look for comparative language (most, least, how many more, total number)
- Look for strategies for interpreting data.
- Ask: How does the title help you figure out what question was asked?

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.



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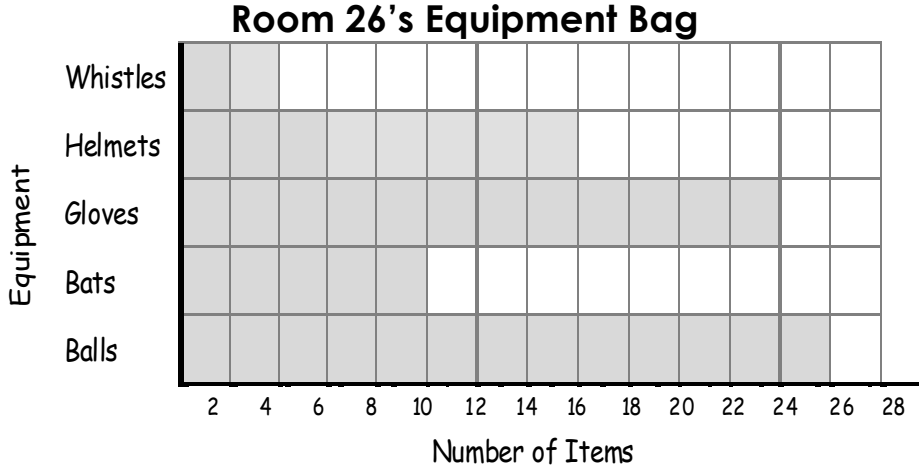
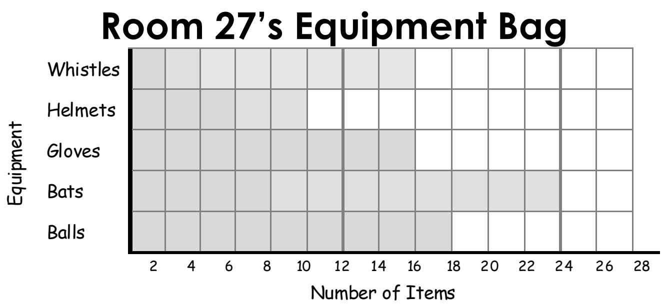


Extension (Independent Task for Math Journal)

Interpret this graph.



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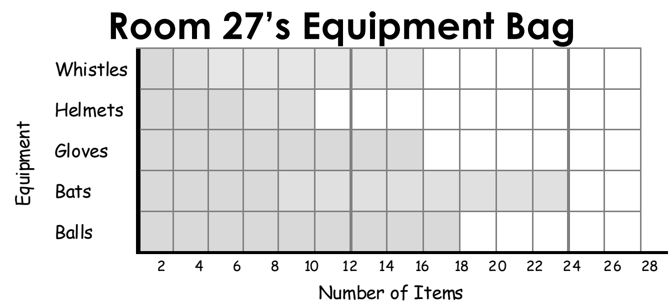
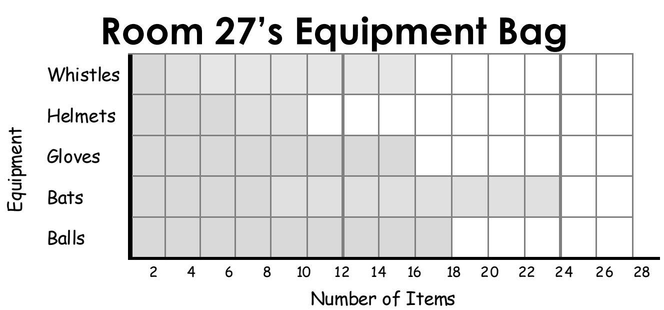
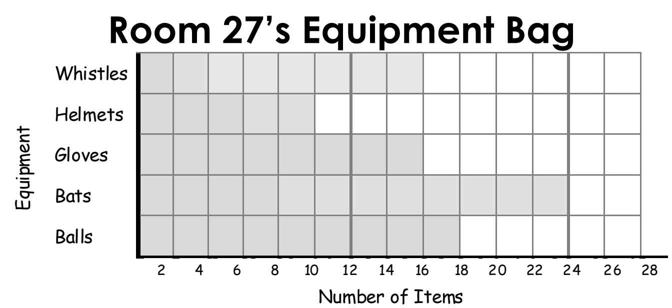


Interpret this graph.



Interpret this graph.



Grade 3 – Data Management (Creating Graphs)

Materials: grid chart paper, markers, ruler, grid paper

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 do you like to do during your free time?* (play video games, read, draw, knit, other).
- Create a T-Chart to organize student responses.
- Define the word survey and its purpose.
- How can we display our results? (pictograph, bar graph, 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

- Highlight the proper ways to create a pictograph and a bar graph.
- Discuss the significance of the "key" when creating pictographs, and introduce how to create a proper bar graph by discussing the significance of the Scale, Axis, Labels, Title, Zero (SALTZ)
- Correct any attempts if needed.

Generalization: I can collect, organize and graph data in a variety of ways.

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

Working On It

Students in Ms. Donatelli's class were surveyed about their favourite drink. How many different ways can you graph the results?

Drinks	Votes
Apple Juice	𝍸 𝍸 𝍸
Pepsi	𝍸 𝍸 I
Coke	𝍸 𝍸 𝍸 IIII
Milk	𝍸 𝍸 𝍸 II

Students in Ms. Donatelli's class were surveyed about their favourite drink. How many different ways can you graph the results?

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Pepsi	𝍸 𝍸 I
Coke	𝍸 𝍸 𝍸 IIII
Milk	𝍸 𝍸 𝍸 II

Extension (Independent Task for Math Journal)

Conduct a survey. Graph the results in at least 2 ways. What did you learn after conducting your survey?	Conduct a survey. Graph the results in at least 2 ways. What did you learn after conducting your survey?
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Grade 3 – Data Management (Probability)

Materials: grid chart paper, markers, number cubes

Curriculum Expectations: Predict the frequency of an outcome in a simple probability experiment or game, then perform the experiment, and compare the results with the predictions, using mathematical language. Demonstrate, through investigation, an understanding of fairness in a game and relate this to the occurrence of equally likely outcomes.

Minds On: 5-10 Minutes

- Review the term sum.
- Use number cubes and ask:
- What are all the numbers on the number cube?
- What is the least sum you can get when rolling 2 number cubes?
- What is the most sum you can get when rolling 2 number cubes?
- Record the sums (1 + 1, 6 + 6)

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 solutions.
- Note if students find a pattern.
- Note if they can find the sums (e.g., different ways to make 6)
- Recognize which number is the most frequent (number 7). Discuss "Lucky 7".
- Review and discuss probability language (likely, unlikely, certain, impossible, most likely)

Generalization: I understand that some sums are more likely to be rolled on number cubes than others.

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

Working On It

How many different sums can you find? Which sum comes up the most often? Show all of the different ways. How do you know you have found all of the different ways?

How many different sums can you find? Which sum comes up the most often? Show all of the different ways. How do you know you have found all of the different ways?

How many different sums can you find? Which sum comes up the most often? Show all of the different ways. How do you know you have found all of the different ways?

Extension (Independent Task for Math Journal)

A number cube is to be rolled 30 times.
About how many times is 5 likely to show?

_____

About how many times is an even number likely to show? _____

Roll a number cube 30 times and keep a tally of the results.

Rolling a 5	Rolling an Even Number

How do your results compare with your predictions?

A number cube is to be rolled 30 times.
About how many times is 5 likely to show?

_____

About how many times is an even number likely to show? _____

Roll a number cube 30 times and keep a tally of the results.

Rolling a 5	Rolling an Even Number

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About how many times is 5 likely to show?

_____

About how many times is an even number likely to show? _____

Roll a number cube 30 times and keep a tally of the results.

Rolling a 5	Rolling an Even Number

How do your results compare with your predictions?

Appendices

Group Members: _____

K What you **KNOW**	W What you **WANT TO KNOW**	C **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?

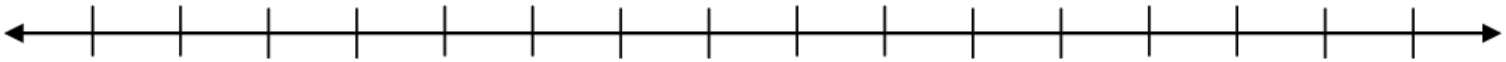
Number Cards

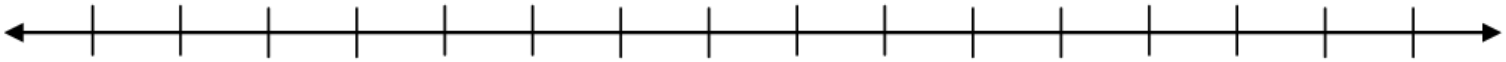
0	1	2	3	4
5	6	7	8	9
0	1	2	3	4
5	6	7	8	9

100 – Chart

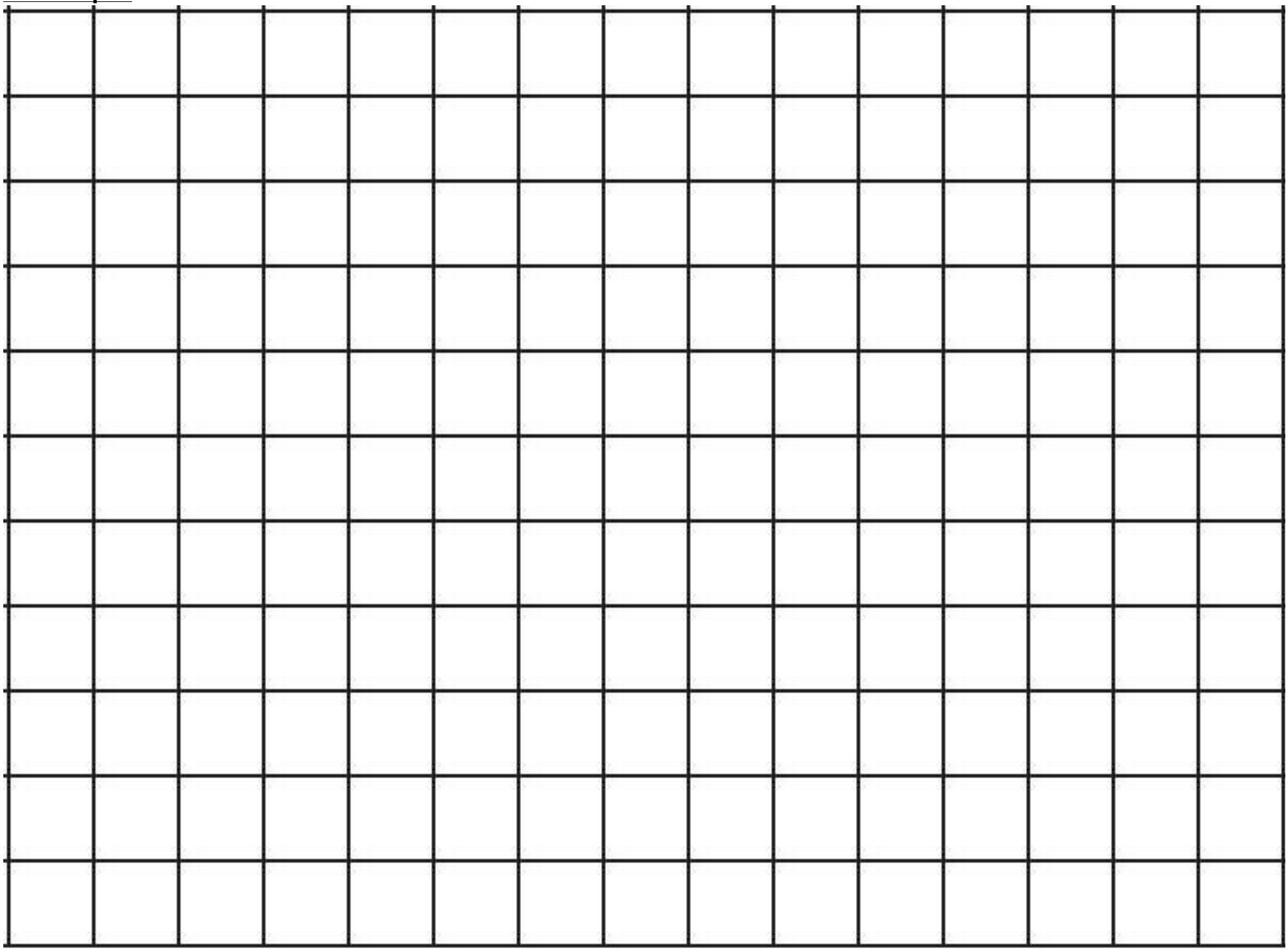
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Number Line

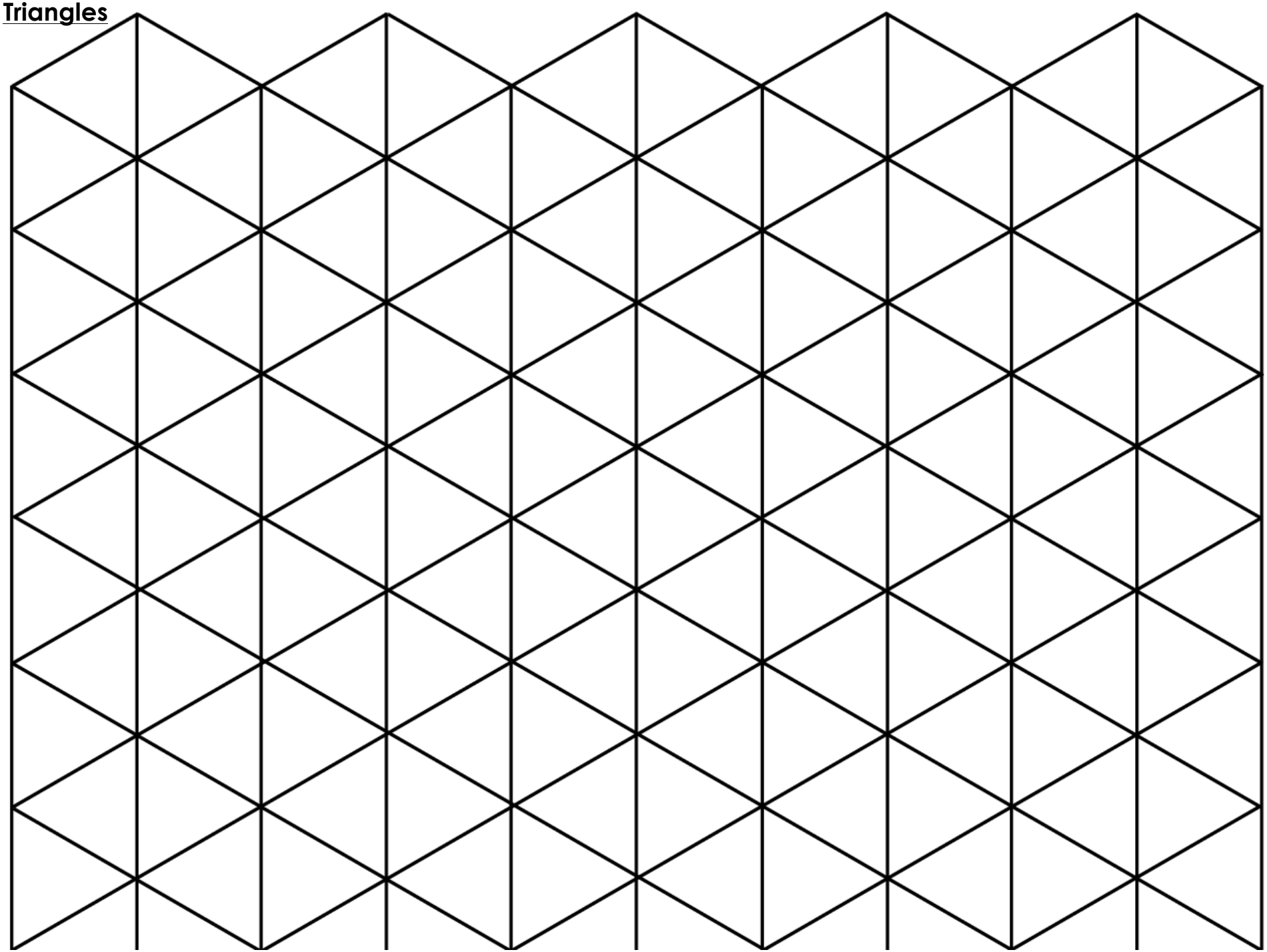




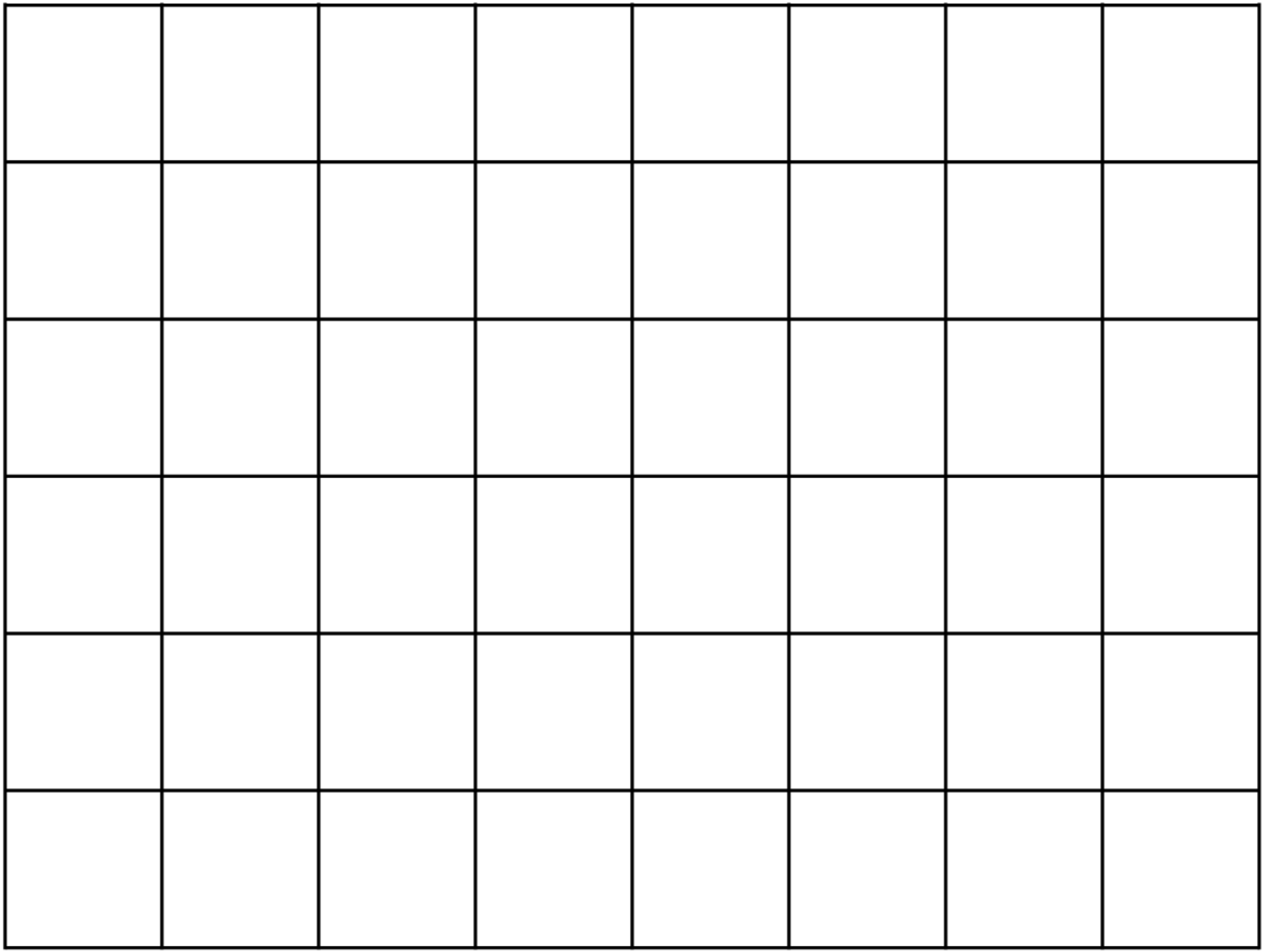
Grid Paper



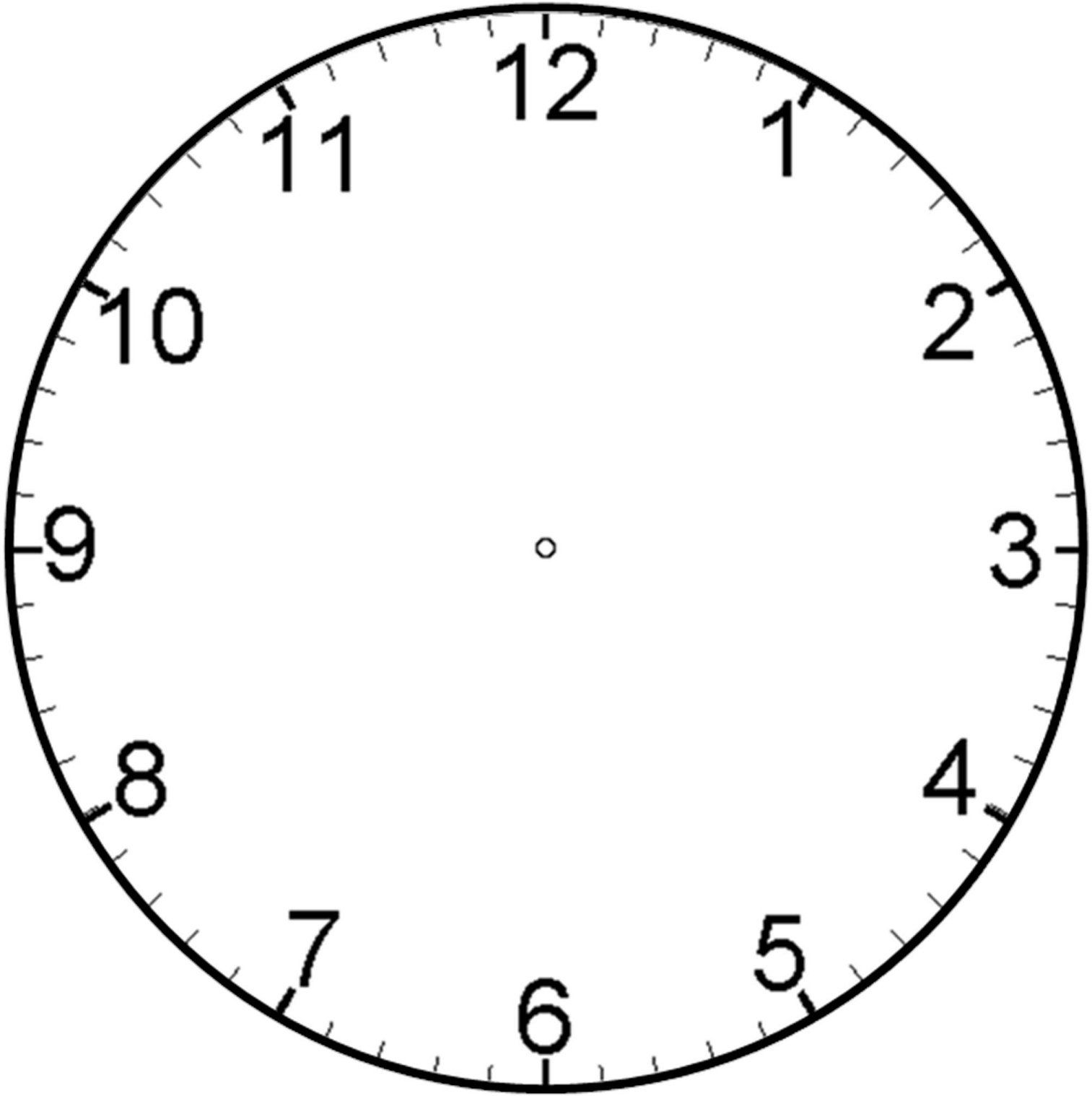
Triangles



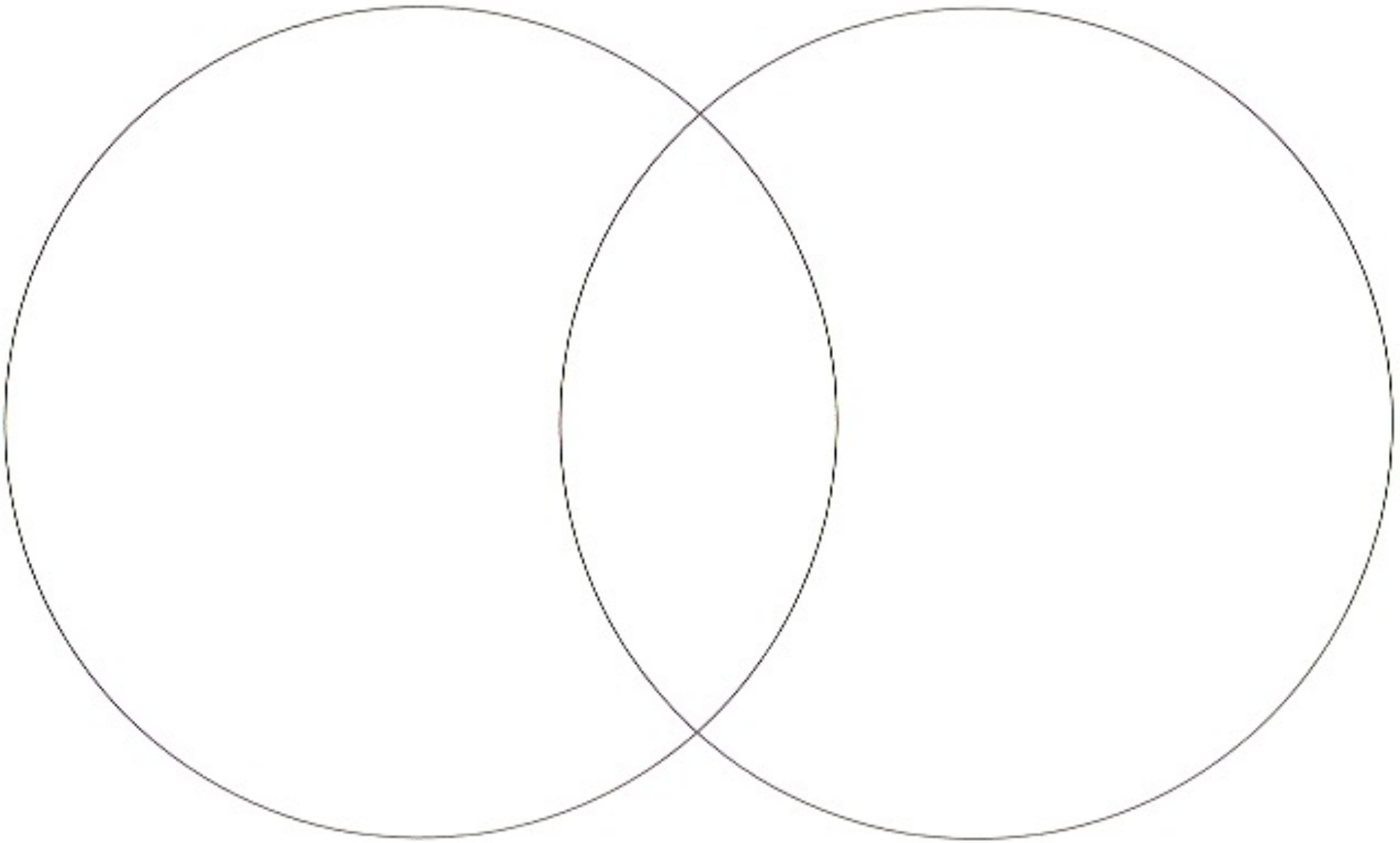
Squares



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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