Unit 7 (Math Expressions)

Objectives for all lessons: 1.MD.3, 1.G.3

7-11 is not in the timeline, but is here if you need it.

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| Unit 7 Pre-Assessment |
| 7-1 & 7-2Goals:* Draw and observe the doubles of shapes
* Identify the doubles of number 1-10 and write corresponding equations

Doubling a Single Square* Draw a rectangle on the board. Explain to the children that they can double a shape, just as they can double a number (2+2=4). Then double the original rectangle.
* Questions:
	+ When you double 1 square how many squares do you have?

Double Multiple Squares* Now trace around any 2 squares. Double the shape either horizontally or vertically
* Questions:
	+ How many squares do you have when you double 2 squares?
* You may continue and double 3, 4, 5, etc. squares

Class Discussion* Be sure to use appropriate language (Introduce the word twice)
* Discuss the meaning of double and twice in real-world situations
	+ If Ben has 3 eggs and Jerry has double that amount, how many eggs does Jerry have?
	+ If Lizzie has 4 pies and Tina has twice this amount, how many pies does Tina have?
* Does the word double have the same meaning as the word twice? (yes!)

Using Dot Arrays* Instead of drawing the doubles using rectangles, the students will circle the groups of dots that represent a number’s double
* Questions:
	+ Do you see a pattern in these numbers?
	+ How is this like skip counting?

Roll Dice, double it and write its equationHomework page 7-1 (practice working with doubles and real-world comparison problems-more and fewer)7-2Goals:* Use multiple methods for finding doubles
* Solve story problems involving doubles

Stories with Doubles* My dad baked 10 brownies yesterday. Today he will bake double that number. How many brownies will he bake today?
* Grace made 6 clay snakes. Juan made twice as many as Grace. How many clay snakes did Juan make?
* Today Nate did 9 jumping jacks. Tomorrow he will do double that number. How many jumping jacks will he do?
* There are 7 rooms in our house. The house next door has twice as many rooms. How many rooms are in the house next door?

Introduce the Doubles Plus One Strategy* Begin this activity by reviewing the numeric double for 6 (6+6=12)
* Invite students to use what they know about doubles to find the total of 6 and 7
* Guide them to see that 7 is one more than 6 so the total of 6+7 will be one more than the total of 6+6
	+ 6+6 = 12 so 6+7=13
* Repeat with other examples
	+ 3+4
	+ 4+5
	+ 9+8

Homework page 7-2 (pg. 247) |
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| 7-3Goals:* Explore half of a set (using a variety of methods)
* Solve story problems with halves

Review doublesIntroduce the word half* When they share something by diving it in half, both people get the SAME amount

Different Ways of Finding Half1. Counters of Coins
	1. Represent problems concretely before moving to paper and pencil methods
2. Using Paper and Pencil
	1. Trial and Error
		1. Children draw the required number of circles and find half by separating them in various places until both sides are equal
	2. Variation
		1. Children draw the required number of circles and shade (or mark) every other one. They count the shaded circles to find half.
	3. Dealing Method
		1. Children draw the required number of circles, “dealing” them into two rows in the order shown here. Each row contains half the number.

Problems the Students can use Counters* You have 8 pennies. If you want to keep half and give half to a friend, should you both have the same amount? How many will you each have?
* Raj has 6 pencils. He wanted to give half of them to his brother. He gave his brother 2. Did he give him half? How do you know?

Problems for Paper/Pencil Method* Find half of 10

Find half of a number from a Story* Abby walked 14 blocks. Her sister only walked half as far. How far did her sister walk?
* There were 10 muffins on a plate. Now there are only half as many. How many muffins are on the plate now?
* We saw 18 birds on the fence. When we opened the door, half of them flew away. How many flew away?
* Mrs. Ruiz has 16 plums. She wants to give half of them to each of her two sons. How many should each son get?

Homework 7-3* Students will practice finding half and double.
* Students are provided with numeric problems using doubles and halves.
* Discuss any patterns that the children may have found
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| 7-4Goals:* Discover various ways to fold geometric shapes in half
* Introduce the concepts of symmetry

Introduction * Have different shapes (triangle, rectangle, square and circle) cut out. Give shapes to students and have them explore how many ways you can fold them in half
	+ Review what half means (both parts are equal)
	+ Be sure to review the names of the shapes
* Once the groups explore with their shapes bring the class back together and ask groups what their findings were
* Show students that in order to fold a shape in half, the corners and sides have to match up.
	+ One way for the triangle (isosoles- 2 sides are the same length)
	+ Two ways for the rectangle
	+ Four ways for the square
	+ Multiple ways for the circle
* Explore different shapes that you can/can’t “cut” in half
* When we’re able to cut something in half, the object has a line of symmetry
	+ Objects that don’t have a line of symmetry are asymmetrical

Homework 7-4 (page 253)- create a symmetrical butterfly  |
| 7-5 & 7-6Goals:* Introduce fraction notation and the concept of fourths
* Find one fourth of a number by solving story problems

Introduce Fraction Notation* Either on the smart board or in your hand, show a piece of paper folded in half then unfold it
	+ Review the meaning of halves (2 equal parts)
* Write the fraction notation for one half on the board
	+ Explain that the bottom part (denominator) of the fraction shows the number of equal parts (2 means there are 2 equal parts in all)
	+ Explain that the top number (numerator) shows how many of those equal parts we have

Introduce Fourths* With the same piece of paper as above, fold the piece of paper to make halves. Ask them to fold it in half again. When they open it, they will have four equal sections
* Questions:
	+ How many parts do we have now? (4)
	+ Each of these parts is called one fourth. How many fourths are there in a whole? (4)
* Write one fourth in fraction notation
	+ What does the numerator in one fourth tell us? (That we have one of the equal parts)
	+ What does the denominator in one fourth tell us? (There are four equal parts in all).

Dividing other Shapes into Fourths* Circle and 3 Squares
* There’s one way to draw a circle into fourths
* There’s three ways to draw a square into fourths
	+ Horizontally
	+ Vertically
	+ Diagonally

Story Problems with Fourths* I have 8 cents. I want to put one fourth of my money in the bank. How many cents should I put in the bank?
* Ricardo has 20 peanuts. He wants to give equal shares to 4 of his friends. How many peanuts should he give to each friend?

Students should have more practice using counters/manipulatives when distributing among groups before going to paper/pencil.Homework page 7-5* Extra practice using ¼ and ½ with shapes

7-6Goals:* Discover the value of a quarter and calculate the value of two, three, and four quarters
* Solve story problems involving the quarter amounts 25, 50 and 75 cents.

Review what one half and one fourth is* Some students may see that half of a half is a fourth

Introducing Quarters* Ask students what they already know about quarters.
	+ How many quarters make one dollar?
	+ Does that make a quarter a fraction of a dollar? Why? (A fraction is part of a whole—the quarter is part of the whole dollar)

Solving Story Problems with Quarters* Shamika has 2 quarters. How many cents does she have?
* I have one half of a dollar. How many cents do I have?
* Maria has 50 cents. Then she got a quarter from her father. How much money does Maria have now?
* I had 75 cents, but I spend a quarter. How much money do I have now?

Sharing Problems with Fourths and Halves (Practice page 7-6)* Show the students how to solve the first problem then call on students to show their thinking on the smartboard.
* Be sure to pay attention to their language
	+ Numerator
	+ Denominator
	+ Equal parts
* Homework page 7-6 (pg. 201 and 202)- Practice with quarters and story problems
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| 7-7Goals:* Practice matching multiple quarters with their values
* Find halves and fourths by solving story problems
* Use fraction strips to compare and order fractions

Match Multiple Quarters with Value* I am selling this notebook for 50 cents. How many quarters do you need to pay for it? Draw them
* I am selling this book for 1 dollar. Draw the quarter you need to buy it.
* Now I am selling this box of markers for 78 cents. Draw 78 cents with the least amount of coins (3 quarters and 3 pennies—no dimes)

Solve Story Problems* Eric has a dollar, but he spent half of it. How many cents does he have now?
* I saw 12 deer in the woods. Then one fourth of them ran away. How many deer ran away?
* Half of my pencils are broken. I have 18 pencils. How many are broken?
* Ellen wants to share 8 peaches equally with 4 people. How many peaches should each person get?

Make Fraction Strips* What do you notice about the strips on the page? (The strips are all the same size. The first strip shows one whole and the rest of the strips show one whole divided into different equal parts.)
* They will color one part of each strip. This will help them compare the fractions later
	+ Review new language (numerator and denominator and what they mean. N- how many parts we have D- how many equal parts)

Homework page 7-7 (pg. 203/4)- practice identifying halves and fourths and a review of doubles in story problems and equations |
| 7-8 & 7-9Goals:* Read circle graphs divided into halves, fourths, or a combination of both
* Read circle graphs showing halves and fourths of a dollar

Make Circle Graphs Divided into Halves and Quarters* There are 6 crayons on the table. 3 are for Ana and 3 are for Eric.
	+ Introduce the term circle graph- they are used to show parts of a whole (when the circle is divided in half, the number of objects is also divided in half)
	+ Questions:
		- What fraction of the crayons is for Ana? (One half)
		- What fraction is for Eric? (One half)
* Guadalupe has 8 toy cars. 2 are green, 2 are blue, 2 are red, and 2 are yellow. How can we show 4 equal parts on a circle graph?
* Brian has 4 balls. 2 are baseballs, 1 is a football, and 1 is a soccer ball. Let’s make a circle graph to show the balls.
	+ Questions:
		- 2 is what part of 4? (One half)
		- How can we show one half on a circle graph? (Make two equal parts)
		- How can we show one-fourth on a circle graph? (Make two equal parts from the other half)
		- How can we compare the baseballs to the footballs? (There are twice as many baseballs as footballs. There are half as many footballs as baseballs)

Graphs with Portions of a Dollar (Student Activity page 259)* Review the parts of a dollar and their worth (one half= 50 cents, etc.)
* Emphasize that each section represents a part of a whole. If the know the whole, they can find out the amount each section represents

Homework page 7-8 (pg. 205/6)- assess learning of circle graphs and using quarters as a part of a dollar7-9Goals: * Interpret more complex circle graphs
* Transfer information from a circle graph to a table, then make a picture graph.

More Complex Circle Graphs* Talk about the fraction strips made in an earlier lesson and how there were more ways of dividing a whole than just in halves and fourths
* Student Page 7-8 (pg. 261)
	+ How many animals are in the zoo? How do you know? (16- add all the numbers on the graph)
	+ Complete questions 1-4
	+ Do similar process for Rows of Vegetables in the Garden Circle Graph

Multiple Presentations of Data (Page 262)* Have the students help you transfer the information from the circle graph to the table.
	+ Show the students a strategy to keep track of the items that they have already listed in their table (beginning with the greatest number and working down, crossing out objects on the circle graph as you complete them on the table, etc.)
* Discuss the advantages of the circle graph and the advantages of the table
	+ On a circle graph you can easily see the larger pieces and smaller pieces. You can quickly see fractions
* Students will use the data from the table to create a picture graph
	+ Questions:
		- How many items of clothing are in the closet?
		- Did you use the circle graph, the table, or the picture graph to find the total? Why? Did anyone else use something different?
		- What type of clothes makes up one fourth of the closet?
		- Did you use the circle graph, the table, or the picture graph to answer that question? Why?
		- Which kinds of clothes are the same numbers of in the closet? How do you know?

Finding Unknown Numbers in a Circle Graph (student activity page 263)* Ask the students if they notice anything unusual?
* Tell the students that each group has a total of 12 animals. Use the total to find the unknown number of animals.
	+ Students may add all the numbers on the graph and then subtract from 12
	+ They may use the graph and notice that the right half should be total 6
	+ Encourage children with different methods to explain how they found the unknown number!

Homework page 7-9 (207/8)- practice using circle graphs and tables |
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| 7-10 & 7-12Goals:* Put daily activities in order
* Read digital clocks and write standard time notation
* Read the time for exact hours on analog clocks

Explain How to Order Events* What would the steps be to write your name? There is an order they would need to follow in writing a name
	+ You would have to pick up a pencil before they can write

Order Common Daily Activities* Discuss a variety of daily events the students engage in that follow an order.
	+ Examples:
		- Order of events to brush your teeth
		- Getting dressed in the morning
		- Making a sandwich/cookies
		- Science experiment
* Discuss why the order of these activities is important

Introduce Digital Clocks* Ask the students what they know about clocks
	+ How many hours are there on a clock? (12)
	+ What else do you know about clocks?
* Draw a digital clock on the board
* Explain that the hour is given first, followed by a colon (2 dots)
* When it is the exact hour, the two dots are followed by two zeros
* Write different times on the board using a digital clock and ask students to read the times out loud (ex: 10:00 would be read “10 o’clock”)

Describing an Analog Clock* Look at this clock. What are some characteristics you notice about it?
* Show the students how to correctly draw an analog clock
	+ 12 goes at the top (some students could think 1 goes at the top)
	+ 6 goes at the bottom
	+ 3 and 9 go on either side—fill in the other numbers. Pay close attention to the space in between the numbers (be sure it’s even!)
* Explain the meaning of clockwise- the direction the numbers go around the clock
* Review what the minute and hour hand do on an analog clock
	+ Shorter hand is the hour hand
	+ Longer hand is the minute hand
	+ A way for students to remember which is which—the word “minute” is longer than the word “hour” so the longer hand is the minute hand
* Show various exact-hour times on my clock and have students draw the time on the analog clock and written using a digital clock

Homework 7-10 (page 209/10)- practice telling time and review of comparing questions using picture graphs 7-12Goals:* Tell time to the half-hour on a digital clock
* Tell time to the half-hour on an analog clock

Finding the Number of Minutes in One Half-Hour* How many minutes are in an hour? (60 minutes)
* Ask the students how to find half of that amount of one half-hour. If students already know the answer, have them prove or explain how they know
	+ One way is using 6 ten sticks—half of 6 is 3 and since each ten stick represents a ten, half of 60 is 30

Write Time to the Half-Hour* Ask the students how they believe 10:30 is written
* Write 10:30 on a digital clock
* Ask the students if they know any other way to say 10:30 (half past ten)
* Say several half-hour times and ask students to write them on a digital clock

Telling Half-Hour Times on Analog clocks* Review the hands of the clock and the word clockwise
* Set the clock at 2:00. Slowly move the minute hand clockwise. Tell the students that they tell you when they believe the clock is showing 2:30.
* Draw a circle on the board and split it into half vertically. This should help show the students at the half-hour, the minute hand has covered half the clock.
* Ask the students to show different half-hour times on the analog clock
* Discuss the placement of the hour hand at a half-hour time. Them ask, “ Why is the hour hand between the 7 and the 8 when the time is 7:30?”

Homework page 7-12 (page 268)- story problems dealing with how much time has passed- If students are having difficulty doing this, tell them to use a clock to help them find the start time, end time and how much time has passed. |
| 7-11Goals: * Use ordinal numbers to order events
* Use ordinal numbers to show positions

Ordering Events with Ordinal Numbers* Ask the students what do they do before they go to bed at night (First I brush my teeth. Then I put my pajamas on, etc.)
* Explain that numbers can be used to order events. This number is called ordinal numbers
* As you discuss the names of them, have the students match the word with the number
	+ First🡪 1st
	+ Second 🡪 2nd

Ordinal Numbers to Show Position* Tell the students that ordinal numbers can also be used to tell the position of an object or someone. For example, in this row on the carpet you’re first, you’re second, you’re third, etc.
* Using Crystal’s Smart File for 7-11
	+ Order the objects from first to tenth
	+ Match the ordinal number to the toys on the shelf

Homework page 7-11 (page 211/12)- review of ordinal numbers with objects and telling time on an analog clock |
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| 7-13Goals:* Convert a simple table into a circle graph and then a picture graph

Converting a table to a circle graph and a picture graph * Use student activity page 7-13 (pg. 269)
* Guide students to finding the total amount of cereal
* What is half of the total? One fourth of the total?

Homework Page 7-13 (page 215/16)- students practice telling time, adding quarters, reading a circle graph and writing numbers using ten sticks |
| 7-14 Goals:* Learn the days of the week in sequence and make a calendar
* Use a calendar, learn the months of the year, discuss seasonal changes

Days of the Week* Write the names of the days of the week in order on the board. Point to each word as you read the list. Tell the students that the days of the week are always in the same order
* Answer Questions about calendar on activity book 7-14 page 273

Months of the Year and Seasons* Write the names of the months of the year in order on the board
* Discuss the seasons
	+ What are the winter months? Summer? Spring?
	+ Encourage students to share what they know about the weather and activities associated to each season

Homework page 7-14 (pg. 214/15)- students will practice reading a calendar, identifying days of the week, months of the year and extra practice in adding doubles and identifying halves and fourths |
| 7-15Goals: * Flip a shape over a vertical line; slide a shape horizontally; decide when the result of a flip and a slide of the same figure is the same
* Decide if there is a whole number you can double to get 17
* Make a bar graph to show data in a table
* Explain why ½ of a region is larger/greater than ¼ of the same region

Compare Flips and Slides* Class Activity 7-15 (page 276)
	+ Have students complete page and explain their answers

Is there a whole number we can double to get 17? 7? 19?* Why or why not?
* How do you know? How are these number alike?
	+ They are odd numbers where as numbers that are even can be halved evenly.
* Can you ever double a number and get an odd number for an answer? (No)
* Can you ever double a number and get an even number for an answer? (Yes)

Make a Bar Graph* Model how to use the information from the table to create a bar graph
* Have a discussion with the students which way of representing the data was easier to read
* What statement can you make about the data in the bar graph?

Explain why ¼ of a region is smaller than ½ of a region* Have a square up on the board and have students explain this question in their own words
	+ Emphasize the use of new vocabulary and using their picture to explain their thinking

Homework page 7-15 (page 219/20)- story problems using halves and fourths, explaining which is greater ½ or ¼, answering questions about a picture graph and using ten sticks to write a number |
| Unit 7 Post-Assessment |