

Unit 8: Addition, Subtraction, and the Number System

TEAMBPCS
Office of
Mathematics PreK-12

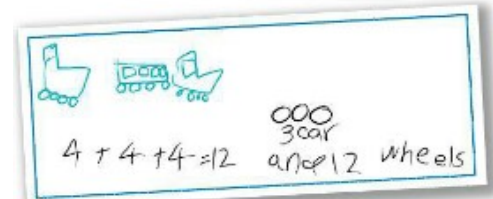
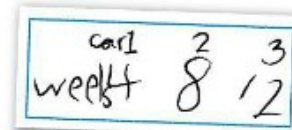
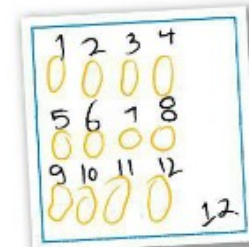
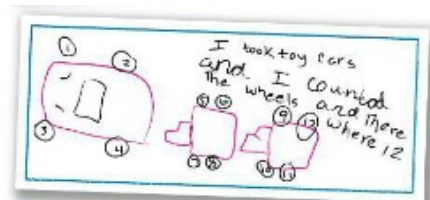
The PreK-12 Mathematics curriculum focuses on problem solving, communication, and critical thinking in order to provide a foundation where every student reaches their potential to become a globally competitive, mathematically literate citizen.

About This Unit

This unit focuses on counting and quantity, whole number operations and computation, addition and subtraction strategies to 20, and computational fluency with addition to 10. Students will continue their work with numbers, quantity, addition and subtraction strategies, story problems, and fluency with addends to 10. Specifically, students will be solving story problems with number relationships and patterns using various strategies, building and comparing 2-digit numbers, using 10 to further develop computation skills with addition and place value, and adding and subtracting multiples of 10 using mental math and the hundred chart.

Counting and Quantity

Throughout this unit, students continue previous work with counting and quantity beyond 100 with Counting Strips and Missing Numbers, addition and subtraction strategies, organizing and keeping track of sets for efficient counting, and using patterns on the hundred chart. Students will be introduced to counting and combining things that come in groups of 2, 4, 5, and 10 such as the number of eyes in groups of people, legs in groups of animals, fingers on hands and people, etc. Through this work, students will develop strategies for skip-counting by 2s, 5s, and 10s while exploring number relationships (ratios) with 2:1, 4:1, 5:1, and 10:1. These relationships will also be expressed using repeated addition equations. Foundations for future work with multiplication in 2nd and 3rd grade begin in this unit!



Number Relationships & Patterns

The pictures on the right show some of the strategies students may use for solving story problems involving number relationships and patterns. The story problem used for this example asked students to find the number of wheels on 3 cars. The first student drew a picture of the cars and counted by labeling the wheels with the numbers 1-12. The second student drew circles to represent the wheels in sets of 4. The third student skip-counted by 4 and represented their work expanding the ratio of 1:4 (cars to wheels). The last student included a repeated addition equation to represent the total number of wheels.

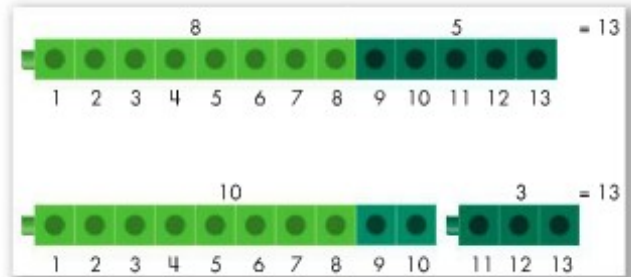
Computational Fluency

Students solidify their fluency with combinations of 10 in order to apply those skills to new ideas. They revisit games such as *Make Ten*, *Tens Go Fish*, *Counters in a Cup*, and *How Many am I Hiding*, adding variations on the games depending on mastery. They work with the addends of ten as well as finding missing numbers when given the addend and the total.



Number Composition

Students learn two new games. *Roll Tens* (left) is a game that involves collecting and counting connecting cubes and grouping them into tens and ones which encourages efficient counting strategies. By playing this game, students develop strategies for using place value to count, add, and manipulate quantities.

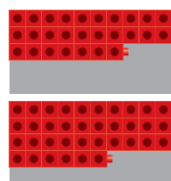


Ten Plus (right) teaches children to develop equivalent expressions by looking at numbers in the teens as a group of tens and ones. For example if a student combines $8+5$, they record the total 13 as $10+3=13$; 1 ten and 3 ones. This develops the idea of equivalency of the expressions $8+5$ and $10+3$ and builds the equation $8+5=10+3$. This concept not only continues flexibility with place value but also develops crucial foundations for algebra!

< 10	10 + 0	10 + 1	10 + 4	10 + 3	10 + 4	10 + 5	10 + 6	10 + 7	10 + 8	10 + 9	10 + 10
	$5+4=9$	$4+6=10$		$8+5=13$		$6+9=15$		$9+8=17$			
				$7+6=13$							

Comparing Two-Digit Numbers

Students apply skills from the game Roll Tens and use cubes to compare numbers through 120. Students will discuss the strategies they use to compare the numbers.



Students might say:



"36 is more than 27. It comes later on the number line."



"This one fills up more of the mat than the other, so it has to be more."



"There are more rows of 10 here, so it's more."

Add and Subtract Two-Digit Numbers

Students apply the skills from Roll Tens by using cubes to add or subtract a group of ten from a number and generating equations. Students will also use the hundred chart to develop and refine this skill and extend the learning to add and subtract multiples of 10.

Build 50.
Remove 30.
How many are left?

___ - ___ = ___

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

Helping Your Child at Home

- Ask your child about the number of ears, elbows, fingers, etc. in your family.
- Play Go Fish with cards making sums of 10 instead of number pairs.
- Encourage your child to explain their strategies and thinking during games and homework activities.
- Count nickels and dimes to practice counting by 5s and 10s. Try starting with a quarter and counting on with nickels and/or dimes. This encourages skip-counting beginning from a number other than 0.

Visit These Websites for Interactive Math Activities

- [Math Lines](http://www.primarygames.com/math/mathlines) (http://www.primarygames.com/math/mathlines)
Students can earn points by finding multiple combinations of ten.
- [Save the Whale](http://www.ictgames.com/save_the_whale_v4.html) (http://www.ictgames.com/save_the_whale_v4.html)
Students find missing numbers to make ten.
- [Caterpillar Slider](http://www.ictgames.com/caterpillar_slider.html) (http://www.ictgames.com/caterpillar_slider.html)
Students put numbers in order from least to greatest.
- [Number Grid Fireworks](http://www.abcya.com/100_number_grid.htm) (http://www.abcya.com/100_number_grid.htm)
Students identify missing numbers on the hundred chart.
- [Number Bubble](http://www.abcya.com/number_bubble_skip_counting.htm) (http://www.abcya.com/number_bubble_skip_counting.htm)
Students practice skip-counting by various numbers.
- [Froggy Hops](http://www.ictgames.com/frog.html) (http://www.ictgames.com/frog.html)
Students make the frog leap by adding 1 or 10 on the number line.
- [Whack a Mole](http://www.ictgames.com/whackAMole/index.html) (http://www.ictgames.com/whackAMole/index.html)
Set the game to skip-count by 2, 5, or 10 and whack the moles sequentially.

