Third Grade Lessons

Each of our activities is designed to be flexible and self-contained. Please feel free to use any of the activities as the basis of your teaching or as supplementary materials.

You do not need to do more than one of the activities in order for them to be useful. However, we have listed them here in the approximate order that we have used them with students. This may be helpful for teachers looking for a series of activities.

Please explore our categorizations by activity type, process, and math concept if you are looking for something specific!

Third Grade Lessons

1. **Symbols** - Discussion about what symbols are; writing messages or "stories" with symbols; interpreting symbols.
2. **Comparisons** - Comparisons and comparison operators: =, , <, >.
3. **Comparisons and Attributes** - Work with comparisons and comparison operators (=, , <, >).
4. **Comparing Heights I** - Students compare the heights of two children, measure, compare, and represent one's own height in relation to a peer's height, and focus on the differences between heights.
5. **Comparing Discrete Quantities** - Students compare amounts of tokens and unknown amounts of discrete quantities. In both cases they are guided to adopt line segments to represent discrete amounts and the differences between them. They are also asked to discuss composition of measures: "the difference plus the smaller amount is equal to the larger amount" and, "the larger amount minus the difference is equal to the smaller amount".
6. **Heights as Functions** - In this class children will work on the functional representation of two unknown heights and on the composition of the shorter height plus the difference between the heights as equal to the second height.
7. **Candy Boxes** - This class centers on the possible amounts of candies two children, John and Maria, have. They each have the same, unspecified number of candies inside their own candy box. John has, in addition, one extra candy and Maria has three extra candies. What are the possible total candies they might have?
8. **Part-Whole Relations** - This class follows the discussion from the Candy Boxes I class. The challenge is to work with a visual representation of the relationships among the various quantities in the candy box problem and to relate the visual and numerical information contained in visual diagram(s) to verbal descriptions and to algorithms for finding unknown values.
9. **Number Line - Locations** - Students place themselves at points on the number line. Main contexts: stairs, age, money, temperature, and pure number.
10. **Number Line Shortcuts** - The students will use a number line to see how two addends or subtrahends are equivalent to one single change once combined.
11. **Partial and Total Changes** - Students learn that two partial changes are equivalent to a single total change. On the number line, this corresponds to the idea of a shortcut. Three notations are emphasized: words, number lines with hopping arrows, and numerical expressions.
12. **Multiple Number Lines** - Students continue to learn that two partial changes that start at different points on the number line are equivalent. At the end, they will work with notation for variables (N + 5 - 3 or N + 2).
13. **N-Number Line I** - Students work with the table they built in the previous class for multiple number lines, focusing on the notation for variables (N + 5 - 3 or N + 2).
14. **N-Number Line II** - Students use the N-Number line to make generalizations about an unknown amount of money in a piggy bank.
15. **Piggy Banks** - The whole lesson revolves around a multipart story problem involving changes in two quantities over several days of a week. The initial quantities are equal yet unknown. Then transformations are applied to the quantities. Students are asked to compare the quantities throughout the week even though only their relative relationship can be determined.
16. **Guess my Rule - Tables** - Two children create secret rules for transforming input numbers. The teacher uses a doubling rule.
17. **Guess my Rule - Multiplicative Tables** - Two children create secret rules for transforming input numbers. The teacher uses a doubling or tripling rule.
18. **Three Heights** - In this class we will explore: (a) How the children deal with comparisons, (b) How they draw inferences from comparisons, and (c) How they represent comparisons between three unknown amounts.
19. **Comparison Problems & Tables** - This class will be used to review concepts and representations as applied to the solution of verbal comparison problems and to work on function tables.
20. **All Things Being Equal II** - The equals sign signifies that amounts on each side are the same. The students will use Unifix blocks and the corresponding equations to represent equalities between additive amounts.
21. **All Things Being Equal III** - The students will write equations to represent verbal statements and successive transformations that maintain or do not maintain the equality.
22. **Dots Problem** - We present to the students a problem dealing with a growing pattern over time. To begin, there is one dot. With each passing minute four more dots are drawn around the previous dot(s).
23. **Functions - Earning Money** - The students will create tables and equations from given stories. The functions are additive and multiplicative.
24. **Functions II** - The students will use three functions that are represented as a sequence of patterns and create a sequence of hops on the number line, a data table, and an algebraic expression to express the functions.
25. **Linear vs Quadratic Functions** - The students will use two functions (a linear and a quadratic) that are represented as a sequence of patterns and create a sequence of hops on the number line and an algebraic expression to express the functions.
26. **Comparing Different Functions** - The students will discuss, represent, and solve a verbal problem involving the choice between two functions.
27. **Functions from Tables** - Students work with a function, beginning with a table and then a formula, to generate ordered pairs that follow the rule of the function.
28. **Starting With A Rule** - Students focus on whether given outputs are consistent with a given rule.
29. **Rules and Formulas** - Students are given a rule and a data table supposedly generated according to the rule. Students evaluate whether: (1) the proper rule has been applied and (2) the result is correct.
30. **Formulas and Stories** - The students will be required to work with the relation between different mathematical expressions (formulas) and stories.
31. **Dinner Tables I** - Students work with a function relating number of tables to the number of available seats. One table seats 4, two tables seat 8, three tables seat 12....
32. **Dinner Tables II** - Students work with a function relating the number of tables (in a straight line) to the number of available seats. One table seats 4, two tables seat 6, three tables seat 8....
33. **Functioning Together** - Students work together to develop multiple representations of a function. The students split up into groups of three with each student having a separate responsibility. When all the input values have been used up, the students are asked to, together, make up a story that describes their function.
34. **Times Two** - The lesson focuses on a function that multiplies the input by two. New notations are introduced.

35. **Recipes that Exchange** - The lesson focuses on a function that multiplies input by two but also changes the ingredient to another type of ingredient.
36. **Human Graph I** - Students plot themselves on a Cartesian plane. Each student will get a large card with a place for an ordered pair: (x, y), where x refers to hours worked, and y refers to amount earned. The students must name the coordinate pair for the point they themselves are standing on.
37. **Human Graph II** - Students graph the functions k x 2 $/h and k x 3 $/h. The idea is to show that for each linear function the points fall onto a straight line.
38. **Rates vs Totals** - Students compare points on an hours/pay Cartesian space. The main challenge lies in recognizing that, although one student earned more, the other student was paid better, that is, at a higher rate of pay. They must indicate the difference in pay and the differences in amount worked.
39. **Comparing Graphs** - Students are given an hourly rate of pay and infer coordinates for (h, $) over a range of hours. They produce a table and a graph of work-pay. Then they produce another graph for another rate of pay and discuss differences in time and pay.
40. **How Many Points?** - Students work with: (a) a context — distance as a function of time; (b) generating coordinates.
41. **Interpreting Maps** - Students construct a narrative of a trip, given a simplified map and a table of arrival and departure times. They also determine how much time was spent along each segment of the trip (and how much time was spent at each place along the way.) If time permits, they construct a table ordered by time, showing the duration of each segment and the accumulated times.
42. **Maps to Graphs** - Students will be given two linear distance-time graphs and asked to tell a story about each graph and to compare them. They will later explore comparisons between points in each line.
43. **Time and Time Lines** - Students will discuss and learn about points and intervals on time lines of various sorts.
44. **Interpreting Graphs** - Students will be given two linear distance-time graphs and asked to tell a story about each graph and to compare them. They will later explore comparisons between points in each line.