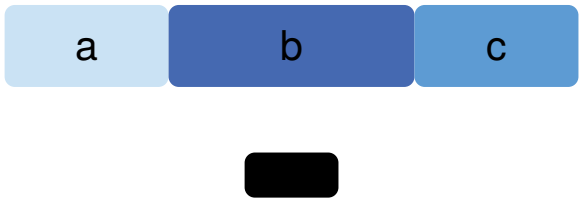
Problem Categories

Stuck on a problem? Here are the categories for the problems you will encounter in the game with some example bar models that can be used to solve them.

Basic Addition

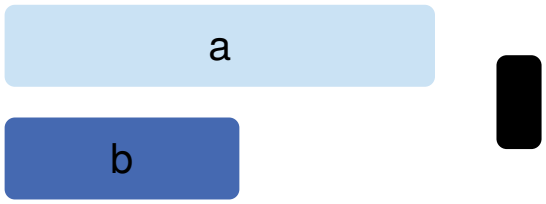
What to look for: These problems will give or ask for the values of two or more different items and the total of all of those items added together.

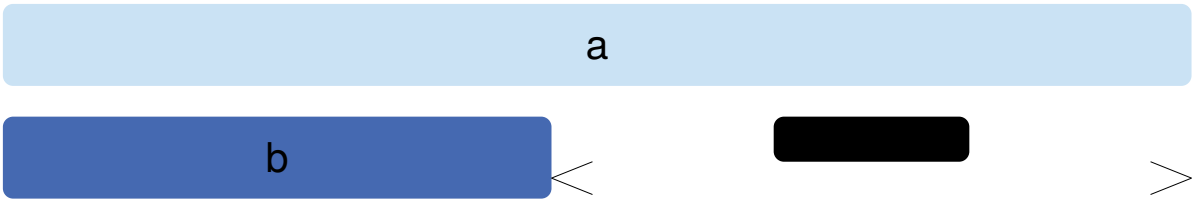
Explanation: Boxes are made for each of the items that are supposed to be part of the sum. The bracket, either to the bottom or to the side, is used to show that the value of all the boxes inside the bracket combine to equal the value of the bracket.



Basic Subtraction

What to look for: These problems will give or ask for the values of items that make up a smaller part and a larger part. It will also have somewhere in the text the difference between the larger and smaller part. The keywords greater/fewer or more/less will give you a clue that subtraction is needed.

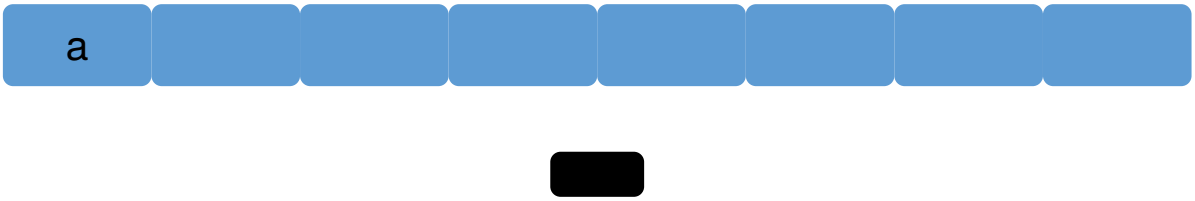




Explanation: Boxes are placed on different rows to represent the item with larger value and the item with the smaller value. The space between the larger and smaller row is where the difference needs to be shown.

Basic Multiplication/Division

What to look for: In these problems you will have either groups of an item or one item being a some multiple of times larger than another item. The problem will give you the number of groups or the number of multiples. Also carefully look for where the problem talks about the size of one group or multiple and the total value of all groups or multiples combined as both those part are needed in your answer.



Explanation: Several equal sized boxes are used to represent the groups or multiples referenced in the problem. The name on top of one of the boxes indicates the value of a single group or multiple. The bracket value shows the total, which is equal to the value of a single box multiplied by the number of boxes.

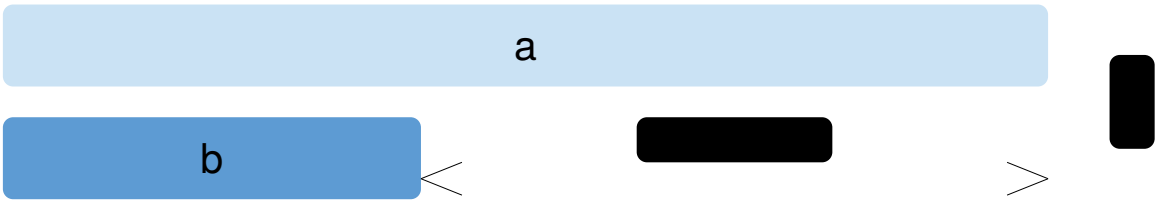
Multiplication/Division with Multiple Operators

What to look for: These problems are mostly similar to the Basic Multiplication/Division except for a few additional parts to look for. There will usually be one type of item that is a multiple of another type. In addition, the problem will either ask for or give the total value of both types added together or the difference between both of those types.

Explanation: The equal sized boxes represent the number of groups or multiples referenced in the problem. The two rows are used to represent the two types of items in the problem, with the larger one being some multiple larger than the other. Depending on the wording of the problem you will need to show the total of the two item types added together or show the difference between them.

Addition/Subtraction with Multiple Unknowns

What to look for: These problems will ask you to find values for two unknowns. The problem will have two different types of items as well as the total of those items AND the difference between them. Note the unknowns the problem will ask about can be value of either item type, the total, or the difference.



Explanation: Each row represents one of the item types referenced in the problem. Since both a difference and total need to be shown, two rows are required and the total is to the side to leave space for the difference.

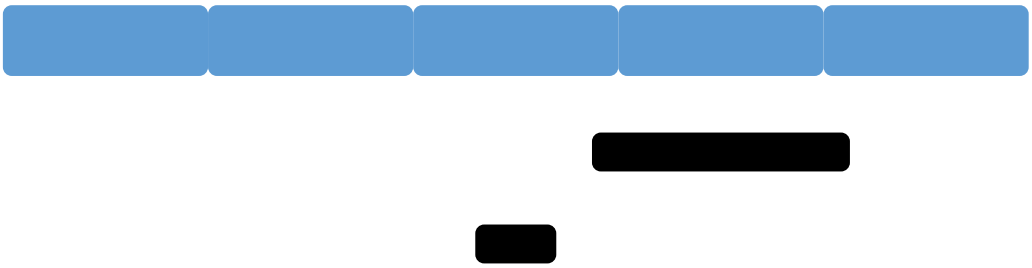
Multiplication/Division with Multiple Unknowns

What to look for: These problems will ask you to find the values for two unknowns. There will be two types of items where one item will be some multiple of times larger than the other. Depending on the specific problem, it may give or ask for the total of both items combined, the total of the larger item, and the difference between the two item types.

Explanation: Two rows are created for each of the two item types. The larger row should be some multiple greater than the other, this multiple will be a number in the problem. The value of a single box also needs to be shown. Like the Addition/Subtraction with Multiple Unknowns, two rows are made in case a difference is required to be shown.

Fractions

What to look for: These problems will have one item type to represent a total or whole and then indicate a fraction to be taken from the whole. The fraction the problem talks about represents a subgroup of the whole, the value of which is either given or requested. Remember that the fraction you need to show may not be the one explicitly referenced in the problem.



Explanation: The row of equal size boxes represents the 'whole' of a total set of items. The number of boxes to use should be chosen such that any fraction referenced in the problem can be indicated by just by counting some number of the boxes. Each bracket should show the value of each of those fractions.

Fractions of a Whole

What to look for: These problems will have two different item types, where a smaller item type is a fraction of the amount of another item type. This is similar to the other fraction category, except the item type that is the fraction is NOT a subgroup of the larger item type. Depending on the problem, it will also give or ask for the total value of both item types combined, the difference between the two item types, the value of the smaller item type, or the value of the larger item type

Explanation: Each row of equal sized boxes represents one type of item. The first row is treated as the 'whole' and the second as the 'fraction of the whole'. The numerator and denominator of the fraction will tell you how many boxes you need to make. If the problem has a difference, there will need to be two rows. Multiple rows also make it clearer what the total of the larger item or smaller item is.