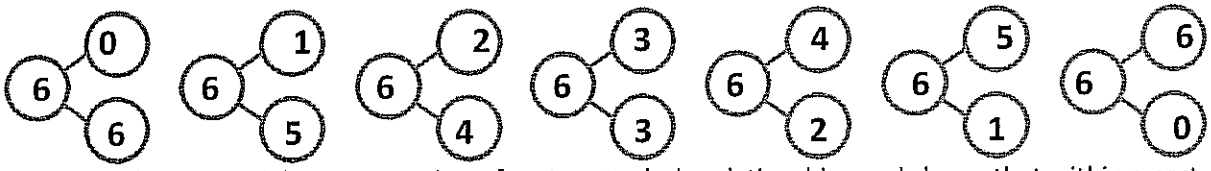
Number Bond

Grade Level K – 5

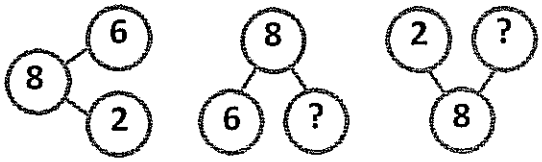
Description



The number bond is a pictorial representation of part-part-whole relationships and shows that within a part-whole relationship, smaller numbers (the parts) make up larger numbers (the whole). The number bond may be presented as shown, using smaller circles (or squares) for the parts to distinguish the part from the whole. As students become more comfortable using number bonds, they may be presented using the same size shape for parts and whole.

Number bonds of 10 have the greatest priority because students will use them for adding and subtracting across 10. Students move towards fluency in Grade 1 with numbers to 10 building on the foundation laid in Kindergarten. They learn to decompose numbers to ten with increasing fluency. (1.OA.6) Students learn the meaning of addition as "putting together" to find the whole or total and subtraction as "taking away" to find a part.

Notice in the diagrams below that the orientation of the number bond does not change its meaning and function. (6 + 2 = 8, 2 + 6 = 8, 8 – 6 = 2, 8 – 2 = 6)



Instructional Strategies

- Make bonds with a specified whole using concrete objects. Students place all the objects into the "parts" circles of the bond using various combinations. These can be recorded pictorially (students draw objects in the bonds), abstractly (children write numerals in the bonds), or a combination of these representations as appropriate.
- Generate number stories for each number from 5 to 10 from pictures and situations.
- Develop fluency: Show all the possible ways to make_____, for all the numbers from 1 to 10.
- Present bonds in which the whole and one part are visible (using concrete, pictorial, and eventually abstract representations). Students solve for the other part by bonding, counting on, or subtracting.
- Transition students from number bonds to tape diagrams by drawing both representations for number stories.
- Use number bonds as a support for mental math techniques such as "Make 10" (see grade specific

examples below).

- Use number bonds to see part-whole fraction and decimal relationships.

Grade 1 Example

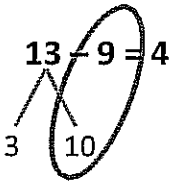
Decompose 13 into 10 and 3.

Subtract 9 from the 10.

$10 - 9 = 1$

Then add 1 + 3.

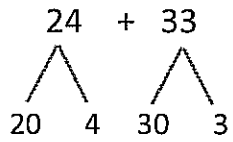
$1 + 3 = 4$, so $13 - 9 = 4$



Grade 2 Example

Solve 24 +33 mentally.

Use bonds to show your thinking.



(20 + 30) + (4 + 3) = 57

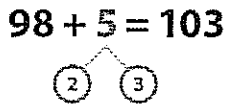
Grade 4 Example 2

T: 98 + 5 = 100 +_____?

S: 98 + 2 + 3 = 100 + 3.

T: 98 + 5 is_____?

S: 103.

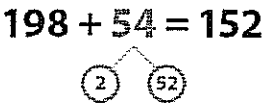


T: 198 + 54 = 200 +_____?

S: 198 + 54 = 200 + 52.

T: 198 + 54 is_____?

S: 252.



T: 398 + 526 = 400 +_____?

S: 398 + 2 + 524 = 400 + 524.

T: 398 + 526 is_____?

S: 924