

Idea 11: Fact teams (1)

The key facts of the numbers to 10 are the bedrock of numeracy. The key facts are the addition and subtraction calculations for all the numbers to 10. This knowledge can then be generalized to calculations with larger numbers.

Students with numeracy difficulties, who try to learn the facts by rote, often feel overwhelmed by the task as they do not understand how quantities relate to each other. Use a structured, multi-sensory approach to demonstrate the relationship between numbers and identify the components within them. For detailed instructions on how to teach key facts so that students understand them see chapters 1 and 2 in *The Dyscalculia Solution: Teaching number sense* by J. Emerson and P. Babbie, Bloomsbury (2014).

Summary of Key Facts

Show students that there are only 25 key facts to master as addition and subtraction are inverse operations. Then investigate all the ways that each fact can be represented.

2	1+1				
3	2+1				
4	3+1	2+2			
5	4+1	3+2			
6	5+1	4+2	3+3		
7	6+1	5+2	4+3		
8	7+1	6+2	5+3	4+4	
9	8+1	7+2	6+3	5+4	
10	9+1	8+2	3+7	4+6	5+5

The facts shown in grey are the doubles and near doubles bonds.

The facts shown in black are the bonds of 10.

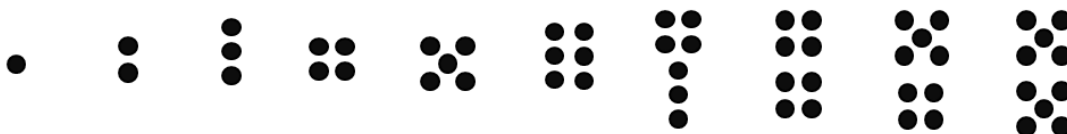
This leaves 12 facts to derive by reasoning: 6 facts involve adding 1; then 4 facts require addition of 2; and 2 facts involve adding 3.

Doubles and near doubles facts

Develop strong visual images of the doubles and near doubles facts and their components for all numbers to 10. Use counters to derive dot patterns that investigate the relationships within and between numbers by reasoning from dice patterns.

Dot patterns

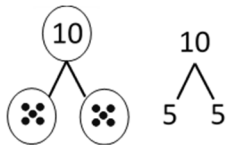
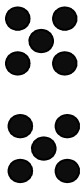
- Provide a distinct visual image for each number.
- Show that numbers are composed of smaller numbers.
- Show relationship between numbers in the sequence.
- Provide basis for calculation.



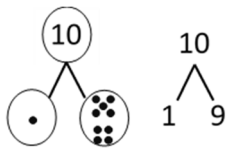
Facts of 10 – triads and equations

Explore and record all the bonds of 10. These facts are critical as they underpin calculation throughout the base-10 number system. They are also essential for the calculation strategy bridging through 10, or multiples of 10.

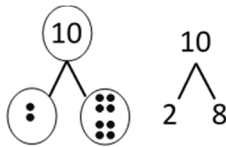
It is essential that students make patterns, move counters, draw diagram and then write all the equations each bond represents.



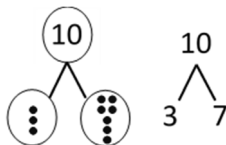
$10 = 5 + 5$ $5 + 5 = 10$ $10 - 5 = 5$ $5 = 10 - 5$



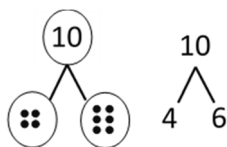
$10 = 1 + 9$ $1 + 9 = 10$ $10 - 1 = 9$ $9 = 10 - 1$
 $10 = 9 + 1$ $9 + 1 = 10$ $10 - 9 = 1$ $1 = 10 - 9$



$10 = 2 + 8$ $2 + 8 = 10$ $10 - 2 = 8$ $8 = 10 - 2$
 $10 = 8 + 2$ $8 + 2 = 10$ $10 - 8 = 2$ $2 = 10 - 8$



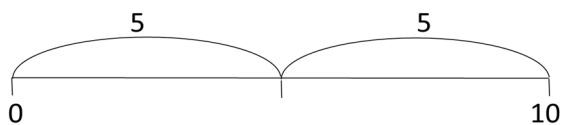
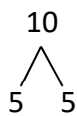
$10 = 3 + 7$ $3 + 7 = 10$ $10 - 3 = 7$ $7 = 10 - 3$
 $10 = 7 + 3$ $7 + 3 = 10$ $10 - 7 = 3$ $3 = 10 - 7$



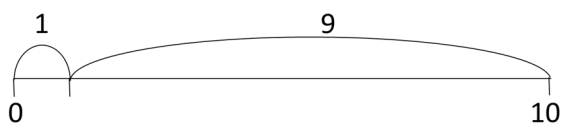
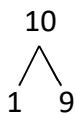
$10 = 4 + 6$ $4 + 6 = 10$ $10 - 4 = 6$ $6 = 10 - 4$
 $10 = 6 + 4$ $6 + 4 = 10$ $10 - 6 = 4$ $4 = 10 - 6$

Facts of 10 – relate triads to number lines

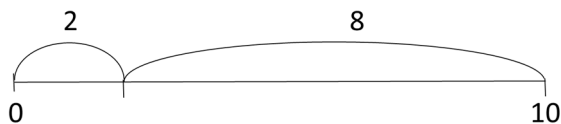
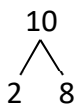
Ask students to draw the triads for the bonds of 10 and then to show each fact of 10 on a number line. Write all the equations that the number line represents.



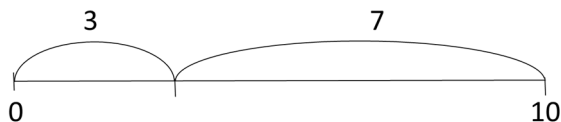
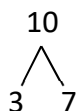
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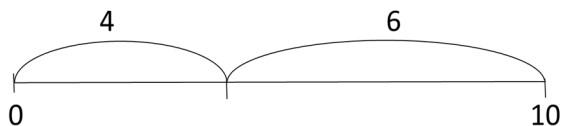
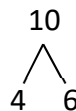
$10 = 1 + 9$ $1 + 9 = 10$ $10 - 1 = 9$ $9 = 10 - 1$
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$10 = 4 + 6$ $4 + 6 = 10$ $10 - 4 = 6$ $6 = 10 - 4$
 $10 = 6 + 4$ $6 + 4 = 10$ $10 - 6 = 4$ $4 = 10 - 6$

Facts of all numbers to 10 – relate triads to number lines

Do the same exercise for each of the numbers from 2 to 9.