

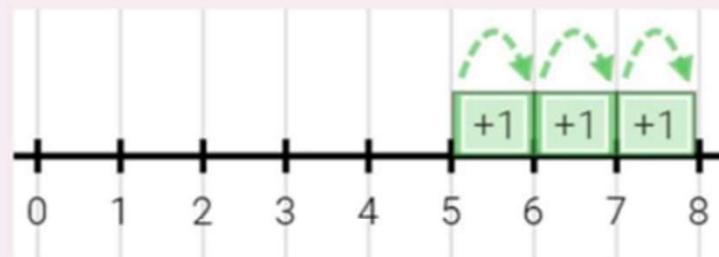
Addition & Subtraction Strategies

Counting On/Counting Back

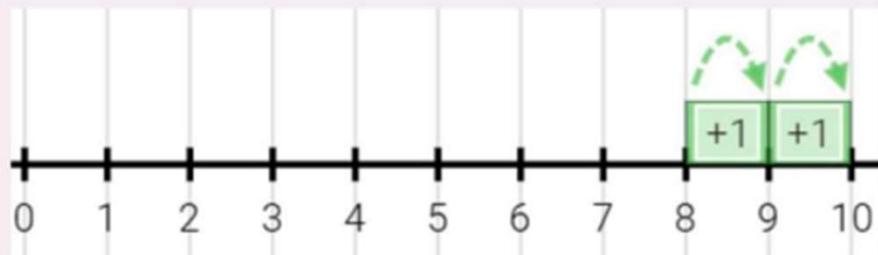
How To Count On (1, 2, 3)

- Counting on your fingers is quick and easy (e.g., 1, 2, 3)
- Always start with the larger number.
- Count the jumps, not the numbers themselves.
- Sketch or use a number line to visualise the process.

- **Example: $5 + 3$**



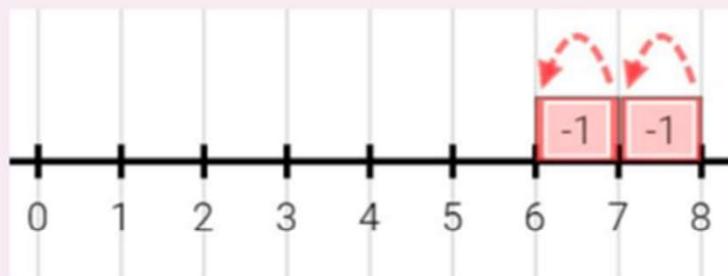
- **Example: $2 + 8 = 8 + 2$**



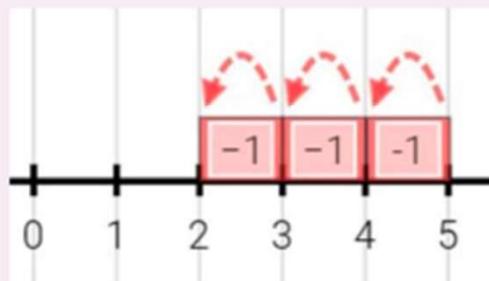
How To Count Back (3, 2, 1)

- Counting back on your fingers is quick and easy (e.g., 3, 2, 1).
- Count the jumps, not the numbers themselves.
- Sketch or use a number line to visualise the process.

- **Example: $8 - 2$**



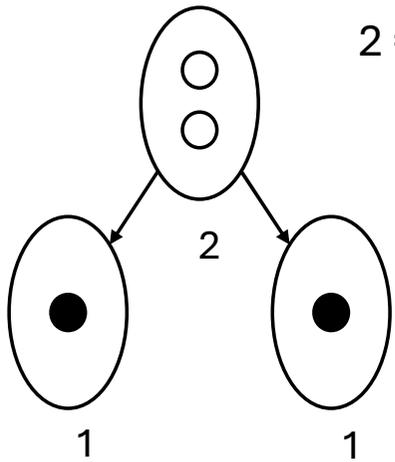
- **Example: $5 - 3$**



Doubles & Near Doubles

Doubles Numbers

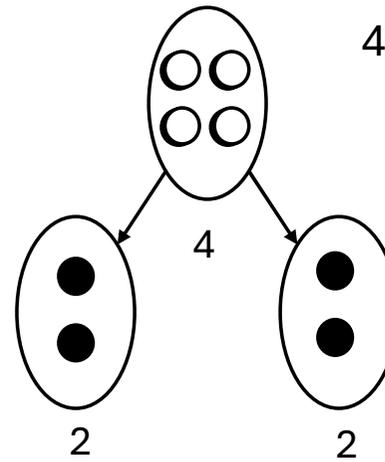
A doubles number is the result of adding a number to itself.



$2 = 1 + 1$

$1 + 1 = 2$

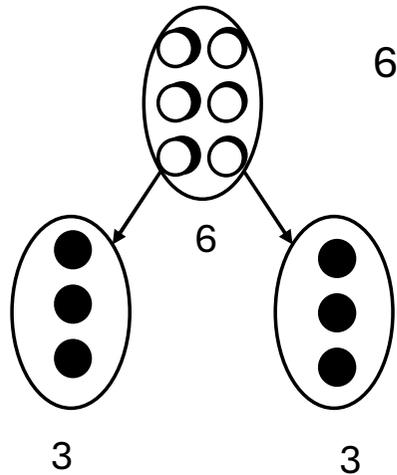
$2 - 1 = 1$



$4 = 2 + 2$

$2 + 2 = 4$

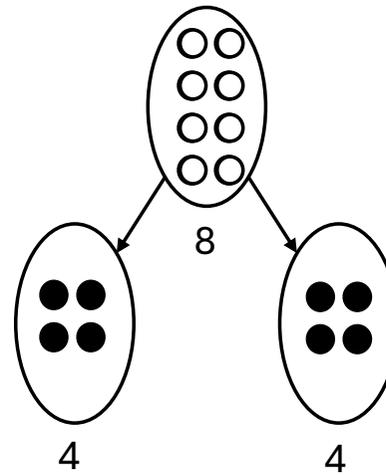
$4 - 2 = 2$



$6 = 3 + 3$

$3 + 3 = 6$

$6 - 3 = 3$



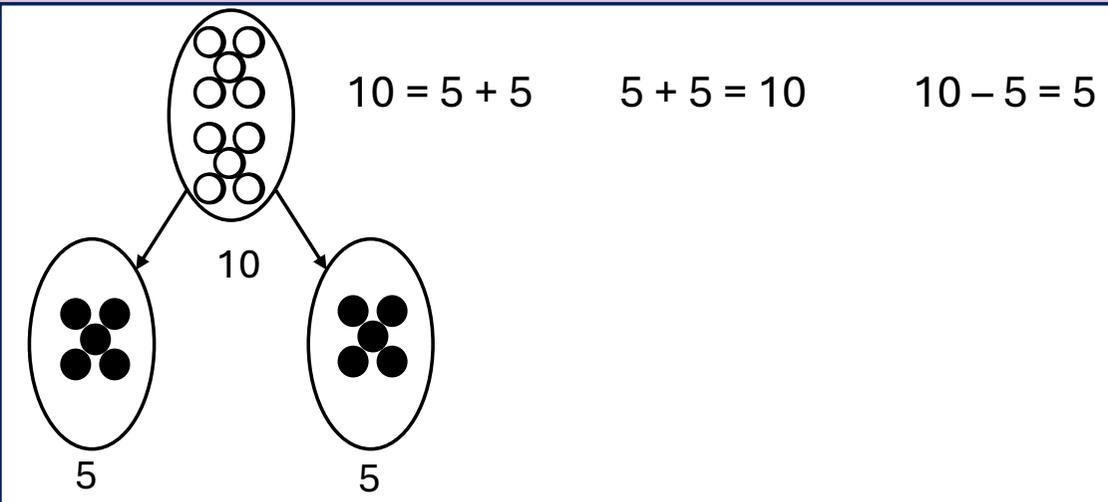
$8 = 4 + 4$

$4 + 4 = 8$

$8 - 4 = 4$

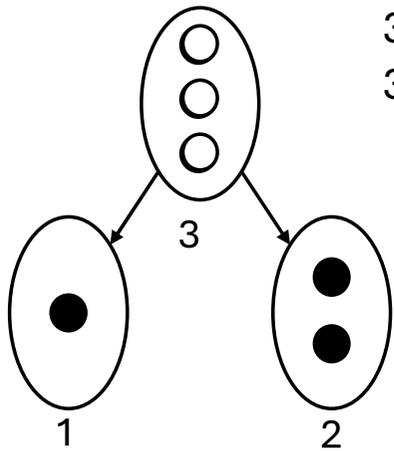
Doubles Numbers

A doubles number is the result of adding a number to itself.



Near Doubles Numbers

A near doubles number sits between two doubles numbers. It is one more than the doubles number below it and one less than the doubles number above it.



$$3 = 1 + 2$$

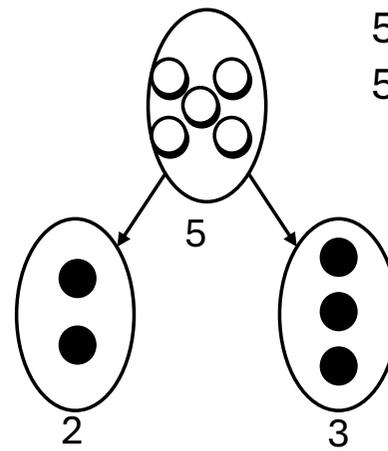
$$3 = 2 + 1$$

$$1 + 2 = 3$$

$$2 + 1 = 3$$

$$3 - 1 = 2$$

$$3 - 2 = 1$$



$$5 = 2 + 3$$

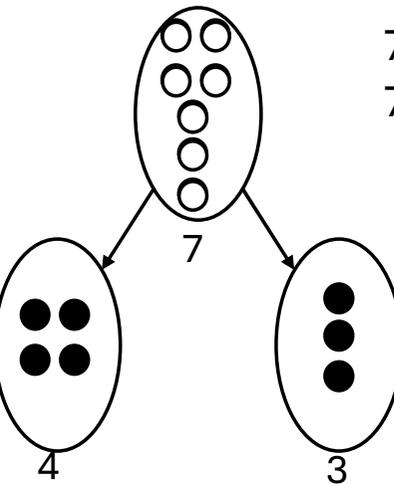
$$5 = 3 + 2$$

$$2 + 3 = 5$$

$$3 + 2 = 5$$

$$5 - 2 = 3$$

$$5 - 3 = 2$$



$$7 = 4 + 3$$

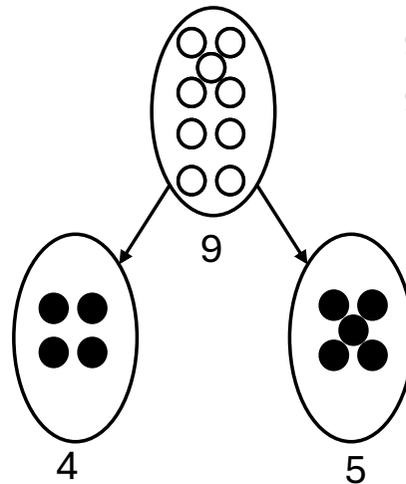
$$7 = 3 + 4$$

$$4 + 3 = 7$$

$$3 + 4 = 7$$

$$7 - 4 = 3$$

$$7 - 3 = 4$$



$$9 = 4 + 5$$

$$9 = 5 + 4$$

$$5 + 4 = 9$$

$$4 + 5 = 9$$

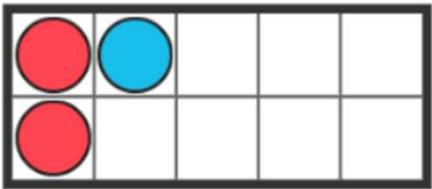
$$9 - 4 = 5$$

$$9 - 5 = 4$$

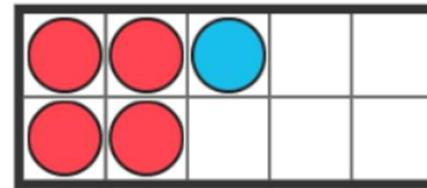
Doubles + 1

Doubles Plus 1

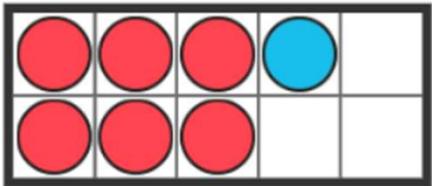
When adding two consecutive numbers like $5 + 6$, simply adjust one number to make a double and then add one more, e.g. $5 + 5 + 1$.



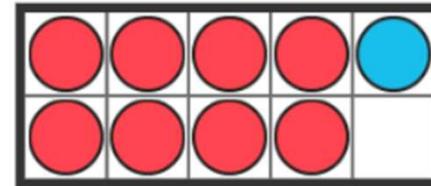
$$2 + 1 = \mathbf{1} + \mathbf{1} + \mathbf{1} = 3$$



$$3 + 2 = \mathbf{2} + \mathbf{2} + \mathbf{1} = 5$$



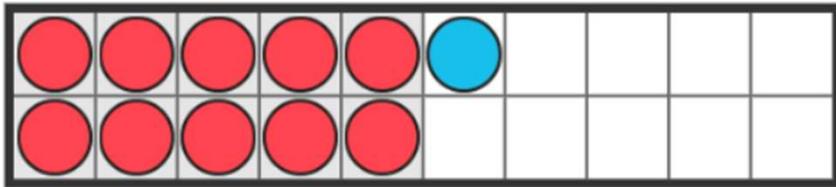
$$3 + 4 = \mathbf{3} + \mathbf{3} + \mathbf{1} = 7$$



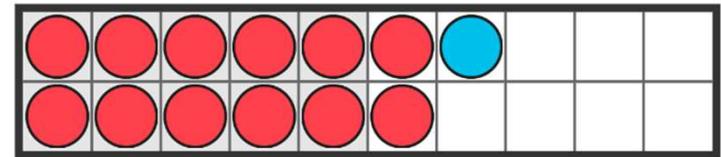
$$5 + 4 = \mathbf{4} + \mathbf{4} + \mathbf{1} = 9$$

Doubles Plus 1

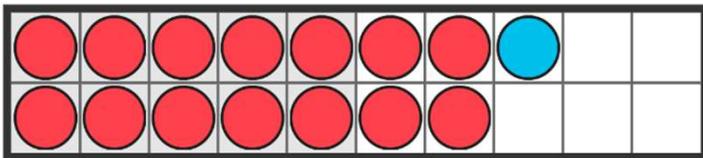
When adding two consecutive numbers like $5 + 6$, simply adjust one number to make a double and then add one more, e.g. $5 + 5 + 1$.



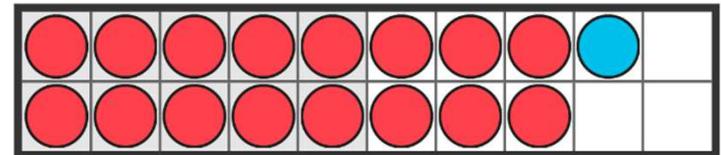
$$5 + 6 = 5 + 5 + 1 = 11$$



$$6 + 7 = 6 + 6 + 1 = 13$$



$$7 + 8 = 7 + 7 + 1 = 15$$

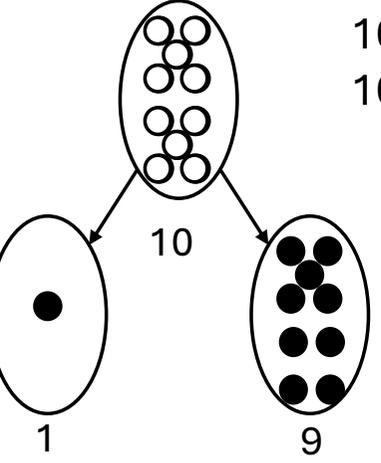
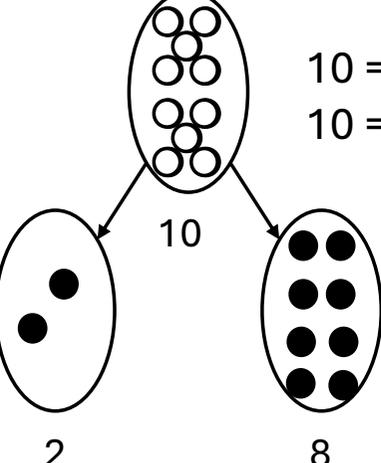
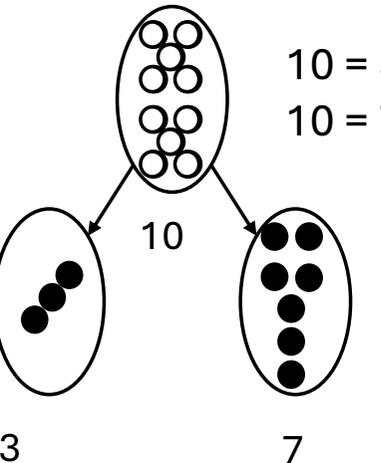
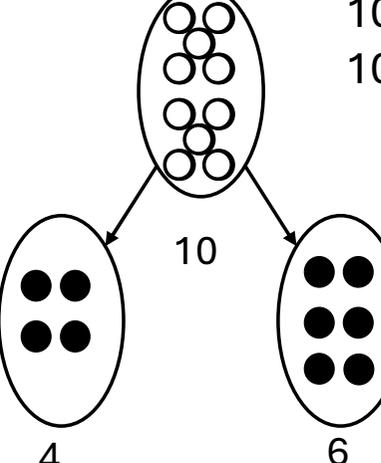


$$8 + 9 = 8 + 8 + 1 = 17$$

Number Bonds of 10

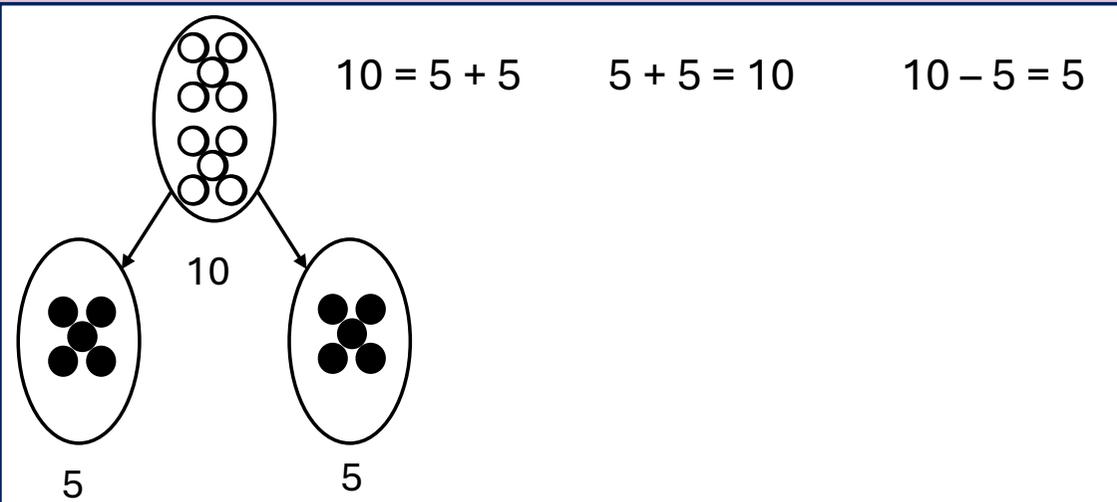
Number Bonds of Ten

Number bonds of 10 are two numbers that add to make 10.

 <p>10</p> <p>1 9</p>	$10 = 1 + 9$ $10 = 9 + 1$ $1 + 9 = 10$ $9 + 1 = 10$ $10 - 1 = 9$ $10 - 9 = 1$  <p>10</p> <p>2 8</p> $10 = 2 + 8$ $10 = 8 + 2$ $2 + 8 = 10$ $8 + 2 = 10$ $10 - 2 = 8$ $10 - 8 = 2$
 <p>10</p> <p>3 7</p>	 <p>10</p> <p>4 6</p> $10 = 3 + 7$ $10 = 7 + 3$ $3 + 7 = 10$ $7 + 3 = 10$ $10 - 3 = 7$ $10 - 7 = 3$ $10 = 6 + 4$ $10 = 4 + 6$ $6 + 4 = 10$ $4 + 6 = 10$ $10 - 6 = 4$ $10 - 4 = 6$

Number Bonds of Ten

Number bonds of 10 are two numbers that add to make 10.



Add/Subtract 0

Add and Subtract Zero (0)

When you add or subtract zero, 0, to any number, the number does not change. It keeps the same value.

5	+	0	=	5
				

	7	-	0	=	7	
						

Bridging Through 10 (Addition)

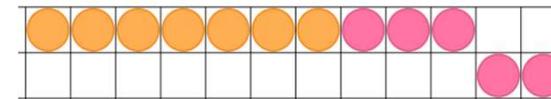
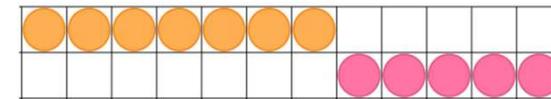
Bridging Through 10 with Counters: Addition

Bridging through 10 is a useful addition strategy. It involves adjusting numbers in a problem to create a sum of 10, which simplifies the calculation.

To bridge through 10 with counters:

- Model the calculation with counters.
- Adjust the counters to make one row equal to 10.
- You now have 10 plus the remaining counters.
- How many counters do you have altogether?
- Model the calculation on a number line.
- Write the calculation as an equation.

Example: $7 + 5$



$$7 + 5 = 13$$

A blue oval circles the number 7. A blue arrow points from the 7 to the number 3 below it. Another blue arrow points from the 5 to the number 2 below it.

Bridging Through 10 with Cuisenaire Rods: Addition

Bridging through 10 is a useful addition strategy. It involves adjusting numbers in a problem to create a sum of 10, which simplifies the calculation.

To bridge through 10 with Cuisenaire rods:

- Use the rods to model the calculation.
- Think about what is needed to make 10.
- Break down one of the rods to make 10.
- How many do you have altogether?
- Model the calculation on a number line.
- Write the calculation as an equation.

Example: $8 + 6$



8 and 2 make 10



I break the 6 rod down into 2 and 4. I now have 10 and 4 more.

$$8 + 6 = (8 + 2) + 4 = 10 + 4 = 14$$

Subtraction

Using Doubles and Near Doubles to Subtract

You can use **doubles and near doubles** to help you subtract.



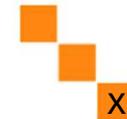
If $2 - 1 = 1$, then



$12 - 1 = 11$



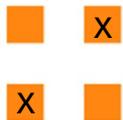
If $3 - 1 = 2$, then



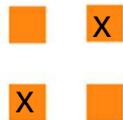
$13 - 1 = 12$

And if $3 - 2 = 1$, then

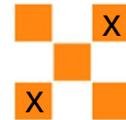
$13 - 2 = 11$



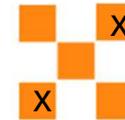
If $4 - 2 = 2$, then



$14 - 2 = 12$



If $5 - 2 = 3$, then



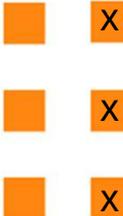
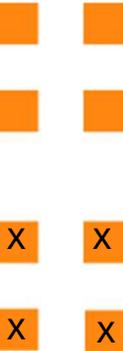
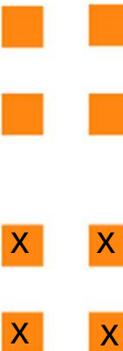
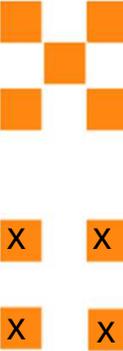
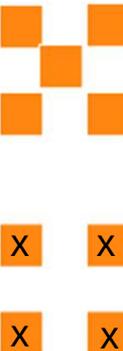
$15 - 2 = 13$

And if $5 - 3 = 2$, then

$15 - 3 = 12$

Using Doubles and Near Doubles to Subtract

You can use **doubles** and **near doubles** to help you subtract.

 <p>If $6 - 3 = 3$, then</p>		 <p>$16 - 3 = 13$</p>	 <p>If $7 - 3 = 4$, then</p>		 <p>$17 - 3 = 14$</p>
			<p>And if $7 - 4 = 3$, then</p>		<p>$17 - 4 = 13$</p>
 <p>If $8 - 4 = 4$, then</p>		 <p>$18 - 4 = 14$</p>	 <p>If $9 - 4 = 5$, then</p>		 <p>$19 - 4 = 15$</p>
			<p>And if $9 - 5 = 4$, then</p>		<p>$19 - 5 = 14$</p>

Using Bonds of 10 to Subtract

You can use **bonds of 10** to help you subtract.



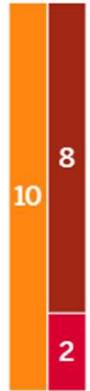
9 If $10 - 1 = 9$,
then



10 9
1 $20 - 1 = 19$



8 If $10 - 2 = 8$,
then



10 8
2 $20 - 2 = 18$



7 If $10 - 3 = 7$,
then



10 7
3 $20 - 3 = 17$



6 If $10 - 4 = 6$,
then



10 6
4 $20 - 4 = 16$



5 If $10 - 5 = 5$,
then



10 5
5 $20 - 5 = 15$



6 If $10 - 6 = 4$,
then



10 6
4 $20 - 6 = 14$



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Using Bonds of 10 to Subtract

You can use **bonds of 10** to help you subtract.



A vertical bar divided into two sections: a top black section labeled '7' and a bottom green section labeled '3'.

If $10 - 7 = 3$,
then



A vertical bar divided into two sections: a top orange section labeled '10' and a bottom green section labeled '3'.

$20 - 7 = 13$



A vertical bar divided into two sections: a top orange section labeled '10' and a bottom red section labeled '2'.

If $10 - 8 = 2$,
then



A vertical bar divided into two sections: a top dark red section labeled '8' and a bottom red section labeled '2'.

$20 - 8 = 12$



A vertical bar divided into two sections: a top blue section labeled '9' and a bottom light grey section labeled '1'.

If $10 - 9 = 1$,
then



A vertical bar divided into two sections: a top orange section labeled '10' and a top blue section labeled '9', with a light grey section labeled '1' at the bottom.

$20 - 9 = 11$

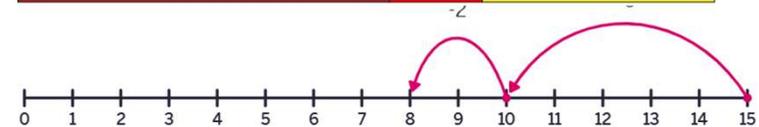
Bridging Back Through 10: Subtraction

Bridging back through 10 is a useful subtraction strategy. It involves subtracting to make 10 and then taking away whatever is left over.

To bridge through 10:

1. Model the calculation using Cuisenaire rods.
2. Partition the number being subtracted so it bridges through 10.
3. Subtract to reach 10, then take away the remaining amount.
4. Use knowledge of number bonds of 10 to identify what is left.
5. Record the calculation on a number line.
6. Write the calculation as an equation.

Example: $15 - 7 =$



$$15 - 7 = (15 - 5) - 2 = 10 - 2 = 8$$

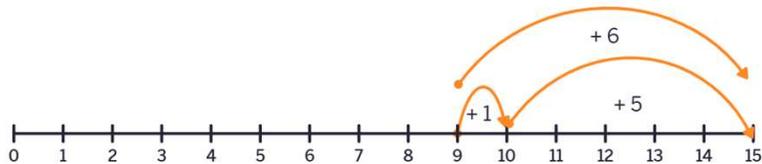
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Subtraction: Shopkeeper's Addition

Shopkeeper's addition is a mental math technique used to calculate change. Instead of subtracting the purchase amount from the customer's money, the shopkeeper would "add up" the purchase amount to the amount tendered.

To subtract using shopkeeper's addition:

1. Rewrite the problem as a missing number addition calculation.
2. Use Cuisenaire rods to model the calculation. You may need to bridge through 10 to make the calculation easier.
3. Record it on a number line.
4. Write it as an equation.



Example: $15 - 9 =$

What do I need to add to nine to get 15?

$$9 + ? = 15$$



I add one to get to 10, then I add five more.



$$9 + 6 = 15,$$

or

$$15 - 9 = 6$$

Acknowledgements

- Images created using free virtual manipulatives by Amplify are available at Polypad.com.