

Long Subtraction

- let the snails show you how to subtract -

A subtraction can be done in any order:

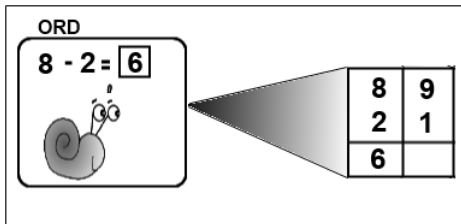
Left to Right or Right to Left.

Or even totally random!

Left to Right means the answer appears as you read it

Except for the first subtraction on the far LEFT of the sum, which must come out "ordinary" or we are going to have a result going below zero, every subtraction is shown two ways.

Subtract each little individual component then check its neighbour to see if it will effect it or not:



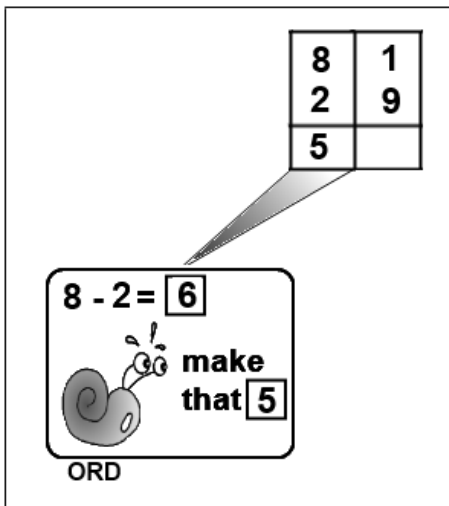
ORD means "Ordinary"

8 - 2 is 6

The snail is happy.

It is looking ahead to its neighbour to its RIGHT
That's 9 - 1 which is BELOW ZERO.

So leave the answer as it is. It remains 6.



ORD still just means "Ordinary"

8 - 2 is still just 6.

However the snail looks worried...

It is looking AHEAD to the neighbour
to its RIGHT

The neighbour goes BELOW ZERO, it is
"hard".

So we DROP the answer from 6 down
to 5

In the example below we are showing two different ways to get the answer:

AAC
 $5 + 1 = 6$
 The snail is happy.

5	6
9	3
6	

5 - 9: Diff = 4
 CoD = 6
 The snail is happy.

AAC means "Add A Complement" method

In "5 - 9" the complement of 9 is 1
 Add the 1 to the 5 to get 6
 The snail is happy.
 It is looking ahead to its neighbour to its RIGHT
 That's 6 - 3 which is ABOVE ZERO
 So leave the answer as it is. It remains 6.

CoD means "Complement of Difference" method

The Diff or Difference between 5 and 9 is 4
 The complement of 4 is 6
 The snail is happy.
 It is looking ahead to its neighbour to its RIGHT
 That's 6 - 3 which is ABOVE ZERO
 So leave the answer as it is. It remains 6.

Again, there are two different ways to get the answer below:

AAC
 $4 + 2 = 6$
 The snail looks worried... make that 5

4	1
8	3
5	8

4 - 8: Diff = 4
 CoD = 6
 The snail looks worried... make that 5

AAC means "Add A Complement" method

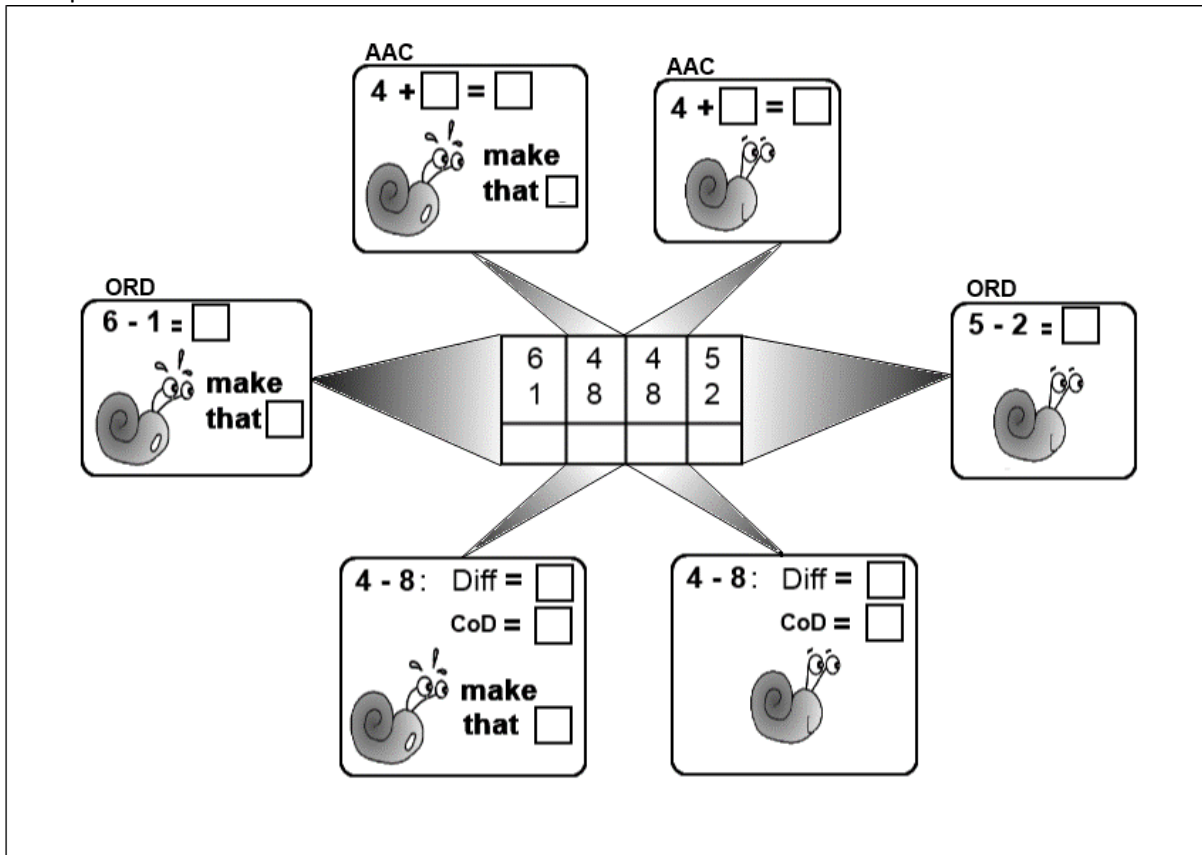
In "4 - 8" the complement of 8 is 2
 Add the 2 to the 4 to get 6
 But the snail looks worried...
 It is looking AHEAD to the neighbour to its RIGHT
 The neighbour goes BELOW ZERO, it is "hard".
 So we DROP the answer from 6 down to 5

CoD means "Complement of Difference" method

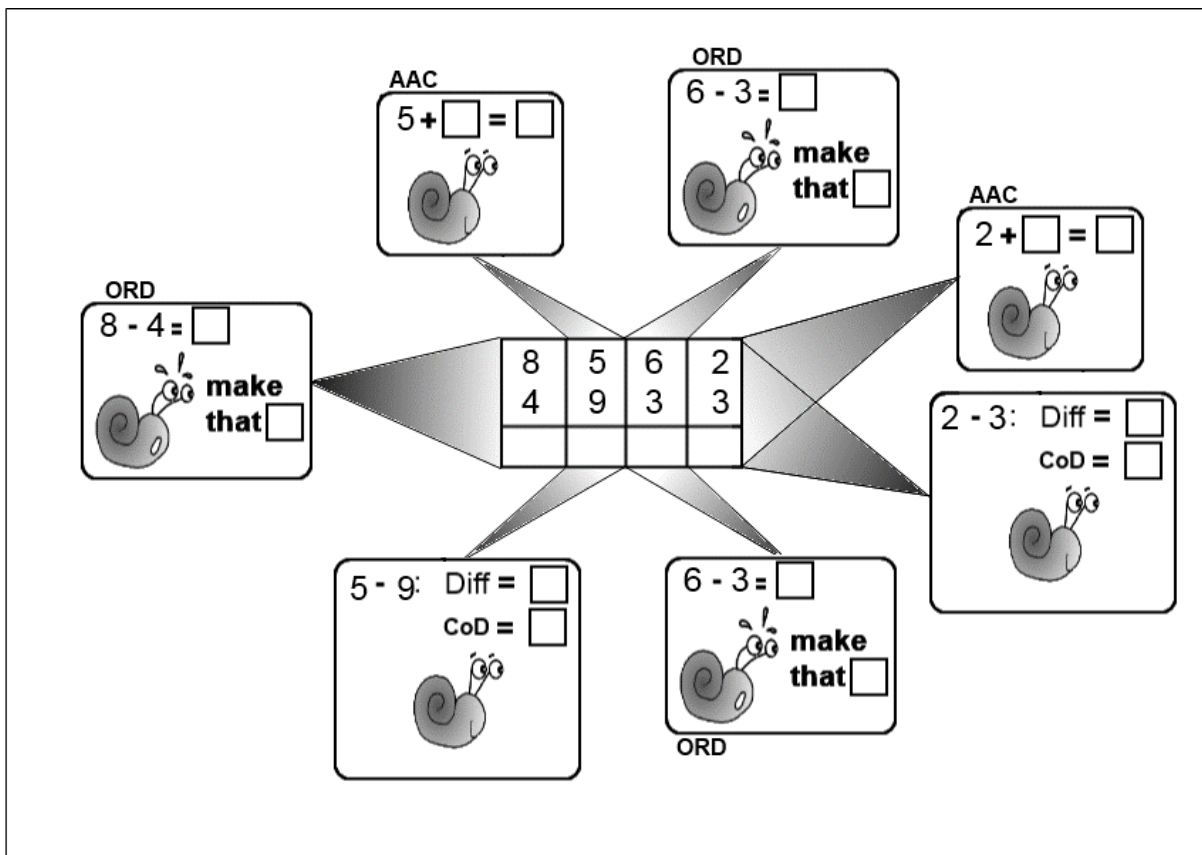
The Diff or Difference between 4 and 8 is 4
 The complement of 4 is 6
 But the snail looks worried...
 It is looking AHEAD to the neighbour to its RIGHT
 The neighbour goes BELOW ZERO, it is "hard".
 So we DROP the answer from 6 down to 5

Here are some examples to try...

Example 1



Example 2



Example 3

Look Right →

AAC
 $2 + \square = \square$
 make that

AAC
 $0 + \square = \square$
 make that

ORD
 $5 - 1 = \square$
 make that

5	2	0	6
1	8	7	7

AAC
 $6 + \square = \square$

$6 - 7$: Diff =
 CoD =

$2 - 8$: Diff =
 CoD =
 make that

$0 - 7$: Diff =
 CoD =
 make that

Example 4

Look Right →

ORD
 $2 - 1 = \square$
 make that

AAC
 $8 + \square = \square$
 make that

ORD
 $4 - 4 = \square$

4	2	8	1
4	1	9	5

AAC
 $1 + \square = \square$

$2 - 1 = \square$
 make that
ORD

$8 - 9$: Diff =
 CoD =
 make that

$1 - 5$: Diff =
 CoD =

ANSWERS

Answers Example 1

Look Right →

The central grid contains the following numbers:

6	4	4	5
1	8	8	2
4	5	6	3

Surrounding boxes contain the following math problems:

- Top Left (AAC):** $4 + 2 = 6$, make that 5
- Top Right (AAC):** $4 + 2 = 6$
- Left (ORD):** $6 - 1 = 5$, make that 4
- Right (ORD):** $5 - 2 = 3$
- Bottom Left:** $4 - 8$: Diff = 4, CoD = 6, make that 5
- Bottom Right:** $4 - 8$: Diff = 4, CoD = 6

Answer Example 2

Look Right →

The central grid contains the following numbers:

8	5	6	2
4	9	3	3
3	6	2	9

Surrounding boxes contain the following math problems:

- Top Left (AAC):** $5 + 1 = 6$
- Top Right (ORD):** $6 - 3 = 3$, make that 2
- Right (AAC):** $2 + 7 = 9$
- Left (ORD):** $8 - 4 = 4$, make that 3
- Bottom Right (ORD):** $2 - 3$: Diff = 1, CoD = 9
- Bottom Left:** $5 - 9$: Diff = 4, CoD = 6
- Bottom Center (ORD):** $6 - 3 = 3$, make that 2

Answer Example 3

Look Right →

AAC

 $2 + 2 = 4$
 make that 3

AAC

 $0 + 3 = 3$
 make that 2

AAC

 $6 + 3 = 9$

5	2	0	6
1	8	7	7
3	3	2	9

ORD

 $5 - 1 = 4$
 make that 3

2 - 8: Diff = 6
CoD = 4

 make that 3

0 - 7: Diff = 7
CoD = 3

 make that 2

6 - 7: Diff = 1
CoD = 9

Answer example 4

Look Right →

ORD

 $2 - 1 = 1$
 make that 0

AAC

 $8 + 1 = 9$
 make that 8

AAC

 $1 + 5 = 6$

4	2	8	1
4	1	9	5
0	0	8	6

ORD

 $4 - 4 = 0$

2 - 1 = 1

 make that 0

ORD

8 - 9: Diff = 1
CoD = 9

 make that 8

1 - 5: Diff = 4
CoD = 6