Subtraction Example

The Problem:

144-82

- Traditionally, we would line up by place value and then "borrow" or "regroup" to complete the subtraction.

```
  0 14
- 144
-  82
   62
```

Multiple Ways to Subtract:

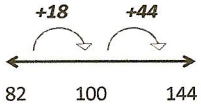
- Add Up
- Subtract Back
- Subtract in Parts
- Number lines, but not always
- Traditional Algorithm

Adding Up

Bridget solved this problem by adding up. She started at 82 and added up to get to 144. She used 100 as a landmark number.

Bridget's Solution

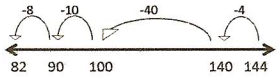
1. 82 + _____ = 144
2. 82 + 18 = 100
3. 100 + 44 = 144
4. The answer is the total of the two jumps from 82 to 144.
5. 18 + 44 = **62**



Subtracting Back:

Keith solved the problem by subtracting back. He started at 144 and subtracted back to get to 82.

1. 144 – _____ = 82
2. 144 – 4 = 140
3. 140 – 40 = 100
4. 100 – 10 = 90
5. 90 – 8 = 82



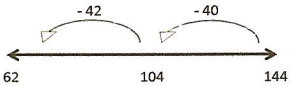
The answer is the total of all the jumps from 144 back to 82.

4 + 40 + 10 + 8 = 62

Subtract in Parts

Kim solved this problem by starting with 144 and subtracting 82 in parts.

1. I started at 144 on the number line.
2. I subtracted 40 and landed on 104
3. I subtracted 42 and landed on 62



Reminders:

- Number lines were used in these examples, but are not always needed as students do the math more abstractly.
- Traditional Algorithm is not implemented until fourth grade!

Multiplication Example:

- Problem:

24 X 38

Traditionally, we would multiply without attention to place value.

24
X 38
192
+ 720
912

Ways to Multiply:

- Picture Arrays(3rd)
- Array Method (4th – 5th)
- Expanded Form/Partial Products(4th - 5th)
- Traditional Algorithm (End of 5th)

Pictures:

- Example problem in a picture array

3 X 4 =12

Array Method:

	20	4
30	600	120
8	160	32

Add up the partial products to determine the actual product or complete answer.

600+ 120 = 720
160+ 32= 192

720+192= 912

Expanded Form:

24 X 38

8 X 4 = 32
8 X 20 = 160
30 X 4 = 120
30 X 20= 600

- Total all the partial products to determine our answer.

600+ 120+ 160+ 32 = 912

Reminders:

- Traditional Multiplication Algorithm does not come until the end of fifth grade.
- For division there are also multiple strategies and the **traditional algorithm** is not used or mentioned until **sixth grade!!**