Chapter 1 Section 1, 2
Addition, subtraction

Sets – collection of objects
- finite
- infinite

Whole numbers – natural numbers or counting numbers
Whole includes zero.
{0, 1, 2, 3, 4, . . . }
Natural numbers
{ 1, 2, 3, 4, . . . }

Number line graphing

Example 1: page 3
Graph the whole numbers 1, 3 and 5 on the number line/

Order of numbers

Place value

345

Expanded form or notation:
3 hundred 4 tens 5 ones
3 x 100 + 4 x10 + 5 x 1

Example 3: page 5

Write the number 23, 712 in expanded notation

Rounding whole numbers
5 or more increase, less than 5 leave.
Rule on page 6

Example 5: page 6
Round the number 8, 769 to the nearest ten.

Example 6: page 7
round the number 4 7 34 to the nearest hundred.

Addition of Whole numbers
(ADD 2)

Problems that occur
* Not line up properly
Solution:
Use line paper vertically.
Line up the numbers so that the numbers are align to the right.

Page 18, example 1:
1,234 + 498

	1	2	3	4	
+		4	9	8	

Another way:
1,234 in expanded form is:
1 x 1000 + 2 x 100 + 3 x 10 + 4 x 1

498 expanded form is:
4 x 100 + 9 x 10 + 8 x 1

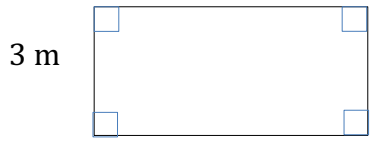
Add the corresponding place value

1 x 1000 + 2 x 100 + 3 x 10 + 4 x 1
4 x 100 + 9 x 10 + 8 x 1
So

1 x 1000 + 6 x 100 + 12 x 10 + 12 x 1
12 x 10 is
1 x 100 + 2 x 10 and
12 x 1 is
1 x 10 + 2 x 1 so
1 x 1000 + 7 x 100 + 3 x 10 + 2 x 1 so the answer is
1 7 3 2

Perimeter of a polygon is the sum of the sides.

Find the perimeter of the rectangle below:



Subtraction
(sub 2)

Page 20, Example 3
Simplify: 1, 755 – 328
The standard

```
  1755
- 328
```

borrow from the 5 in the 10's which becomes 4 and add 10 to the 5 in the ones

So 1 7 4 15

```
  - 3 2 8
  1 4 2 7
```

The reasoning is one of subtraction and adding the same value does not change the problem.
Example: subtract 5 and add 5 to any number, the results is the same.

Looking a place value of the subtrahend, 1 x 1000 + 7 x 100 + 5 x 10 + 5 x 1
Do the subtraction and adding 10: 1 x 1000 + 7 x 100 + **4 x 10 + 15 x 1**
This now makes it possible to subtract the minuend: 3 x 100 + 2 x 10 + 8 x 1
Thus the difference: **1** x 1000 + **4** x 100 + **2** x 10 + **7** x 1
The answer: 1 4 2 7

Another way to look at the same problems is to add the same number to the top and bottom.

Example: 45 – 18. Add 2 to both numbers: 47 – 20. The answer to both problems is 27.

So in the previous problem: 1 7 5 5 – 3 2 8. One will add 10 to the bottom and 10 to the top

1 x 1000 + 7 x 100 + 5 x 10 + **15** x 1
\- 3 x 100 +**3** x 10 + 8 x 1
1 x 1000 + 4 x 100 + 2 x 10 + 7 x 1 answer
1 4 2 7

Without expanded form:

```
  1755
- 328
```

```
 17  5 15
 - 3  3  8
 ------
 1  4  2  7
```

For more information:
http://www.themathpage.com/Arith/subtract-whole-numbers-subtract-decimals.htm

Other techniques:

Back to the add the same value to the top and bottom:

```
  692        692 + 2        694
- 378        378 + 2        380

  3904       3904 + 25      3929
- 1775       1775 + 25      1800
```

Evaluate x – y where x = 7061 and y = 3229

Grouping Symbols
Affects the order that expressions are to be evaluated.
( ), { }, [ ]

The expression inside – evaluate first

(3 + 4) + 5

2 + [3 + (4 + 5)]