

What to bring to class:  
 Ask students to bring PM  
 4A and 5A.

1.3 Addition

(go over #6 of HW 2 - shows them how students will struggle)

\*Review - what is place value? (Good Exam question)  
 (value of a digit is specified by its position within number)

Addition:

$$2 + 3 = 5$$

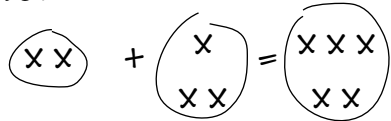
$\swarrow \quad \searrow$   
addends      sum

or

summands

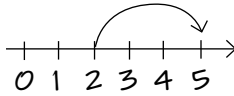
Explained with models:

\* set

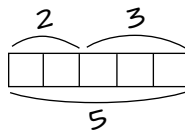


\* measurement

steps on number line



lengths of sticks



Teaching Stages:



Meaning of addition  
 (counting on)

Mix of - mental math  
 - worksheet  
 - short word problems

In chapter 3

say: Must balance. Don't want to hold math hostage by reading & writing skills!

### Properties of Addition:

1 Additive Identity: "Adding zero does nothing"

Reason - set: Bag 1 has 7 chips, bag 2 has none. Pour contents of bags 1 and 2 into a 3<sup>rd</sup> bag. You get 7 in a new bag.

say: not really an addition fact - is really def. of zero

2 Any-order property: A list of whole numbers can be added in any order (with same answer)

Ex:  $3 + 7 + 2 = (3 + 7) + 2 = (7 + 2) + 3 \dots$

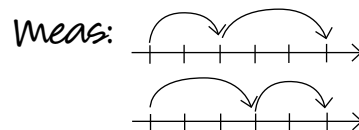
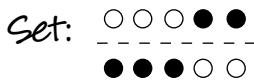
↑  
parentheses indicate  
which is done 1st

Reason - set: All chips thrown in same bag - order doesn't matter  
measurement: all lengths joined end to end - order doesn't matter

### Special Cases:

a) For 2 numbers only Commutative Property - 2 numbers can be added in either order to yield same result.

Ex:  $3 + 2 = 2 + 3$



b) For changing order of addition, but not order of numbers - called associative property

Ex:  $(3 + 2) + 4 = 3 + (2 + 4)$

Together (a) + (b) give any-order prop.

Ex:  $(2 + 3) + 4 = 3 + (2 + 4)$

true because

$(2 + 3) + 4 = (3 + 2) + 4 = 3 + (2 + 4)$

comm.      assoc.

"Addition with in 20" = sums 0 + 0 to 10 + 10  
-taught/learned using "Thinking strategies"

Thinking/Teaching Strategies (in order to be taught)

1 Adding +1, +2

Ex.  $7 + 2 = 9$  easy by counting

2 Adding: 0

$5 + 0 = 5$  natural, once taught

3 Commutativity: Pick the easier order

$2 + 7 = 7 + 2$   
hard easy by ①

4 Doubles: 3 + 3, 4 + 4, 5 + 5, ...

Ex:  $5 + 5$  → fingers

$6 + 6$  → egg carton

5 Adding 10  $6 + 10 = 16$

Ask: What type of fact: Place Value

6 10's combinations

$9 + 1, 8 + 2, 7 + 3, 6 + 4, 5 + 5$   
① ④

7 Relating to doubles: "Mental Math"

$6 + 7 = (6 + 6) + 1$

$7 + 8 = (8 + 8) - 1$

8 Compensation: "Mental Math"

$9 + 6 = 10 + 5$   
+1

"6 gives 1 to the 9"

Say: We will be doing lots of mental math to improve. Will use large numbers because smaller ones are already memorized.

Examples:

1.  $38 + 32 = 40 + 30 = 70$  or  $30 + 30 + (8 + 2)$   
+2 compensation Place Value

2.  $71 + 29$   
+1

$$3. \quad 232 + 96 = 228 + 100 = 328$$

$+4$

$$4. \quad 36 + 35 = (35 + 35) + 1 = 71$$

*doubles*

$$5. \quad 793 + 428 = 800 + 421 = 1221$$

$+7$

Summarize !

HW

Read Sect 1.3, Do HW Set 3.