

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

1.4 Subtraction

*Review - Place Value
-Any Order Properties (Comm, Assoc)

Subtraction: Definition:

$$13 - 5 = \underline{\quad\quad\quad} \quad \xleftrightarrow[\text{def}]{\text{by}} \quad 5 + \underline{\quad\quad\quad} = 13$$

"missing addend"

Terminology:

$$13 - 5 = 8$$

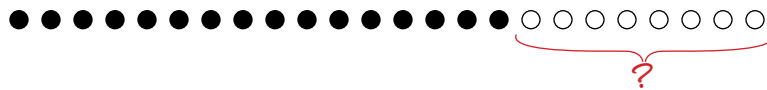
minuend subtrahend difference

Say: Need to know these terms to read teacher guides

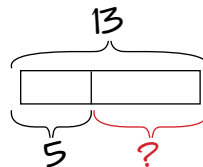
3 interpretations:

① Part-whole interpretation: "How much is the missing part?"

Ex: Set Model: There were 24 cars and trucks. 16 were cars.
How many were trucks?



Meas. Model:



$$13 - 5 = \underline{\quad\quad\quad}$$

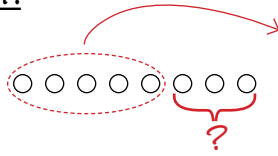
Say: Same as missing addend?

② Take-away interpretation: "How much is the remaining part?"

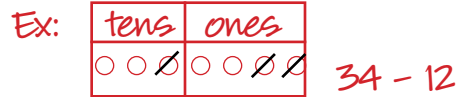
Ex: There were 8 pencils on the desk, 5 were picked up.

How many were left?

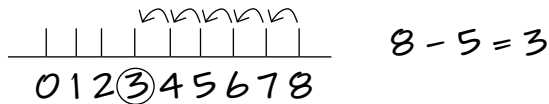
Set:



Note: With bigger numbers chip models help



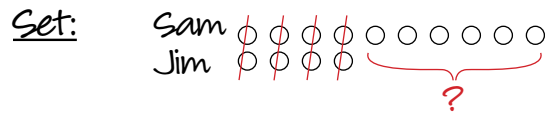
Measurement:



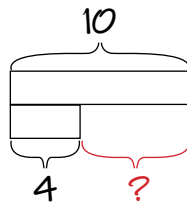
③ Comparison Interpretation: "How much more or less does one group have?"

Ex: Sam had 10 pencils. Jim had 4.

How many more pencils did Sam have?



Measurement:

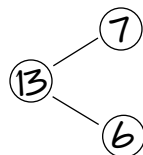


Thinking/Learning Strategies for subtraction within 20.

a) Four-fact families

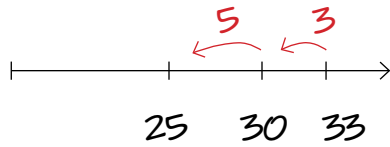
$$\begin{cases} 6 + 7 = 13 \\ 7 + 6 = 13 \\ 13 - 7 = 6 \\ 13 - 6 = 7 \end{cases} \quad \begin{array}{l} \text{*aid to connecting + and -} \\ \text{*reduce need for memorization} \end{array}$$

b) number bonds - display all four facts in one picture



c) counting down:

$$\begin{aligned} \text{Ex: } 33 - 8 &= (33 - 3) - 5 \\ &= 30 - 5 \\ &= 25 \end{aligned}$$

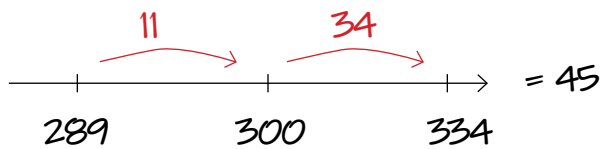


**use round numbers as stepping stones.*

d) counting up:

$$\text{Ex: } 334 - 289$$

start at 289. How far to 334?



Practice:

$$132 - 94 =$$

$$1040 - 792 =$$

Mental Math:

Recall Compensation for addition:

$$1. 67 + 59 = 66 + 60 = 126$$

+1

$$2. 769 + 51 = 770 + 50 = 820$$

+1

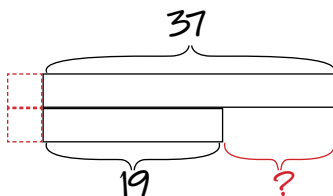
place value w/rebundling

$$3. 37 - 19 = 38 - 20 \quad \text{(not } 36 - 20)$$

= 18

place value

Let students try this!
Likely to make mistake.



4. $62 - 38 \rightarrow 62 - 38 = 60 - 36$
 $(-2) (-2)$

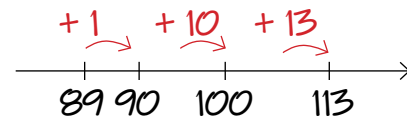
$62 - 38 = 64 - 40$
 $(+2) (+2)$

which is easier?
 make subtrahend nice!

Compensation for $a - b$: increase/decrease a & b by the same amount, usually by making b "nice" (ie - a multiple of 10)

5. $113 - 89 = (m1) = 1 + 10 + 13 = 24$
counting up

$(m2) = 114 - 90 = 24$
place value
compensation



6. $188 - 53 = 135$ place value w/ no rebundling
 (subtract tens, ones)

7. $1859 - 532 = 1327$ just place value

HW Read 1.4, do HW # 4.