

Math 3131 Prof. Pennance – Summary of Lecture 6 - Subtraction¹

1. Definition of Subtraction

Let m and s be integers. The *difference* $m - s$ is the integer which fits in the blank.

$$s + \underline{\hspace{2cm}} = m$$

m is called the *minuend*, and s the *subtrahend*

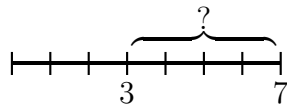
2. Example $7 - 3$ is the number which fits

$$3 + \underline{\hspace{2cm}} = 7$$

3. Interpretations of Subtraction

(a) Part-whole interpretation.

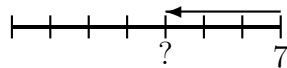
Part of a single set or single interval is specified. How much is needed to make it whole.



- i. Example. The class has 7 students. 3 are boys. How many girls? (Set model)
- ii. Example. The exam is 3 hours. I work for 1 hour. How much time remains? (Measurement Model)

(b) Take-away interpretation

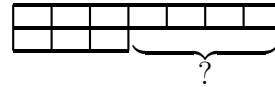
How much remains when we remove objects from a set or decrease a measurement by a certain amount?



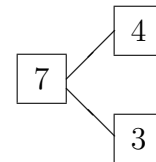
- i. Juan has 7 eggs and breaks 3. How many are left? (set model)
- ii. Carlos has \$7 and loses \$3. How much money does he have left?. (measurement model)

(c) Comparison Interpretation

Two different sets or measurements are compared. Subtraction interpreted as the *difference*.

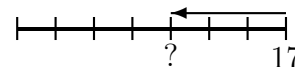


- i. Juan has 7 chocolates. Carlos has 3 chocolates. How many more chocolates does Juan have? (set model)
 - ii. Juan weighs 70 pounds. Carlos weighs 30 pounds. How many more pounds does Juan weigh? (measurement model)
4. “Number bonds” and “four-fact families”



5. Computing subtractions

(a) Counting down $17 - 3 = 14$



Splitting the subtrahend
 $13 - 6 = 10 - 3 = 7$

(b) Counting up $175 - 98 = 2 + 75$

(c) Compensation

$$175 - 98 = 177 - 100$$

$$175 - 101 = 174 - 100$$

6. Subtraction and place value

- (a) Adding multiples of 10.
- (b) Adding 1's and 10's separately.
- (c) Addition with rebundling.

¹Reference: Chapter 1. Elementary Mathematics for Teacher by Thomas Parker and Scott Baldrige