

HOMEWORK: 1, 3, 5, 7, 9, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43

OBJECTIVES:

- ❖ Employ procedures for estimation and mental computation
- 1. **Mental computation** means you are using a strategy to simplify an arithmetic problem (at an easy to moderate level) and computing an *exact* answer without pencil and paper.
- 2. **Estimation** (usually done mentally) to obtain an *approximate* answer to a difficult computation.

Methods of Mental Computation:

- 3. **Mental Addition** common strategies include breaking apart and compensation.
- 4. **Mental Subtraction** common strategies include breaking apart, compensation, and adding on.
- 5. **Mental Multiplication** common strategies include breaking apart and compensation.

Methods of Estimation:

- 6. **Rounding Strategy**
 - a. Round the numbers to obtain a problem you can compute mentally.
 - b. Add, subtract, or multiply the rounded numbers to obtain an estimate.

A book is 123 pages long. A student has read 79 pages.

Estimate the number of pages the student has left to read using rounding.

Compute the number of pages the student has left to read using compensation.

- 7. **Compatible-Numbers Strategy** (Good for mental division and long division with pencil and paper.)
 - a. Round the numbers to nearby compatible numbers.
 - b. Perform the operation with the compatible numbers, and use the answer as an estimate.

A college has 4865 students and 329 teachers.

Estimate the student-teacher ratio using compatible numbers.

Estimate the student-teacher ratio using rounding.

Which estimate is more accurate?

Which estimate is easier to compute?

8. **Front-End Strategy** (especially useful in addition)

Three towns with populations of 3692, 1527, and 4278 make up a voting district.

Estimate the total population using front-end estimation.

Estimate the total population using rounding.

Which estimate is more accurate?

Which estimate is easier to compute?