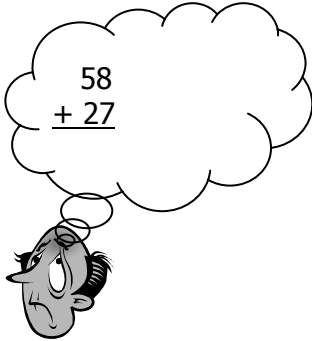


Math 365 Lecture Notes

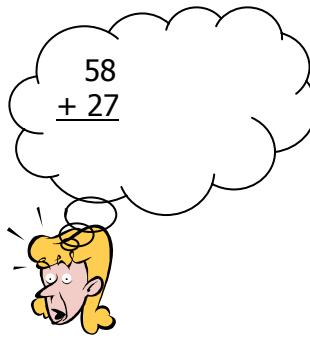
Section 3.4 – Mental Mathematics and Estimation for Whole-Number Operations

★ Mental Mathematics Addition

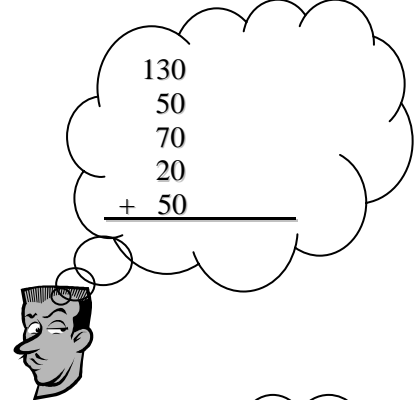
Adding from the left



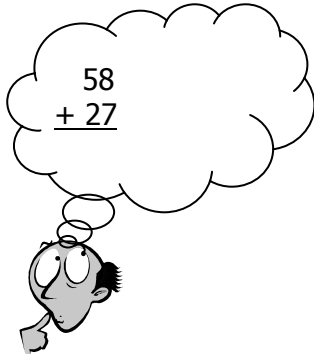
Breaking up and bridging



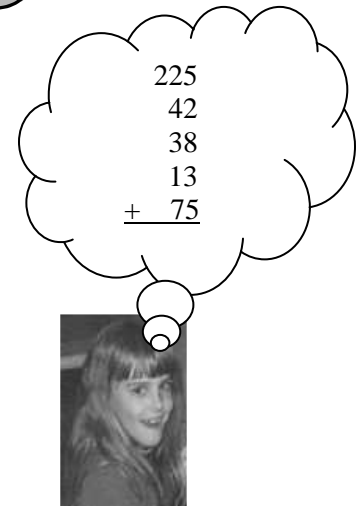
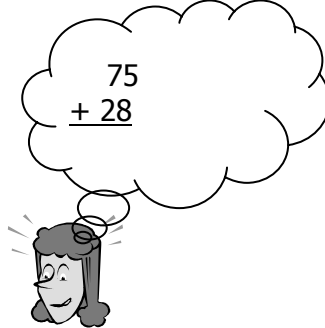
Using compatible numbers



Trading Off

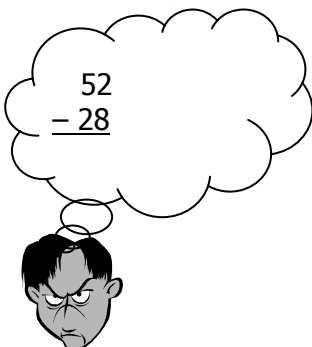


Making compatible numbers

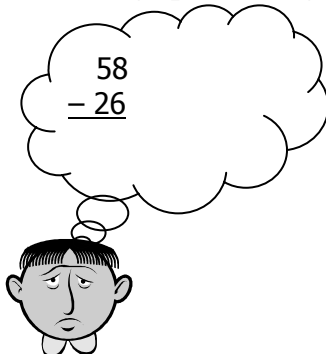


★ Mental Mathematics Subtraction

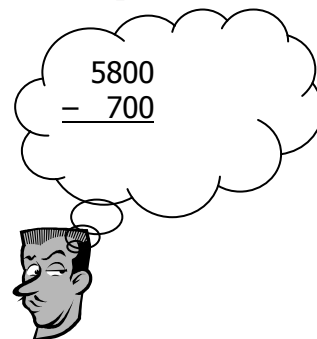
Trading Off



Breaking up and bridging

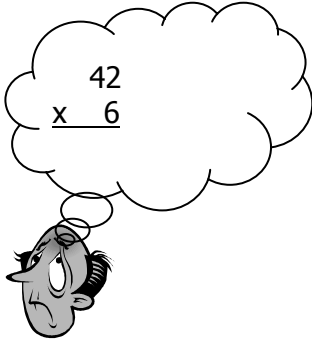


Drop the zeros



★ Mental Mathematics Multiplication

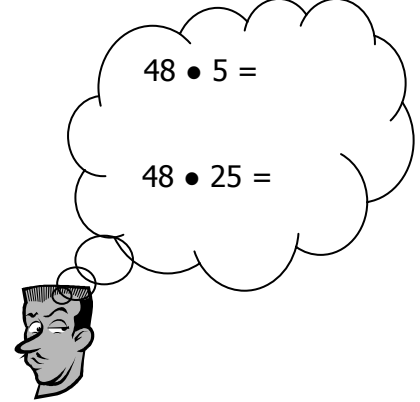
Front-end multiplying



Using compatible numbers



Thinking money



★ Mental Mathematics Division

Breaking up the dividend



Using compatible numbers



★ Computational Estimation

1) Front-end:

Example: The Gregory family went on a three-day trip. They drove 463 miles the first day, 385 miles the second day and 415 miles the third day. Explain how you would use front-end estimation with adjustment to estimate the total distance they drove in three days.

Example: Estimate $426 \bullet 3$ using front-end estimation.

2) Compatible-Numbers:

Example: A movie theater had six shows of “Return to Dodecahedron” on a Saturday. The number of tickets sold at the six shows were 64, 59, 32, 43, 27, and 77. How can you estimate the total number of tickets sold using the compatible numbers strategy?
(Sonnabend, *Mathematics for Teachers* 3e, p.176)

Example: If a cow produces 753 ounces of milk each day, estimate the number of gallons of milk the cow produces in a week.

3) Clustering:

Example: Show how to estimate using the clustering strategy.

$$897 + 706 + 823 + 902 + 852 \approx$$

4) Rounding:

Example: A coliseum seats 38,321 people. If only 2,467 tickets are left for Wednesday’s event, show the steps you could use to estimate the number of tickets that have been sold.

5) Using the Range:

Problem:

Low Estimate:

High Estimate: