

Substitute Compatible Numbers

Estimation Strategy

When to use this strategy: Use this estimation strategy when you have many numbers to work with for which you can substitute compatible numbers for (some of) the original numbers. *Also, you may not need to change all the numbers!*

How to use this strategy: This is “strategic rounding.” If multiplying, it is nice to substitute numbers so that you get 10 (or powers of 10). Then multiply by the remaining number (using the original number). For addition and subtraction, look for an “added” number (or positive number) and a “subtracted” number that end with the same number or numbers. Combine these first (perhaps without rounding). Then add or subtract the remaining numbers, using rounding as needed.

Examples: $2.4 \times 85.3 \times 4.06 \approx (2.5 \times 4) \times 85.3 = 10 \times 85.3 = 853$
 $49.5 \times 7.29 \times 2.13 \approx (50 \times 2) \times 7.29 = 100 \times 7.29 = 729$

Use this (new) strategy on the following:	
1.) Estimate the volume of a box that is 7.3 m by 5.2 m by 2.0 m.	2.) The area of the inner courtyard of the Pentagon is $21,000 \text{ m}^2$. If the area of a football field is $5,351 \text{ m}^2$, then about how many football fields would be able to fit into the courtyard?
3.) You buy four items costing \$4.48, \$2.49, \$2.98, and \$6.94. Estimate the total.	4.) Estimate the value of $r - s - t$ if $r = 137, s = 19, t = 7$

Use any strategy you know on the following:	
5.) Simplify $14x + 82x + 6x + 33x + 7x$	6.) Estimate the total cost of the following items that you buy at the store: \$.89, \$3.04, \$4.88, \$2.12.
7.) Find the circumference if the radius is 38 feet. ($C = 2\pi r$. Leave the answer in terms of π .)	8.) We have 3 buses which have 33 people on each bus going to the zoo. The cost to get in the zoo is \$7 per person. Estimate the total entrance fee to the zoo.