

## **Mental Arithmetic and Estimation**

**Mental arithmetic** involves the calculations that are done in your head without pencil and paper, calculators or other aids. Mental math strategies help you calculate an answer quickly, using the addition/subtraction facts and the multiplication/division facts that you have memorized.

**Estimation** in arithmetic involves rounding numbers up or down so that it is easy to perform mental calculations on them. We use estimation to get an idea of the magnitude of an answer before we do precise calculations. An estimate is an approximate or “ballpark” answer.

### **Examples**

1. Add and subtract these in your head using the given strategy.

a. Add using **multiples of ten**:  $43 + 77$

b. Add by **place value**:  $825 + 162$

c. Add by using the **opposite change** rule: 
$$\begin{array}{r} 398 \\ + 157 \\ \hline \end{array}$$

d. Subtract by using the **same change** rule: 
$$\begin{array}{r} 311 \\ - 195 \\ \hline \end{array}$$

. Two schools raised money for charities. Sean’s school raised \$32587. Leslie’s school raised \$18749. Estimate how much more money Sean’s school raised.

. A pair of hippos weighed 5201 kg together. The female weighed 2038 kg. Estimate how much more the male weighed than the female.