

# Subtraction and Division – Mental Math or Algorithm Examples

Division:

- **Subtracting groups of the divisor**

$$\begin{array}{r} 159 \div 13 \\ 10 \times 13 = 130 \\ 2 \times 13 = 26 \\ 12 \text{ r}3 \end{array} \quad \begin{array}{r} 159 \\ -130 \\ \hline 29 \\ -26 \\ \hline 3 \end{array} \quad \begin{array}{r} 29 \\ -26 \\ \hline 3 \end{array} \quad \text{OR Use the Big 7 method of recording}$$

- **Breaking the problem into parts**

$$150 \div 48 = (50 \div 48) + (50 \div 48) + (50 \div 48) = 3 \text{ r } 6$$

(There is one 48 with 2 left over in each 50)

OR

$$159/13$$

Break into  $130 + 29$ , 130 divided by 13 is 10; 29 divided by 13 is 2 with 3 remaining

- **Transferring the problem into an equivalent problem that is easier to solve.**

$$1400 \div 35 = 200 \div 5 \text{ (divide both numbers by 7)}$$
$$928/16 = 464/8 = 232/4 = 116/2 = 58$$

- **Solving and easier related problem, then compensating**

$$247 \div 13$$

Solve  $260 \div 13$  (There are 20 thirteens in 260, but 247 is 13 less than 260. So there are only 19 thirteens in 247)

- **Dealing out into groups**

$$159/13$$

Give 10 to each group; that uses up 130; 29 is left

Give 1 more to each group; that uses up 13; 16 is left

Give 1 more to each group; 3 is left.

The result is 12 in each group, remainder 3

**Subtraction:**  $465 - 129$

- **Subtract one number in parts from the other.**

$$\begin{array}{r} 465 - 100 = 365 \\ 365 - 20 = 345 \\ 345 - 5 = 340 \\ 340 - 4 = 336 \end{array} \quad \text{OR} \quad \begin{array}{r} 465 - 125 = 340 \\ 340 - 4 = 336 \end{array}$$

- **Change one number, then compensate for the change.**

$$\begin{array}{r} 465 - 130 = 335 \\ 335 + 1 = 336 \end{array} \quad \text{OR} \quad \begin{array}{r} 460 - 129 = 331 \\ 331 + 5 = 336 \end{array}$$

- **Add up from the number being subtracted.**

$$\begin{array}{r} 129 + 1 = 130 \\ 130 + 300 = 430 \\ 430 + 35 = 465 \\ 1 + 300 + 35 = 336 \end{array} \quad \text{OR} \quad \begin{array}{r} 129 + 130 = 429 \\ 429 + 1 = 430 \\ 430 + 35 = 465 \\ 300 + 1 + 35 = 336 \end{array}$$

- **Transform the entire problem to an equivalent problem that is easier to solve.**

$$\begin{array}{r} 465 - 129 = 466 - 130 \\ 466 - 130 = 336 \end{array}$$

- **Subtract each column and record each difference, whether it is positive or negative.**

$$\begin{array}{r} 400 - 100 = 300 \\ 60 - 20 = 40 \\ 5 - 9 = -4 \\ 300 + 40 - 4 = 336 \end{array}$$