

Division Theorem: $a, b \in \mathbb{Z}$, $b \neq 0$

exactly one (1) way to write:

$$a = \underbrace{q}_{q \in \mathbb{Z}} b + \underbrace{r}_{r \in \mathbb{Z} \text{ and } 0 \leq r < |b|} \quad \text{such that}$$

A diagram of the division theorem equation $a = qb + r$. The terms are color-coded and labeled with arrows: a is in a pink circle with a red arrow labeled "dividend"; q is in a purple circle with a purple arrow labeled "quotient"; b is in a blue circle with a blue arrow labeled "divisor"; and r is in a green circle with a green arrow labeled "remainder".

$$52 = 17 \cdot 3 + 1$$

"52 leaves remainder 1 when divided by 3"

* You might have forgotten all this terminology from grade-school — that's okay. Just be sure to run through enough examples so that you know each definition really well.

(really well = it should be second nature. You should not need to pause and think about which one is which)