

**YOU & MATHS** Which are divisors? Consider the polynomial  $P(x) = 4x^2 + 5x - 6$ . Which of the following polynomials are divisors of  $P(x)$ ?

- a.  $x + 1$
- b.  $4x - 3$
- c.  $x + 2$
- d.  $x - 2$

You can immediately check polynomials **a**, **c**, and **d** by substituting  $x$  with  $-1$ ,  $-2$ ,  $2$ , respectively, in the polynomial  $P(x)$ . You get  $P(-1) = 4 - 5 - 6 = -7$ ,  $P(-2) = 16 - 10 - 6 = 0$ , and  $P(2) = 16 + 10 - 6 = 20$ . So, by Ruffini's theorem you can conclude that  $x + 2$ , that is polynomial **c**, is a divisor of  $P(x)$ .

Then, dividing  $P(x)$  by  $x + 2$ , you get  $4x - 3$ , and so you can conclude that  $4x - 3$ , that is polynomial **b**, is a divisor of  $P(x)$ .

	4	5	-6
-2		-8	6
	4	-3	0

Therefore the solutions are **b** and **c**.