

Quadratics worksheet

1. Expand the brackets on the following expressions

- a. $(x+2)(x+1)$ b. $(x+4)(x-2)$ c. $(x-1)(x+3)$ d. $(x-5)(x-3)$
e. $(x-1)(x+1)$ f. $(2x-3)(x+2)$ g. $(3x-1)(2x-2)$ h. $(2-x)(2x+3)$
i. $(x-3)^2$

2. Factorise the following expressions (put brackets in)

- a. $x^2 + 3x + 2$ b. $x^2 + 6x + 8$ c. $x^2 - 6x + 9$ d. $x^2 - x - 12$
e. $x^2 - 2x - 15$ f. $x^2 - 52x + 100$ g. $x^2 - 6x + 7$ h. $5x + x^2 + 4$

3. Solve the following quadratic equations

- a. $(x+2)(x+1) = 0$ b. $(x+4)(x-2) = 0$ c. $(x-1)(x+3) = 0$
d. $(x-5)(x-3) = 0$ e. $(x-1)(x+1) = 0$ f. $(2x-3)(x+2) = 0$
g. $(3x-1)(2x-2) = 0$ h. $(2-x)(2x+3) = 0$ i. $(x-3)^2 = 0$

4. Solve the following quadratic equations by factorising

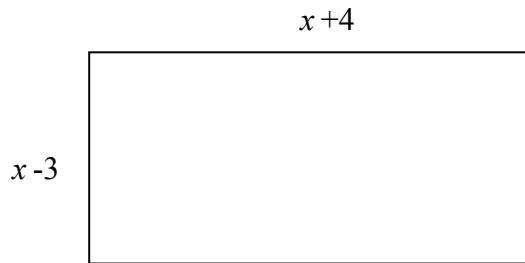
- a. $x^2 + 5x + 4 = 0$ b. $x^2 + 8x + 12 = 0$ c. $x^2 - 4x + 5 = 0$
d. $x^2 - 5x - 14 = 0$ e. $x^2 + 6x + 9 = 0$ f. $x^2 - 52x + 100 = 0$
g. $x^2 - 6x + 7 = 0$ h. $x^2 - 10x + 21 = 0$ i. $2x^2 - 6x - 8 = 0$

5. Solve these more difficult problems by rearranging and then factorising

- a. $x^2 + 6x = -5$ b. $-5x + x^2 = -6$ c. $x(x-7) + 12 = 0$
d. $2x^2 - 4x = 6$ e. $1 = x^2 - 2x$ f. $x^2 - 52x + 48 = -52$

Applied quadratic problems

- 6.
- If my age is x years and my brother is 2 years older than me, write my brothers age in terms of x
 - If my sister is 5 years younger than me, write my sisters age in terms of x
 - If the product of my brothers age and my sisters age is 54, write down an equation to represent this in terms of x
 - Solve this equation to find my age x , and explain why one of the two solutions is invalid
7. A rectangle is shown, if the area of the rectangle is 98cm^2 . Find
- the length of each side
 - the length of the diagonal of the rectangle



8. A triangle is shown below of area 24cm^2 . Find the length of the base.

