

Quadratic Equation Word Problems



Level 1 - Create and solve simple quadratic equations

Level 2 - Create and solve quadratic equations where factoring is required

Answers:

Level 1

a) $x(x + 1) = 6 \rightarrow$ Integers: 2 and 3
b) $x^2 + x = 56 \rightarrow$ Number: -8
c) $x^2 = x + 12 \rightarrow$ Number: 4
d) $x(x - 8) = 240 \rightarrow$ Length: 20 m
e) $\frac{1}{2}(2h + 4)(h) = 8 \rightarrow$ Base Length: 8 cm
f) $(x + 2)^2 - x^2 = 68 \rightarrow$ Numbers: 16 and 18
g) $y^2 = 8(y + 2) + 4 \rightarrow$ Ages: 10, 11, 12

Level 2

a) Set $h = 0$: $-2t^2 + 8t + 10 = 0 \Rightarrow (t - 5)(t + 1) = 0 \Rightarrow t = 5$ s
b) Let legs x and $x + 7$: $x^2 + (x + 7)^2 = 13^2 \Rightarrow x = 5, x + 7 = 12 \Rightarrow$ sides 5 cm and 12 cm
c) Let width w , length $w + 3$: $10w(w + 3) = 100 \Rightarrow w^2 + 3w - 10 = 0 \Rightarrow w = 2 \Rightarrow$ base 2 cm by 5 cm
d) Let integers n and $n + 1$: $n^2 + (n + 1)^2 = 221 \Rightarrow n^2 + n - 110 = 0 \Rightarrow n = 10 \Rightarrow$ integers 10 and 11
e) Let height h , width $\frac{1}{2}h + 2$: $h(\frac{1}{2}h + 2) = 48 \Rightarrow h^2 + 4h - 96 = 0 \Rightarrow h = 8 \Rightarrow$ width 6 ft, height 8 ft
f) Let border x : $(8 + 2x)(6 + 2x) = 120 \Rightarrow x^2 + 7x - 18 = 0 \Rightarrow x = 2 \Rightarrow$ border width 2 cm