
QUADRATIC EQUATIONS

Question	Answer
1. Solve using Factorisation $x^2 + 5x + 6 = 0$	
2. Solve using Factorisation $x^2 - x - 12 = 0$	
3. Solve using Quadratic Formula $x^2 + 3x - 4 = 0$	
4. Solve using Quadratic Formula $2x^2 + 5x - 3 = 0$	
5. Solve using Quadratic Formula $3x^2 - 7x + 2 = 0$	
6. Solve using Quadratic Formula $4x^2 - 4x - 3 = 0$	
7. Solve using Quadratic Formula $-2x^2 + 3x + 2 = 0$	
8. A civil engineer is designing a parabolic arch for a small pedestrian bridge. The height of the arch above the ground is modelled by the equation: $h = -0.5x^2 + 3x + 2$ where: h is the height of the arch in metres. x is the horizontal distance in metres from a reference point on the ground. The engineer needs to determine where the arch meets ground level to establish the span of the arch.	
9. A civil engineer is designing a rectangular concrete foundation for a small structure. The length of the foundation is 3 metres greater than its width. The foundation must have an area of 40m^2 . Calculate the width and length of the foundation.	

10. A civil engineer is investigating the trajectory of a water jet discharged from a pipe during a hydraulic experiment. The height of the water jet above a reference level is modelled by the equation: $h = -0.5x^2 + 4x + 1$ where h is the height in metres and x is the horizontal distance in metres. Tasks: Calculate the horizontal positions where the water jet reaches a height of 5m. Explain why there are two possible solutions.
11. A civil engineering contractor is installing a rectangular paved area measuring 8m long and 5m wide. A uniform-width border is added around the outside of the paved area. The total area, including the border, is 70m² Calculate the width of the border.