# Foundation Check In – 6.03 Algebraic equations

1. Solve .
2. Solve .
3. Solve .
4. Solve .
5. Solve algebraically these simultaneous equations.





1. The graph shows the quadratic equation . Explain how the graph can be used to find the approximate solutions of the equation .
2. Karolina owns 19 pets. Each pet is either a guinea pig or a bird. The pets have a total of 46 legs. Write down two equations from this information.
3. Explain how the graph of the equations  and  could be used to solve the equations simultaneously.
4. A rectangle has an area of 104 cm² and sides of length *x* cm and cm. Calculate the lengths of the two sides.
5. 1000 tickets are sold for a charity event. Adult tickets cost £5, children’s tickets cost £2 and a total of £4175 is collected. How many tickets of each type are sold?

**Extension**

Penny leaves Liverpool at 08.15 and travels at a steady speed of 25 mph. Isabella leaves Liverpool two hours later and travels at a steady speed of 30 mph. If we assume that they keep to these speeds, at what time will Isabella catch up with Penny and how far will they have travelled?

## Answers

1. 
2. 
3.  so  and 
4.  so  and 
5.  and 
6. The solutions are where the graph cuts the *x*-axis ( and ).
7.  and 
8. Draw the two straight lines and where they intersect is the solution ( and ).
9. 8 cm and 13 cm
10. 725 adults and 275 children

**Extension**

20.15 and 300 miles

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| **Assessment Objective** | **Qu.** | **Topic** | **R** | **A** | **G** |  | **Assessment Objective** | **Qu.** | **Topic** | **R** | **A** | **G** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| AO1 | 1 | Solve a linear equation in one unknown |  |  |  |  | AO1 | 1 | Solve a linear equation in one unknown |  |  |  |
| AO1 | 2 | Solve a linear equation with brackets and unknown on both sides of the equation |  |  |  |  | AO1 | 2 | Solve a linear equation with brackets and unknown on both sides of the equation |  |  |  |
| AO1 | 3 | Solve a quadratic equation by factorising |  |  |  |  | AO1 | 3 | Solve a quadratic equation by factorising |  |  |  |
| AO1 | 4 | Solve a quadratic equation by factorising |  |  |  |  | AO1 | 4 | Solve a quadratic equation by factorising |  |  |  |
| AO1 | 5 | Solve two linear simultaneous equations in two variables |  |  |  |  | AO1 | 5 | Solve two linear simultaneous equations in two variables |  |  |  |
| AO2 | 6 | Use a graph to find approximate solutions of a quadratic equation |  |  |  |  | AO2 | 6 | Use a graph to find approximate solutions of a quadratic equation |  |  |  |
| AO2 | 7 | Set up two simultaneous equations from quantities given in a worded scenario |  |  |  |  | AO2 | 7 | Set up two simultaneous equations from quantities given in a worded scenario |  |  |  |
| AO2 | 8 | Explain how a graph can be used to find the approximate solution of two linear simultaneous equations |  |  |  |  | AO2 | 8 | Explain how a graph can be used to find the approximate solution of two linear simultaneous equations |  |  |  |
| AO3 | 9 | Set up and solve a quadratic equation by factorising |  |  |  |  | AO3 | 9 | Set up and solve a quadratic equation by factorising |  |  |  |
| AO3 | 10 | Set up and solve two linear simultaneous equations in two variables |  |  |  |  | AO3 | 10 | Set up and solve two linear simultaneous equations in two variables |  |  |  |
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