# A Clever New Way to Solve Quadratics

### Section A

Find the missing square by expanding the brackets using a rectangle area model and then working out what else you have to add on to make the sides equal

1. 
2. 
3. 
4. 
5. 

### Section B

Find the missing square by expanding the brackets using a rectangle area model.

1. 
2. 
3. 
4. 

### Section C

Find the missing number. Check your answer by expanding the brackets.

1. 
2. 
3. 

Now work out the sign too. Remember to check your answer.

1.  [you must also put + or – in the small box]
2. 
3. 

And now fill all the blanks yourself. Remember to check your answer.

1. 
2. 
3. 
4. 
5. 

### Section D Solve the following equations, expressing your answers as surds:

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 
11. 
12. 
13. 

### Section E Solve the following equations, expressing your answers as surds:

1. Show that 
   1. Hence solve
   2. Solve the same equation by using the zero trick instead.
2. Complete the square in the expression 

Hence show that two roots of  are  and 

1. Solve the equation 
2. By first completing the square, explain why the equation  has no roots.
3. By first completing the square, show that the equation  has exactly one root.
4. Solve the following equations:
   1. 
   2. 
   3. 
   4. 
   5. 
   6. 

**Section F** Example Show that the roots of  are 

1. Show that the roots of  are 
2. Show that the equation  has no real roots.

(Hint: try to find them and see what happens)

1. Show that the roots of  are 
2. Show that the roots of  are  , which can be written as 
3. Show that the roots of  are 

Find all roots of each of these equations:

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 

### Section G Do the following equations have real solutions? If not, explain why not. If so, say how many solutions and find them.

1. ****
2. ****
3. ****
4. ****
5. ****
6. ****
7. ****
8. ****
9. ****
10. ****
11. ****
12. ****

# A Clever New Way to Solve Quadratics - Homework

Find the missing numb and sign. Remember to check your answer.

1. 
2. 

And complete the square all by yourself! Remember to check your answer.

1. 
2. 

Solve these equations by using your answers to the previous questions

1. 
2. 
3. \*Generalise the method to create a formula.

### Section A: Solve, expressing your answers as surds in their simplest form

1. 
2. 
3. 
4. 
5. 
6. \*

Answer box:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  | - |  |

**Section B**

1. Show that the two roots of  are .
2. Show that the two roots of  are 
3. Show that the two roots of  are 
4. \*Peter is wondering for what values of *k* the equation  can be solved.
   1. Complete the square
   2. Answer peter’s problem