A Level Transition Lessons from GCSE:

Equations Transition Lessons

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01: Solving By Factorising

Factorising Revision

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Factorising Quadratics

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3 quick questions

There are 6 ways to solve a quadratic equation:

1. **Rearranging (making the subject)**
2. **Factorising**
3. By completing the square
4. Using the Quadratic Formula (need to memorise)
5. Looking at the graph of the quadratic
6. Iteration

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Solving by factorising

Examples:

|  |  |
| --- | --- |
| 1) |  |
|  |  |

Quick Questions

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1. Make sure equation is in the form
2. Factorise the quadratic
3. Find the solutions

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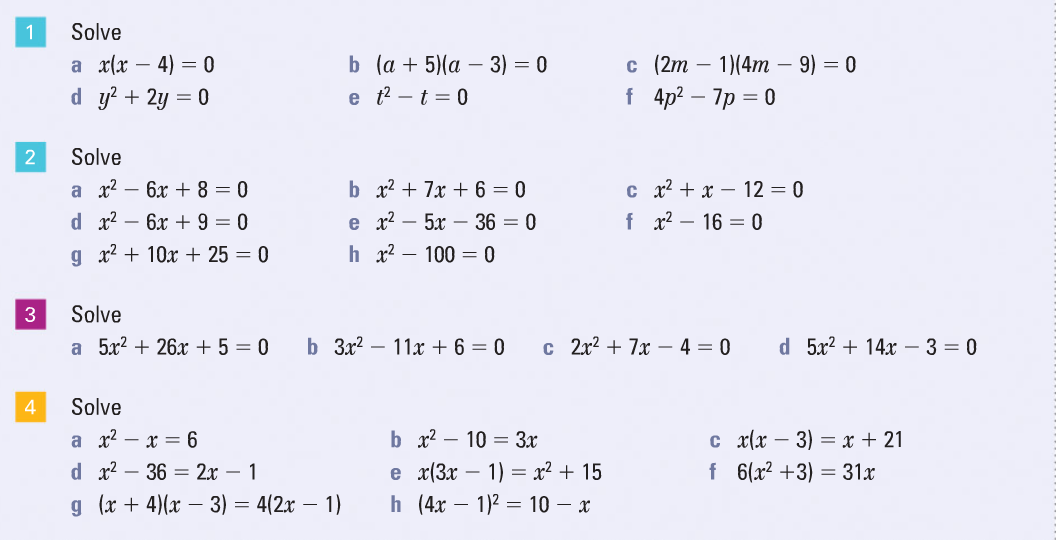
Further Examples

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Quick Questions: In your books.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x2 + 7x + 12 = 0 | x2 + x – 6 = 0 | x2 + 10x + 21 = 0 | x2 + 2x + 1 = 0 | x2 + 5x = 14 |
| x2 – 3x = 0 | x2 + 7x = 0 | 2x2 – 2x = 0 | x2 – 49 = 0 | 4x = x2 |



02: Solving By Factorising 2

Starter: Factorise the following…

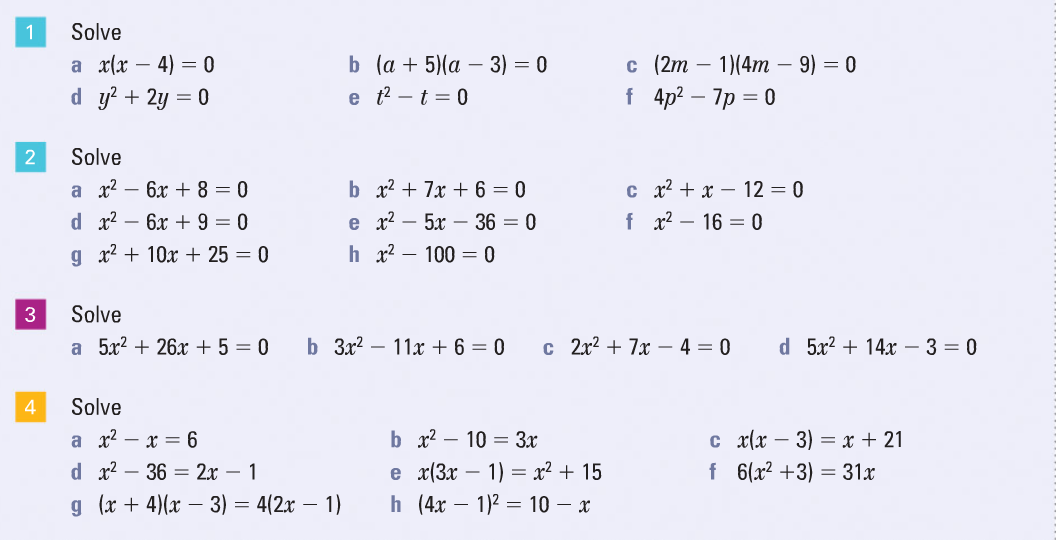
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|  |  |  |
| --- | --- | --- |
| a) | b) | c) |

Further Example:

Solve

c.tiffa.tiffb.tiff



03: Completing the Square

|  |  |  |
| --- | --- | --- |
| 1) | 2) | 3) |
| 4) |  | 6) |

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Quadratics in this form can be solved using an easier technique because only appears once.

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Completing the square

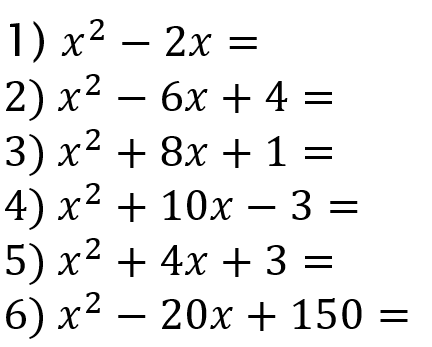
|  |  |  |
| --- | --- | --- |
| a) | b) | c) |

Further Examples

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Typical Exam Question:

Write in the form , stating the values of

Quick Questions: In your books…

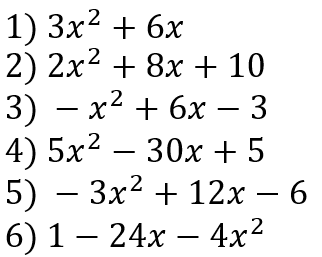
When the coefficient of is odd…

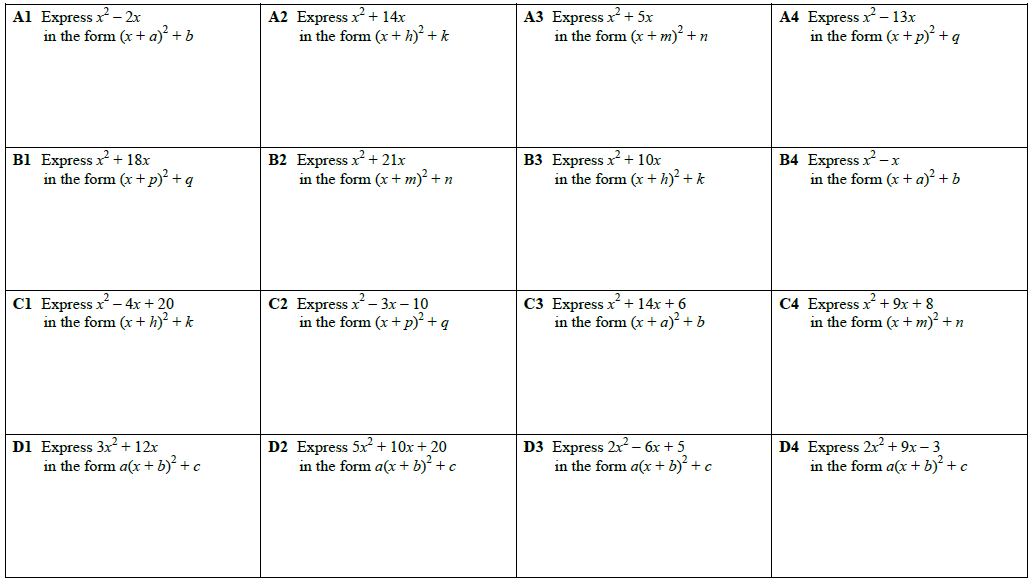
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Exercise: In your books

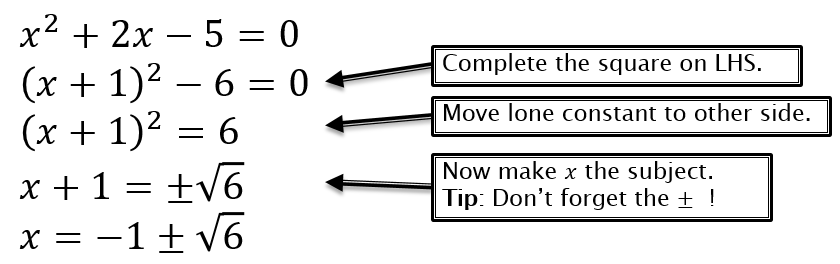
When there is a coefficient of

|  |  |  |
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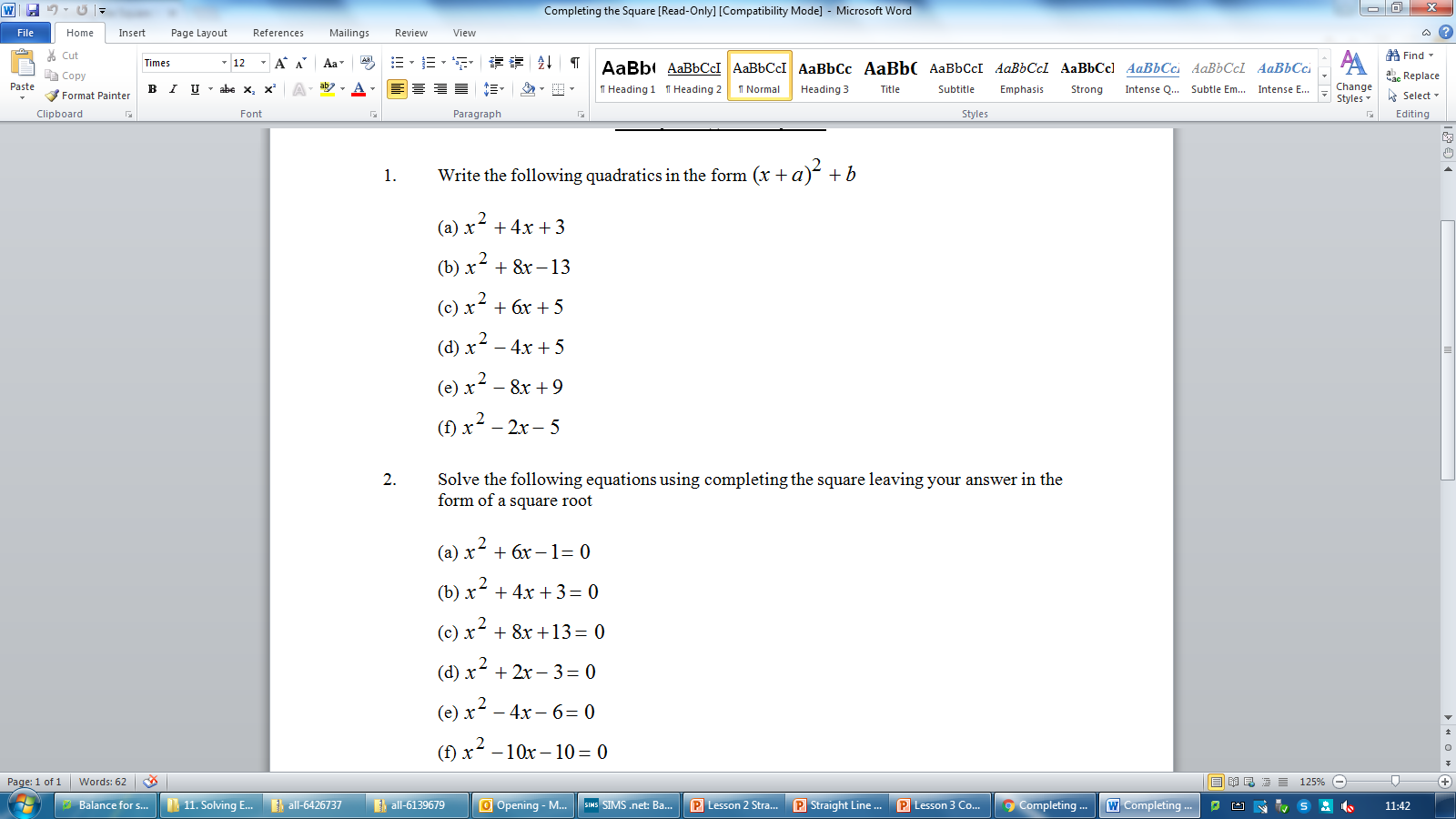
04: Solving in completed square form



Possible GCSE Question:

a) Put the expression in the form .

b) Hence find the exact solutions to *.*

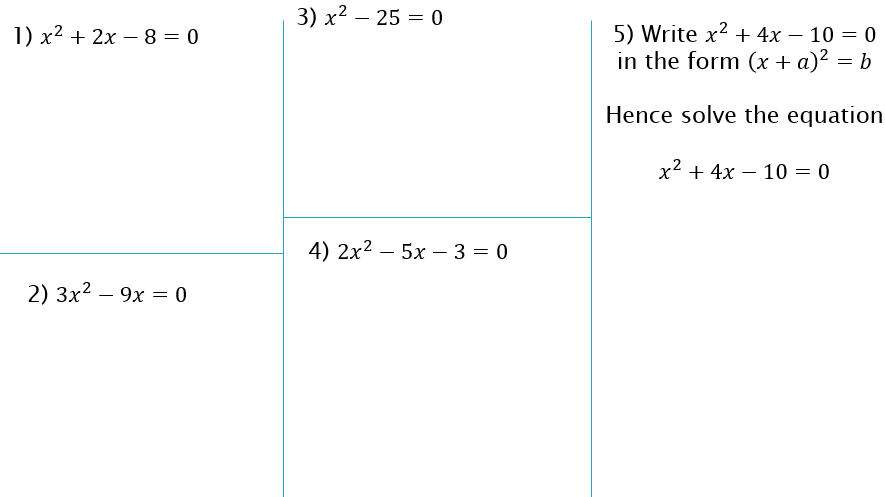
Further Examples:

|  |  |
| --- | --- |
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Working Backwards

|  |  |  |
| --- | --- | --- |
| You are given that  Work out | You are given that  Work out | You are given that  Work out |

05: Quadratic Formula



**Solving Quadratic Equations in the form**

1. Start by making the quadratic is equal to zero.

2) If the quadratic doesn’t factorise then we either use completing the square or the **quadratic formula.**

1.tiff

1.tiff

1.tiff

These quadratics don’t factorise. Which would method would you use?

Completing the square or Formula?

|  |  |
| --- | --- |
| =0 | =0 |

|  |  |  |
| --- | --- | --- |
| Solve  Give your answer to 2 decimal places | Solve  Give your answer to 2 decimal places | Solve  Give your answer in exact form |

Working Backwards:

|  |
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Solve the equation by:

|  |  |  |
| --- | --- | --- |
| 1) Factorising | 2) Completing the square | 3) Formula |

Exercise:

1)  3)

5) 7) )

The Discriminant

Some quadratic equations have no solutions…

Solve

is known as the discriminant and is very important as it tells you about the nature of the solutions of the equations.

|  |  |  |
| --- | --- | --- |
| 1) | 2) | 3) |

