Simplifying Complex Numbers

Complex Numbers are binomials (expressions with two terms) that look like: . They add and subtract just like any other variable expression—by combining like terms. But, remember: unlike *x*, the *i* term goes at the back.

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| **EXAMPLE**  *Re-organized:* | 1. | 2. | 3. | 4. |
| **EXAMPLE**  *Re-organized:* | 5. | 6. | 7. | 8. |

To multiply complex numbers, you have two choices (just like with any variable expressions): you can FOIL or use the box method. I prefer the box method, because it keeps me organized. Either way, you multiply it just like you normally would. However, there are two things you cannot forget: if you can simplify, you must simplify; and .

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| **EXAMPLE**   |  |  |  | | --- | --- | --- | |  |  |  | |  |  |  | |  |  |  | | 9. | 10. | 11. |
| **EXAMPLE**   |  |  |  | | --- | --- | --- | |  |  |  | |  |  |  | |  |  |  | | 12. | 13. | 14. |
| **EXAMPLE**   |  |  |  | | --- | --- | --- | |  |  |  | |  |  |  | |  |  |  | | 15. | 16. | 17. |

To simplify a fraction with a complex number in the numerator (the top), simply reduce each term, as always.

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| **EXAMPLE**  EVERY term can be reduced by 3, so… | 18. | 19. | 20. | 21. |