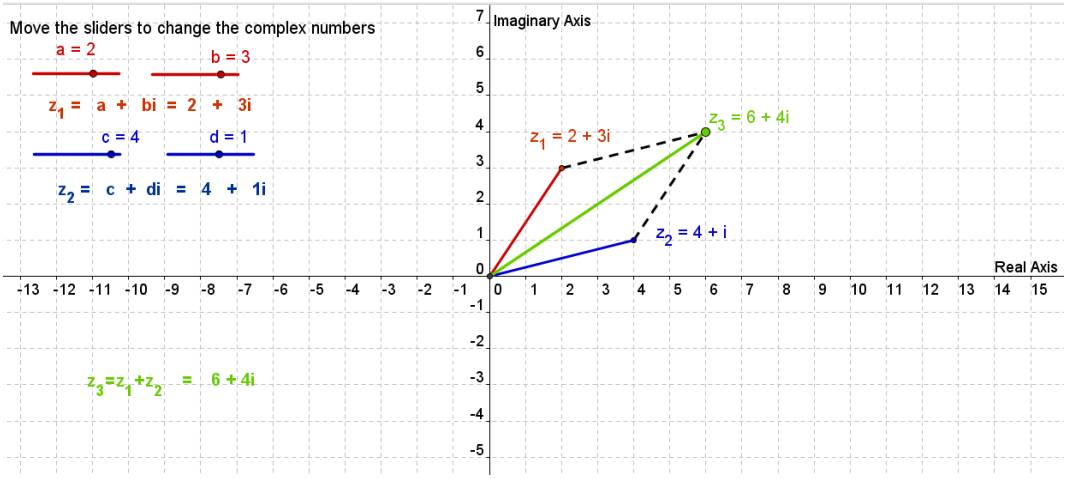
<u>Student Activity</u>: To investigate the addition of complex numbers

Use in connection with the interactive files, 'Addition of complex numbers', and 'Addition by translation of a complex number', on the Student's CD.



1. Add the following complex numbers and check your answers using the interactive file "Addition of Complex numbers".

		Calculate $z_1 + z_2$
a.	$z_1 = 3 + 2i$ and $z_2 = 1 + 4i$	
b.	$z_1 = 2 + 3i$ and $z_2 = 1 + 3i$	
c.	$z_1 = 2 + 4i$ and $z_2 = 1 - 3i$	
d.	$z_1 = 2 + 4i$ and $z_2 = -1 - 2i$	
e.	$z_1 = -3 + 4i$ and $z_2 = 1 - 2i$	
f.	$z_1 = -2 - 4i$ and $z_2 = 1 - 3i$	
g.	$z_1 = -1 - 3i$ and $z_2 = -2 - 1i$	
h.	$z_1 = i$ and $z_2 = 2 + i$	

i.	$z_1 = i$ and $z_2 = i$	
j.	$z_1 = i$ and $z_2 = -i$	
k.	$z_1 = 1$ and $z_2 = -1$	
l.	$z_1 = 1$ and $z_2 = -i$	
m	$z_1 = -1 - i$ and $z_2 = -2 - i$	
n.	$z_1 = -1 - i$ and $z_2 = -2 - i$	
o.	$z_1 = 1 + i$, $Z_2 = -2 - 2i$ and $z_3 = 2 + 3i$	
p.	$z_1 = 1 + \sqrt{25}\, i$ and $z_2 = -2 - \sqrt{36}\, i$	

2. What shape is formed when you add two complex numbers?

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3. What complex number would you need to add to $2+3i$ to get $0+0i$?

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4. If two complex numbers z_1 and z_2 are added together to give $4+6i$, list four values z_1 and z_2 could have.

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5. Is the addition of complex numbers associative? Explain your answer.

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6.

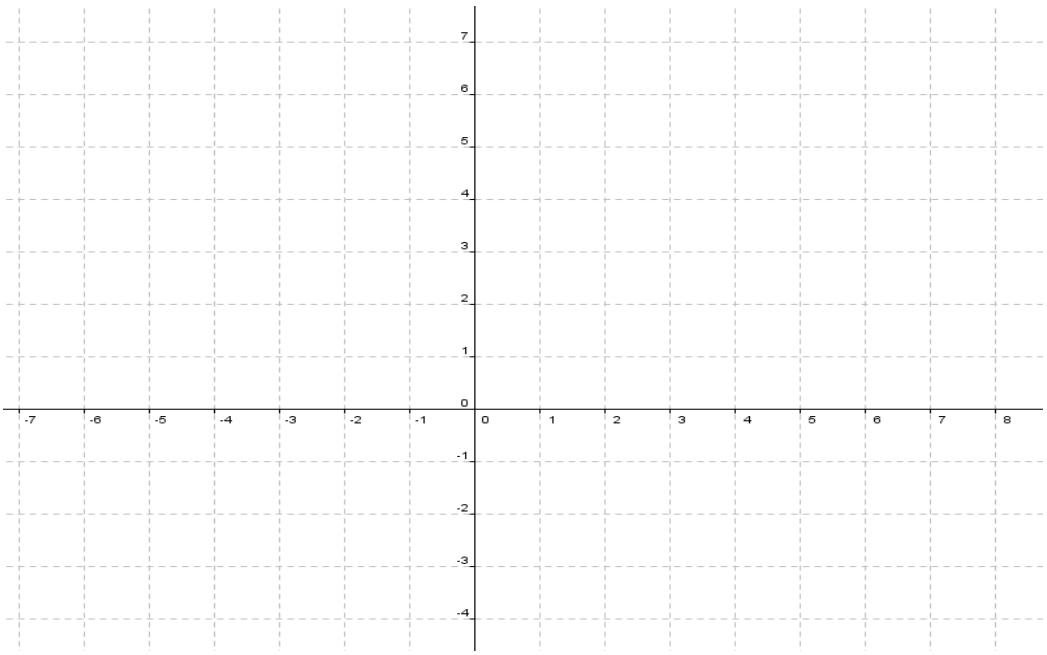
a. Plot the following complex numbers in the Argand Diagram.

i. $2 + 4i$

ii. $2 - 2i$

iii. $-3 + i$

iv. $-2 - 3i$



b. Add $2+1i$ to each of the complex numbers in section a. of this question (It is not necessary to show the parallelograms).

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c. Draw a directed line (a line with an arrow indicating direction) between each complex number and its corresponding number with $2+1i$ added to it. What do you notice?

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d. What would have happened if instead of adding the complex number $2+1i$ to each of the complex numbers above you had subtracted $2+1i$?

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