Expanding Brackets with Surds (2)

1 By expanding brackets first, write each of the following calculations in its simplest form.

Example

$(\sqrt{2} + 1)(\sqrt{2} + 3)$

X	$\sqrt{2}$	+ 1
$\sqrt{2}$	2	$+ \sqrt{2}$
+ 3	$+ 3\sqrt{2}$	+ 3

Use a multiplication grid and apply the laws of surds.

Simplify by collecting like surds.

$= 2 + \sqrt{2} + 3\sqrt{2} + 3$

$= \mathbf{5 + 4\sqrt{2}}$

a) $(\sqrt{3} + 1)(\sqrt{3} + 3)$

X	$\sqrt{3}$	+ 1
$\sqrt{3}$		
+ 3		

b) $(\sqrt{3} + 2)(\sqrt{3} + 3)$

X		

c) $(\sqrt{3} + 1)(\sqrt{3} + 4)$

X		

d) $(\sqrt{3} + 2)(\sqrt{3} + 4)$

e) $(\sqrt{3} - 2)(\sqrt{3} + 4)$

f) $(\sqrt{3} - 2)(\sqrt{3} - 4)$

g) $(\sqrt{5} - 2)(\sqrt{5} - 4)$

h) $(\sqrt{7} - 2)(\sqrt{7} - 4)$

2 By expanding brackets first, write each of the following calculations in its simplest form.

Example

$\left(\sqrt{3}+1\right)\left(\sqrt{2}+3\right)$

X	$\sqrt{3}$	+ 1
$\sqrt{2}$	$\sqrt{6}$	$+\sqrt{2}$
+ 3	$+ 3\sqrt{3}$	+ 3

Use a multiplication grid and apply the laws of surds.

Simplify by collecting like surds.

$= \sqrt{6}+\sqrt{2}+3\sqrt{3}+3$

Notice, this answer cannot be simplified any further.

a) $\left(\sqrt{5}+1\right)\left(\sqrt{2}+3\right)$

X		

b) $\left(\sqrt{7}+1\right)\left(\sqrt{2}+3\right)$

X		

c) $\left(\sqrt{6}+1\right)\left(\sqrt{2}+3\right)$

d) $\left(\sqrt{6}+1\right)\left(\sqrt{3}+3\right)$

e) $\left(\sqrt{6}+1\right)\left(\sqrt{3}-3\right)$

f) $\left(\sqrt{5}+1\right)\left(\sqrt{4}-3\right)$

g) $\left(\sqrt{10}+1\right)\left(\sqrt{2}-3\right)$

h) $\left(\sqrt{20}+1\right)\left(\sqrt{2}-3\right)$