## Removing Brackets and Simplifying

Be able to expand out brackets, then collect like terms

*Examples :-*

1. $2(x+3)-5$
   $= 2x+6-5$
   $= 2x+1$

2. $4(2p+5q)-10q$
   $= 8p+20q-10q$
   $= 8p+10q$

3. $6(a+2)+3(a-1)$
   $= 6a+12+3a-3$
   $= 9a+9$

4. $3(3p-4)-2(p-6)$
   $= 9p-12-2p+12$
   $= 7p$

   note the Double Negative

5. $21-3(x+6)$
   $= 21-3x-18$ [not $18(x+6)$]
   $= 3-3x$

## Exercise 3

Multiply out the brackets and collect like terms :-

1. a $2(x+1)+4$ b $3(a+5)+2$ c $5(p+3)-8$
   d $6(w+1)-6$ e $2(k+1)+8k$ f $3(d+2)-2d$
   g $10(2+g)-8g$ h $5x+5(x+4)$ i $8a+4(a-2)$
   j $7q+5(3q-2)$ k $4w+(w-1)$ l $5a+4(a+6b)$
   m $m+2(7m+8q)$ n $4x+2(8x-20y)$ o $40p+6(10p+q)$
   p $1+3(x+1)$ q $5(4a-2b)-20a$ r $10w+10(9w+2z)$
   s $8+2(g-4)$ t $12+7(m+2n)-11$ u $6+2(e-2f)-6$.

2. a $2(x+1)+3(x+2)$ b $4(a+4)+5(a+1)$ c $2(h-1)+5(h+1)$
   d $3(m-7)+6(m+4)$ e $6(2+v)+5(1-v)$ f $4(1-u)+5(1+u)$
   g $2(7e-3)+2(3e+5)$ h $2(2-7x)+8(1+2x)$ i $2(5b+4a)+2(6a-b)$.

3. a $3(x+3)-2(x+2)$ b $4(a+2)-3(a+2)$ c $3(2p+4)-2(p+5)$
   d $7(2p+2)-10(p+1)$ e $4(k+3)-2(k-3)$ f $3(1+2m)-2(1-m)$
   g $10(2-d)-12(1-d)$ h $h(h+4)-3(h-1)$ i $a(3a-1)-2(2a-6)$.

4. a $6-2(x+4)$ b $4w-(w-1)$ c $5-5(d-1)$
   d $10+5(2-h)$ e $7-2(1-3m)$ f $-2(g-1)-2$
   g $a-(20-a)$ h $9t-3(t+6)+18$ i $-3x-2(2-5x)$.

5. By calculating the area of the large rectangle, then the area of the small rectangle, find the blue border area in terms of $x$.
   (*Answer in sq. units*).