Equations with brackets

Starter

1. **(Review of last lesson)**
   Solve: (a) $9 - 4x = 33$ (b) $7 - 2x = 2x - 7$

2. **(Review of previous material)**
   Expand: (a) $5(2x - 7)$ (b) $-3(4x - 9)$

3. **(Review of previous material)** Solve the equation $7(x + 5) = 40$.

Notes

When expanding brackets, whatever is outside the brackets ***multiplies*** all the terms inside the bracket.

When solving questions involving brackets, it is usually best to expand the brackets before rearranging. After expanding, collect like terms and rearrange using ***SADMIB***.

E.g. 1 Solve: (a) $6(3 - 2x) = 56$ (b) $17 = -9(4x - 1)$

Working: (a)

	$6(3 - 2x) = 56$
Expand the brackets:	$18 - 12x = 56$
Add $12x$ ***to both sides:***	$18 = 56 + 12x$
Subtract 56 ***from both sides:***	$-38 = 12x$
Divide both sides by 12***:***	$-\frac{38}{12} = x$
Make sure the unknown is on the LHS:	$x = -\frac{19}{6}$

N.B. When no number can be seen in front of a letter or bracket, assume there is a 1 there:
E.g. $x = 1x$ and $6x - (3 + 5x) = 7$ is the same as $6x - 1(3 + 5x) = 7$

E.g. 2 Solve: (a) $2(3x - 1) = 3(x - 1)$ (b) $7x = 3x - (x + 20)$
(c) $4(x - 1) = 3(2 - x)$ (d) $10x - (2x - 3) = 21$

Working: (a)

	$2(3x - 1) = 3(x - 1)$
Expand the brackets:	$6x - 2 = 3x - 3$
Subtract $3x$ ***from both sides:***	$3x - 2 = -3$
Add 2 ***to both sides:***	$3x = -1$
Divide both sides by 3***:***	$x = -\frac{1}{3}$

Video: How to solve linear equations with brackets

Solutions to Starter and E.g.s

Exercise

9-1 class textbook:	p159 M6.2 Qu 1-32 odd
A*-G class textbook:	p149 M6.2 Qu 1-29 odd
9-1 homework book:	p56 M6.2 Qu 1-23
A*-G homework book:	p41 M6.2 Qu 1-21

Summary

When expanding brackets, whatever is outside the brackets ***multiplies*** all the terms inside the bracket.

When solving linear equations with brackets, expand the brackets and then rearrange using ***SADMIB***.