2.8 Expansion of Brackets

1. Copy and complete the following multiplication tables. Some are done for you.

(a)

$\times$	$y-2$	$3y$	$\dfrac{6}{y}$	$4-3y$
-1		$-3y$		
$\dfrac{1}{4}$				$1-\dfrac{3}{4}y$
2				
$-\dfrac{1}{2}$			$-\dfrac{3}{y}$	

(b)

$\times$	$-k$	$\dfrac{2k}{3}$	$\dfrac{2}{3k}$	$2-2k$
6	$-6k$			
-4			$-\dfrac{8}{3k}$	
3				
$-\dfrac{1}{2}$				

2. Remove the brackets in each of the following algebraic expressions.

(a) $2(u-3)$

(b) $8(v+7)$

(c) $4(2x+3y)$

(d) $6(5a-b)$

(e) $-2(p-q)$

(f) $-5(a+b)$

(g) $-3(-2u-3v)$

(h) $8(-2u-3v)$

(i) $\dfrac{1}{2}(10p-6q)$

(j) $\dfrac{1}{5}(20x-15)$

(k) $-(b+c)$

(l) $-(p-q)$

(m) $-x(p+q)$

(n) $-y(-x+y)$

(o) $-(-p-q)$

(p) $-(-t+r)$

(q) $\dfrac{1}{2}\left(\dfrac{2}{3}a-\dfrac{4}{5}b\right)$

(r) $6a\left(\dfrac{1}{3}b-\dfrac{5}{6}c\right)$

3. Simplify each of the following algebraic expressions.

(a) $(3x-2y)+(4x-y)$

(b) $(p-m)+(m-2p)$

(c) $5(x-2)+3(4-x)$

(d) $(3a+2b)-(a-b)$

(e) $2(3m+n)-3(m-3n)$

(f) $(x-y)-(y-z)-(z-x)$

(g) $3a(b-c)+(3b-2)a$

(h) $m(m-n)-n(n-m)$

(i) $x(y-z)+y(z-x)+z(x-y)$

(j) $3(2y+5z)-4(2y-x)$

4. Multiply out and simplify each of the following expressions.

(a) $6(3x + y)$

(b) $5z(z - 2y)$

(c) $\frac{1}{2}(2xy - 4yz)$

(d) $q(p + 2r - 3s)$

(e) $(p + q)(r + s)$

(f) $(x + y)(z + 2w)$

(g) $(3a + b)(a + c)$

(h) $(m + 2n)(2p + 3q)$

(i) $(a - b)(c + d)$

(j) $(2e - f)(2g - h)$

(k) $(3p - 4q)(s + 2t)$

(l) $(a + 7)(2b + 5)$

(m) $(x + 3)(x + 4)$

(n) $(a + 5)(a - 3)$

(o) $(x - 7)(x - 6)$

(p) $(3 + c)(6 - c)$

(q) $(1 - 3x)(4 + 3x)$

(r) $(2p + 3)(p + 5)$

(s) $(4x + 5y)(2x + 3y)$

(t) $(d - 7)(d - 5)$

(u) $(a + 5)^2$

(v) $(x - 3)^2$

(w) $(b + 2)^2$

(x) $(e - 4)^2$

(y) $(2x + 1)^2$

(z) $(3x - 2)^2$

5. (a) Expand $p(p^2 - 3p)$.

(b) Factorise $y^2 + 5y$.

(c) Factorise completely $2x^2 + 6xy$.

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