Expanding Brackets

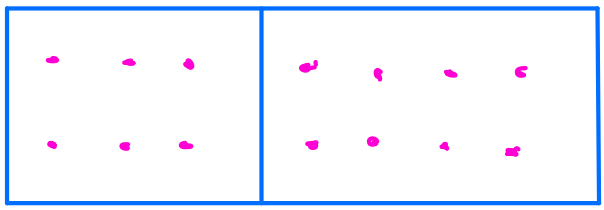
Consider $2(3+4)$

This means 2 multiplied by the value of the bracket

So $2 \times 7 = 14$

We can think of this as 2 rows of 7 dots

But we can also think of it as



$\therefore \quad 2(3+4)$

$= 2 \times 3 + 2 \times 4$

$= 6 + 8 \qquad = 14$

Algebra Examples

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

2) $3(x+4) = 3x + 12$

Common wrong answers

$3(x+4) = 3x + 7$

$3(x+4) = 3x + 4$

Multiplication of Signed Numbers

+ve positive

-ve negative

+ve × +ve → +ve

−ve × −ve → +ve

+ve × −ve → −ve

−ve × +ve → −ve

Examples

1) $4(y+2) = 4y + 8$

2) $5(2x+3) = 10x + 15$

3) $3(x-4) = 3x - 12$

4) $2(3x+y) = 6x + 2y$

5) $5(2p-1) = 10p - 5$

6) $6(x-3) = 6x - 18$

7) $3(2p-q) = 6p - 3q$

8) $5(x+y+2) = 5x + 5y + 10$

9) $-3(2m-n) = -6m + 3n$

10 $-2(x-y+4) = -2x + 2y - 8$

14:26 Tue 1 Feb

▲ thema

Exercise A

Expand the brackets

1) $2(m+4) = 2m+8$
2) $3(h+2) = 3h+6$
3) $4(p+q) = 4p+4q$
4) $5(x+2) = 5x+10$
5) $3(2y+1) = 6y+3$
6) $2(p+4q) = 2p+8q$
7) $4(h+2k) = 4h+8k$
8) $6(2x+3) = 12x+18$
9) $3(x+2y+3) = 3x+6y+9$
10) $2(p+q+r) = 2p+2q+2r$

Expand the brackets

1) $4(x-1) = 4x-4$
2) $2(2x-3) = 4x-6$
3) $3(x-3) = 3x-9$
4) $5(2p-q) = 10p-5q$
5) $2(p-q+r) = 2p-2q+2r$
6) $-2(x+4) = -2x-8$
7) $-3(y-2) = -3y+6$
8) $-5(x-1) = -5x+5$
9) $-4(2x+y) = -8x-4y$
10) $-2(3p-2q) = -6p+4q$

Expand and Simplify

Ex1 $2(x+3)+3(x+5)$

$= 2x+6+3x+15$

$= 5x+21$

Ex2 $5(p+2q)+2(p+q)$

$= 5p+10q+2p+2q$

$= 7p+12q$

Ex3 $2(y-3)+4(y+2)$

$= 2y-6+4y+8$

$= 6y+2$

Ex4 $3(x+5)-2(x+1)$

$= 3x+15-2x-2$

$= x+13$

Ex5 $5(2x+y)-2(x-y)$

$= 10x+5y-2x+2y$

$= 8x+7y$

Ex6 $3(p+2q)-(p+q)$

$= 3p+6q-p-q$

$= 2p+5q$

Exercise C

Expand and simplify

1) $3(x+2)+5(x+3)$

2) $4(p+2q)+3(p+q)$

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

4) $2(h+k)-3(h-k)$

5) $5(x+6)-2(x+4)$

6) $-4(x-2y)+3(x-1)$

7) $2(p+q+5)-3(p+4)$

8) $5(h+2k)+2(h+3k)$

9) $2(p+2q+3r)-3(p-r)$

10) $-4(x+2y)+3(y+6)$

---

1) $3(x+2)+5(x+3)$

$= 3x+6+5x+15$

$= 8x+21$

2) $4(p+2q)+3(p+q)$

$= 4p+8q+3p+3q$

$= 7p+11q$

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

$= 3x+6y+4x-2y$

$= 7x+4y$

4) $2(h+k)-3(h-k)$

$= 2h+2k-3h+3k$

$= -h+5k$

5) $5(x+6)-2(x+4)$

$= 5x+30-2x-8$

$= 3x+22$

6) $-4(x-2y)+3(x-1)$

$= -4x+8y+3x-3$

$= -x+8y-3$

7) $2(p+q+5)-3(p+4)$

$= 2p+2q+10-3p-12$

$= -p+2q-2$

8) $5(h+2k)+2(h+3k)$

$= 5h+10k+2h+6k$

$= 7h+16k$

9) $2(p+2q+3r)-3(p-r)$

$= 2p+4q+6r-3p+3r$

$= -p+4q+9r$

10) $-4(x+2y)+3(y+6)$

$= -4x-8y+3y+18$

$= -4x-5y+18$