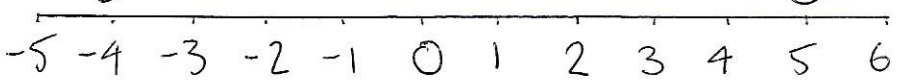
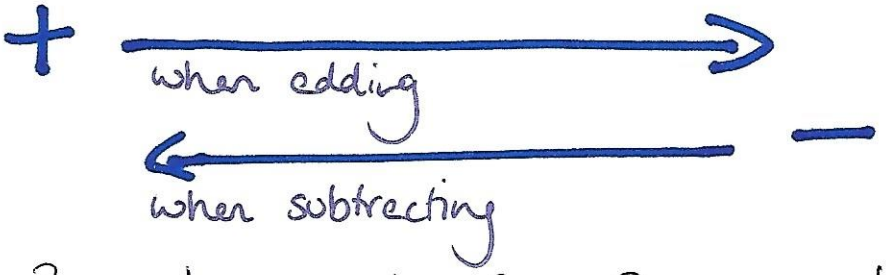
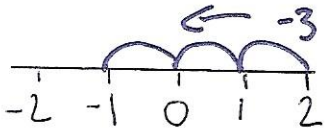
Negative Numbers & Rules of the Minus

Using a number line for adding & subtracting

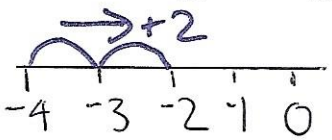




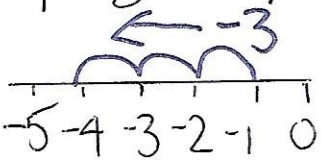
$2 - 3 = -1$



$-4 + 2 = -2$



$-1 - 3 = -4$



Multiplying & Dividing with −

+ × + = +		eg $2 \times 3 = 6$
+ × − = −		eg $4 \times -2 = -8$
− × + = −		eg $-5 \times 3 = -15$
− × − = +		eg $-6 \times -2 = 12$

& the same for dividing

+ ÷ + = +		eg $24 \div 6 = 4$
+ ÷ − = −		eg $32 \div -4 = 8$
− ÷ + = −		eg $-15 \div 3 = -5$
− ÷ − = +		eg $-20 \div -4 = 5$

Algebra Simplifying

Adding expressions

$a + a = 2a$

simply add up how many a's you have

$3a + 4a = 7a$

$a + b = a + b$

letters can't be mixed

$3a + 2b + 5a + 4b$

add like terms

$8a + 6b$

$4x + 3y + x + y \rightarrow 5x + 4y$

$7m + 2n - m + 3n \rightarrow 6m + 5n$

note the $-m$

Multiplying expressions

$2 \times a = 2a$

A number x a letter is written as

$3 \times 4a = 12a$

Just multiply the numbers together

$a \times a = a^2$

remember $2 \times 2 = 2^2$

$3 \times 3 = 3^2$

Brackets

$2x(3 + x)$

↑ this is usually hidden

$2(3 + x)$

$2 \times 3 + 2 \times x$

$6 + 2x$

2 must be timesed by EVERYTHING in the brackets

$4(x + 2)$

$4x + 8$