1.2 Algebra – what you need to know

Achievement

* Simplifying adding and subtracting like terms eg $3+2x+3-2x$
* Simplifying multipliying and dividing terms eg. $(5m^{2}n^{4})^{2 }$ and $\frac{5e^{3}f^{5}}{2e^{4}f^{2}g}$
* Solving exponent equations – by guess and check eg $y^{3}=216$, $5^{x}=125$
* Solving linear equations eg $6\left(a+4\right)+16=-38$
* Solving linear inequations – same as above but with $<, >, \leq , \geq $ (just change sign when $×, ÷$ by negative number
* Expanding – getting rid of brackets – all types
* Rearranging formula/Substitution - basic (change side, change sign) eg. $x=4ac-2d$
* Factorising – simple and quadratics (incl difference of two squares and perfect squares) eg. $x^{2}+11x-26$ (no number in front of $x^{2}$ but can have common factor)
* Quadratic Equations – same level as factorising, solving equal to 0
* Rational Expressions – like fractions, simple (already factorised) eg $\frac{x^{2}+5x+6}{x+2}$
* Simultaneous Equations – simple elimination eg. $3y-2x=9$

 $ 3y+2x=-3$

Merit

* Simplifying adding and subtracting (using negative and fraction exponents eg. $4x+y^{-2}+9x-3y^{-2}$
* Simplfying multiplying and dividing terms (two or more steps) eg. $(5p^{2}q)^{2}×(2pq)^{3}×p^{2}q$

and $\frac{9a^{3}b^{2}×4a^{5}b}{18a^{9}b^{3}}$

* Solving exponent equations eg. $2y^{3}=432$ (two step process ie ÷2 then $y^{3}=216$)
* Simplifying algebraic fractions eg. $\frac{5}{4x}+\frac{1}{6y}$ and $\frac{4xy^{2}}{3b}×\frac{6b^{2}d}{2x^{2}y}$
* Solving linear equations (usually fractions) $\frac{x-5}{2}=6$
* Solving linear inequations eg. $\frac{2-3x}{2}\leq -5$
* Expanding (word questions) using diagrams
* Rearranging formulae eg $-7t-q=3x$ (t), $V=πr^{2}h$ (h)
* Factorising quadratics (number in front of $x^{2}$) eg. $3m^{2}+13m+12$
* Solving quadratic equations (brackets = 0) eg. $4x^{2}+2x-12=0$
* Rational expressions (factorise top and bottom and cancel out eg. $\frac{x^{2}+9x-22}{xs-2}$
* Simultaneous equations eg. $3x+9y=1$

$$2x-3y=-5$$

* Algebra word problems

Excellence

* Using letters instead of exponents eg. $2x^{a}+3y^{b}+4x^{a}-5y^{ b}$
* Generalising rules and proofs eg If $\frac{a^{0}}{a^{n}}$ show $\frac{1}{a^{n}}=a^{-n}$
* Harder exponential equations eg $x^{4}=16x^{2}$
* Harder algebraic fractions, rearranging, word equations
* Word problems