Fast Track Maths –

To be handed in Lesson 1 for marking on **separate** paper with **full working** and **handwritten.**

1. Pick from the box an example of each of the following, (you may use old notes, books or the internet)

   (a) an expression, (b) an equation (c) a constant

   (d) a variable, (e) a term, (f) a coefficient

   (g) an index (h) an identity

$y = mx + c$	$3x^2 + 2x = 10$	$6x^2$	$a^2 - b^2 \equiv (a-b)(a+b)$

2. Solve the equations:

   (a) $3(2x+5)-(x+8)=6(3-x)$ (b) $\frac{1}{2}(5x+3)-\frac{1}{4}(7-2x)=5$

3. Find the values of x and y that simultaneously satisfy:

   (a) $\begin{matrix} 3x+2y=4 \\ x-2y=36 \end{matrix}$ (b) $\begin{matrix} 7x+y=25 \\ x^2+y^2=25 \end{matrix}$

   For the equations in part (a), explain how you could have found the solution graphically.

4. Factorise the following:

   (a) $5x^2y-2x$ (b) $3y(x+2)+6(x+2)^2$

5. Factorise fully the following:

   (a) x^2+5x+6 (b) x^2-5x+6 (c) x^2-5x-6

   (d) x^2+5x-6 (e) $3x^2-7x-6$ (f) $4x^2-9$

   (g) $6x^2-15x+6$

6. (a) Make h the subject of $\frac{2}{Rt} = mgh + k^2h$.

   (b) Make h the subject of $2\pi rh = 6x^2 + 2xh$.

   (c) Make h the subject of $yh = \frac{10\pi\varepsilon}{h}$.

   (d) Make h the subject of $y = 1+\sqrt{3h+1}$.

7. In 10 years' time James will be four times older than he was 11 years ago.

   (a) Write this information in the form of an equation involving James' present age, y years.

   (b) How old is James now?

8. Write each of the following expressions as a single fraction in its simplest form:

   (a) $\frac{a}{b^2}\times\frac{a^2}{b}$ (b) $2uv^2 \div \frac{u}{v}$ (c) $\frac{1}{4x}+\frac{1}{6x}$

9. Simplify the following fractions:

(a) $\dfrac{2(x-2)^3}{(x-2)(x+4)}$ (b) $\dfrac{3y-9}{y^2-9}$ (c) $\dfrac{6ab+30b^2}{3(2a+5b)}$