

**Fast Track Maths - To be handed in Lesson 1 for marking on separate paper with full working and hand written (unless you completed your maths exams electronically and intend on doing so again!)**

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) $3x + 2y = 4$	(b) $7x + y = 25$
$x - 2y = 36$	$x^2 + y^2 = 25$

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  $2\pi h = 6x^2 + 2xh$ .

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