Algebra with Variables:

- If you know tables are generated through algebra

with #'s

$7 \times a + 11 = 4$

① $-11 \quad -11$

$\frac{7a}{7} = \frac{-7}{7}$

②

$a = -1$

$w \times a + x = z$

$-x \quad -x$

$\frac{wa}{w} = \frac{z-x}{w}$

$a = \frac{z-x}{w}$

$a = \frac{4-11}{7} = \frac{-7}{7}$

$a = -1$

Example $\boxed{a = \frac{v - v_0}{t}}$

① $t \cdot a = \frac{v - v_0}{t} \cdot t$

② $\frac{at}{a} = \frac{v - v_0}{a}$

$\boxed{t = \frac{v - v_0}{a}}$

① $at = \frac{v - v_0}{a} \cdot a$

② $at = v - v_0$

$+v_0 \quad +v_0$

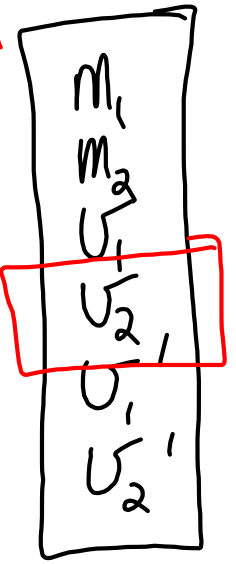
$\boxed{v = v_0 + at}$

③ $-at \quad -at$

$\boxed{v_0 = v - at}$

Example: Conservation of momentum

momentum before = momentum after ? =



$$m_1v_1 + m_2v_2 = m_1v_1' + m_2v_2'$$

① $-m_1v_1 \qquad -m_1v_1$

② $$\frac{m_2v_2 = m_1v_1' + m_2v_2' - m_1v_1}{m_2 \qquad\qquad\qquad\qquad m_2}$$

$$v_2 = \frac{m_1v_1' + m_2v_2' - m_1v_1}{m_2}$$

Finding mass...

$m_1v_1 + m_2v_2 = m_1v_1' + m_2v_2'$

① $-m_1v_1' \quad -m_1v_1'$

$m_1v_1 - m_1v_1' + m_2v_2 = m_2v_2'$

② $-m_2v_2 \quad -m_2v_2$

$m_1v_1 - m_1v_1' = m_2v_2' - m_2v_2$

③ $m_1(v_1 - v_1') = m_2v_2' - m_2v_2$

④ $\frac{(v_1 - v_1')}{(v_1 - v_1')} \quad \frac{}{(v_1 - v_1')}$

$a(b+c) = ab+ac$

$m_1 = \frac{m_2v_2' - m_2v_2}{v_1 - v_1'}$