General form: $y = ax^2 + bx + c$

Standard form: $y = a(x-h)^2 + k$

Transformational form: $\frac{1}{a}(y-k) = (x-h)^2$

Write $4x^2 + 2y = 8 + 10x$ in General, Standard and Transformational form.

To place in General:

$4x^2 + 2y = 8 + 10x$

$\frac{2y}{2} = \frac{8}{2} + \frac{10x}{2} - \frac{4x^2}{2}$

$y = 4 + 5x - 2x^2$

$y = -2x^2 + 5x + 4$

To Place in Standard: (Complete the square)

$y = -2x^2 + 5x + 4$

① $y - 4 = -2x^2 + 5x$

② $y - 4 = -2\left(x^2 - \frac{5}{2}x\right)$

③ $y - 4 - \frac{50}{16} = -2\left(x^2 - \frac{5}{2}x + \frac{25}{16}\right)$ $\quad * -\frac{5}{2} \times \frac{1}{2} = \left(\frac{5}{4}\right)^2 = \frac{25}{16}$

④ $y - \frac{4}{1} - \frac{25}{8} = -2\left(x - \frac{5}{4}\right)^2$

$y - \frac{32}{8} - \frac{25}{8} = -2\left(x - \frac{5}{4}\right)^2$

$y - \frac{57}{8} = -2\left(x - \frac{5}{4}\right)^2$

⑤ $y = -2\left(x - \frac{5}{4}\right)^2 + \frac{57}{8}$

To place in Transformational

$y = -2\left(x - \frac{5}{4}\right)^2 + \frac{57}{8}$

$\left(y - \frac{57}{8}\right) = -2\left(x - \frac{5}{4}\right)^2$

$-\frac{1}{2}\left(y - \frac{57}{8}\right) = \left(x - \frac{5}{4}\right)^2$