Elimination → rather than solving for 1 variable we eliminate one.

$$\begin{array}{r} 10 \\ -\ 3 \\ \hline 7 \end{array} \quad \text{or} \quad 10 - 3 = 7$$

↳ this is back

$$\begin{array}{r} 5x + 4y = 26 \\ -(6x + 4y = 15) \\ \hline -x + 0y = 11 \end{array}$$

→ if we subtract these whole eqⁿ we would not have a 'y'

$$-x = 11$$
$$x = -11 \quad \leftarrow \text{use this to get } y$$

$$5x + 4y = 26$$
$$5(-11) + 4y = 26$$
$$-55 + 4y = 26$$
$$4y = 26 + 55$$
$$y = \frac{81}{4}$$

Solⁿ $\left(-11, \frac{81}{4}\right)$

1a) $x + y = 10$
$-(x - y = 4)$

$0x + 2y = 6$
$y = \frac{6}{2}$

I can subtract to eliminate x,
I can add to eliminate y.

$y = 3$ ← use this to get x.

$x + y = 10$

$x + (3) = 10$

$x = 10 - 3$

$x = 7$

Sol^ (7, 3)

To Solve (Test) I'll give ya 2 eq^n you will have to solve via all 3 methods.

→ Graphing
→ Substitution ★
→ Elimination

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3) $10s + 13a = 4804$

$s + a = 430$ ← I want this to line up with eq^ ①

$10s + 13a = 4804$

$-(10s + 10a = 4300)$

$3a = 504$

$a = \frac{504}{3}$

$a = 168$ ← use this to get s.

$s + a = 430$

$s + 168 = 430$

$s = 262$

262 student tickets and 168 adult tickets.

4a) $3x + 2y = 7$
$4x + 5y = 14$

if we multiply ② by 2 and eqⁿ ① by 5 then our y terms will be the same.

① $15x + 10y = 35$
② $-(8x + 10y = 28)$

$7x = 7$

$x = 1$ ← use this to get that.

$3x + 2y = 7$
$3(1) + 2y = 7$
$3 + 2y = 7$
$2y = 4$
$y = 2$

Solⁿ $(1, 2)$

4c) $4y + 29 = 3x$
$8x + 7 = 3y$
→ this looks gross. Let's fix it.

$-3x + 4y = -29$
$8x - 3y = -7$
→ let's go for 12y i.e ① × 3 + ② × 4

$-9x + 12y = -87$
$+(32x - 12y = -28)$

$23x = -115$

$x = -5$ ← use this to get y.

$4y + 29 = 3x$

$4y + 29 = 3(-5)$

$4y = -15 - 29$

$y = \frac{-44}{4}$

$y = -11$

Sol^n $(-5, -11)$

5c) $\frac{x}{3} = 2 - \frac{y}{2}$ (×6)

Let's make this pretty.

$\frac{2(2x - 3y)}{3} = 4$

multiply the bracket + kill the fraction.

$12 - 3y = 2x$

$4x - 6y = 12$

Now let's line 'em up.

$2x + 3y = 12$

$4x - 6y = 12$

multiply ① by 2

$4x + 6y = 24$

$-(4x - 6x = 12)$

subtract

$12y = 12$

$y = 1$

use this to get x.

$4x - 6y = 12$

$4x - 6(1) = 12$

$4x - 6 = 12$

$4x = 18$

$x = \frac{9}{2}$

Sol^n $\left(\frac{9}{2}, 1\right)$

5a) $3x+2y=10$
$2x-y=4$ ← multiply by 2

$3x+2y=10$
$+(4x-2y=8)$
$7x = 18$
$x = \frac{18}{7}$ ← use this to get y.

$2x-y=4$
$2\left(\frac{18}{7}\right)-y=4$
$\frac{36}{7}-y=4$
$-y=4-\frac{36}{7}$
$-y=-\frac{8}{7}$
$y=\frac{8}{7}$

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7) $b+t=30$ ← multiply by 2
$2b+3t=70$

$2b+2t=60$
$-(2b+3t=70)$
$-t=-10$
$t=10$ ← use this to get b.

$b+t=30$
$b+10=30$
$b=20$