#15 P. 194 (2, 3, 4, 6, 8, 20, 24, 25) 3.2

(2) $x + y = 17$

$y = (x + 7)$

$x + (x+7) = 17$

$2x + 7 = 17$

$-7 \quad -7$

$\frac{2x}{2} = \frac{10}{2}$

$x = 5$ ✓

$\boxed{(5, 12)}$

No substitute $x=5$ in anyone of the equations.

$y = x + 7$

$y = 5 + 7 = 12$ ✓

(3) $y = (x - 19)$

$2x - y = 27$

$2x - (x - 19) = 27$

$2x - x + 19 = 27$

$x + 19 = 27$

$-19 \quad -19$

$x = 8$ ✓

$\boxed{(8, -11)}$

$y = x - 19$

$y = 8 - 19 = -11$ ✓

(4) $2x - y = 2$ → Solve for y

$\frac{-y}{-1} = \frac{-2x}{-1} + \frac{2}{-1}$

$y = (2x - 2)$

$3x - 2y = 11$

$(-7, -16)$

$3x - 2(2x - 2) = 11$

$3x - 4x + 4 = 11$

$-x + 4 = 11$

$-x = 7$

$x = -7$ ✓

$2x - y = 2$

$2(-7) - y = 2$

$-14 - y = 2$

$+14 \quad +14$

$-y = 16$ $\quad y = -16$ ✓

(6) $2x + y = 12$
$-5x - y = -33$

since the y's have opposite coefficients, just add + eliminate the y's.

$\frac{-3x}{-3} = \frac{-21}{-3}$

$\boxed{x = 7}$

$\boxed{(\ ,\ -2)}$

Now substitute x with 7 in either one of the original equations.

$2(7) + y = 12$

$\cancel{14} + y = 12$
$-\cancel{14} \quad -14$

$\boxed{y = -2}$

(8) $2x + 6y = -8$
$2(5x - 3y = 88)$

Multiply the 2nd equation by 2 so that they y's will have opposite coefficients; then Add.

$2x + 6y = -8$
$10x - 6y = 176$

$\frac{12x}{12} = \frac{168}{12}$

$\boxed{x = 14}$

$\boxed{(14, -6)}$

$2(14) + 6y = -8$

$28 + 6y = -8$
$-28 \quad -28$

$\frac{6y}{6} = \frac{-36}{6}$

$\boxed{y = -6}$

20) $5(6x - 3y = -6)$
$6(-5x + 7y = 41)$

$30x - 15y = -30$
$-30x + 42y = 246$

$\frac{27y}{27} = \frac{216}{27}$

$\boxed{y = 8}$

Multiply the first equation by 5 and the 2nd by 6 so that the x's have opposite coefficients; then add.

Be sure to Multiply all the way across.

$\boxed{(3, 8)}$

Put 8 in the y-component.

$6x - 3(8) = -6$
$6x - 24 = -6$
$+24 \quad +24$

$6x = 18$

$\boxed{x = 3}$

24) $5(10x - 2y = 22)$
$2(-25x + 5y = 65)$

$50x - 10y = 110$
$-50x + 10y = 130$

$0 + 0 = 240$

$0 \neq 240$

$\boxed{\emptyset}$

Line up the x's and y's in the second equation. Multiply the 1st By 5 and the 2nd By 2 so the equations will have opposite coefficients for the y's.

What do you notice about the x's coefficients? Guess what's going to happen.

Since you lost <u>both</u> variables and because $0 \neq 240$, there is

$\boxed{\text{No Solution}}$

25) $-2(4y - 3x = 32)$

$8y - 6x = 64$

$-8y + 6x = -64$

$8y + 6x = 64$

$0 + 0 = 0$

$0 = 0$

Since both coefficients eliminate and you get a true statement, there will an infinite number of solutions.

you can switch them around so that x comes before y, but since they are already lined up, you can leave them alone.

Multiply the 1st one by -2 to make the coefficients opposite

Infinite solutions or ℝeals.