

A # 36

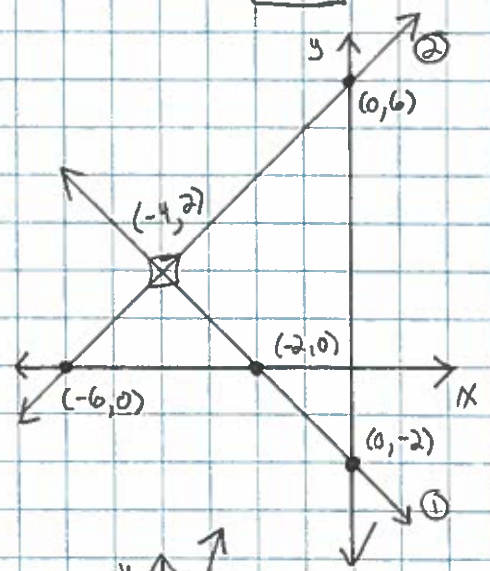
P+I: p. 441 #1, 3-9
 P+II: p. 439 #11-15, 26-27, 31-32, 36

Key

P+I p. 441 #1, 3-9

$$1. \begin{cases} x + y = -2 & \textcircled{1} \\ -x + y = 6 & \textcircled{2} \end{cases}$$

check $(-4, 2)$
 $\textcircled{1} -4 + 2 = -2 \checkmark$
 $\textcircled{2} -(-4) + 2 = 6$
 $4 + 2 = 6 \checkmark$

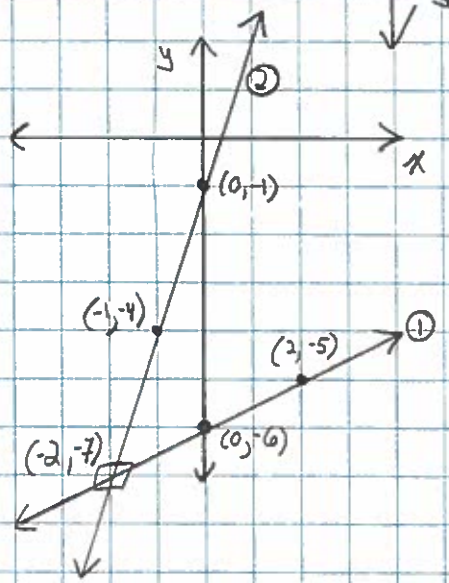


$$3. \begin{cases} x - 2y = 12 & \textcircled{1} \\ -3x + y = -1 & \textcircled{2} \end{cases}$$

$\textcircled{1} -2y = -x + 12$
 $y = \frac{1}{2}x + (-6)$
 $m = \frac{1}{2}$ y-int $(0, -6)$

$\textcircled{2} y = 3x + (-1)$
 $m = 3$
 y-int $(0, -1)$

check $(-2, -7)$
 $\textcircled{1} -2 - 2(-7) = 12$
 $-2 + 14 = 12 \checkmark$
 $\textcircled{2} -3(-2) + (-7) = -1 \checkmark$
 $6 + (-7) = -1 \checkmark$



$$4. \begin{cases} y = x - 4 & \textcircled{1} \\ -2x + y = 18 & \textcircled{2} \end{cases}$$

Step 1: Done
 Step 2: $-2x + x - 4 = 18$
 $-x = 22$
 $x = -22$

Step 3: $y = -22 - 4$
 $y = -26$

Step 4: Check $(-22, -26)$
 $\textcircled{1} -26 = -22 - 4 \checkmark$
 $\textcircled{2} -2(-22) + (-26) = 18$
 $44 + (-26) = 18 \checkmark$

Solution: $(-22, -26)$

$$5. \begin{cases} y = 4 - 3x & \textcircled{1} \\ 5x - y = 22 & \textcircled{2} \end{cases}$$

Step 1: Done
 Step 2: $5x - (4 - 3x) = 22$
 $5x - 4 + 3x = 22$
 $8x = 26$
 $x = \frac{13}{4}$

Step 3: $y = 4 - 3(\frac{13}{4})$
 $y = \frac{16}{4} + (-\frac{39}{4})$
 $y = -\frac{23}{4}$

Step 4: Check $(\frac{13}{4}, -\frac{23}{4})$
 $\textcircled{1} -\frac{23}{4} = 4 - 3(\frac{13}{4})$
 $-\frac{23}{4} = \frac{16}{4} + (-\frac{39}{4}) \checkmark$
 $\textcircled{2} 5(\frac{13}{4}) - (-\frac{23}{4}) = 22$
 $\frac{65}{4} + \frac{23}{4} = 22$
 $\frac{88}{4} = 22 \checkmark$

Solution: $(\frac{13}{4}, -\frac{23}{4})$

$$6. \begin{cases} x = y + 9 & \textcircled{1} \\ 5x - 3y = 7 & \textcircled{2} \end{cases}$$

Step 1: Done
 Step 2: $5(y + 9) - 3y = 7$
 $5y + 45 - 3y = 7$
 $2y = -38$
 $y = -19$

Step 3: $x = -19 + 9$
 $x = -10$

Step 4: Check $(-10, -19)$
 $\textcircled{1} -10 = -19 + 9 \checkmark$
 $\textcircled{2} 5(-10) - 3(-19) = 7$
 $-50 + 57 = 7 \checkmark$

Solution: $(-10, -19)$

A#36 continued

Key

Pt II p. 441 #7-9

$$7. \begin{cases} 2y + x = -4 & \textcircled{1} \\ y - x = -5 & \textcircled{2} \end{cases}$$

step 1: $\textcircled{2} y = x + (-5)$ step 3: $\textcircled{2} y = 2 + (-5)$

step 2: $\textcircled{1} 2(x + (-5)) + x = -4$ $y = -3$

$2x + (-10) + x = -4$ step 4: check $(2, -3)$

$$3x = 6$$

$$x = 2$$

$\textcircled{1} 2(-3) + 2 = -4 \checkmark$

$\textcircled{2} -3 - 2 = -5 \checkmark$

Solution: $(2, -3)$

$$8. \begin{cases} 5x - 4y = 27 & \textcircled{1} \\ -2x + y = 3 & \textcircled{2} \end{cases}$$

step 1: $\textcircled{2} y = 2x + 3$ step 3: $\textcircled{2} y = 2(-13) + 3$

step 2: $\textcircled{1} 5x - 4(2x + 3) = 27$ $y = -26 + 3$

$5x - 8x - 12 = 27$ $y = -23$

$$-3x = 39$$

$$x = -13$$

step 4: check $(-13, -23)$

$\textcircled{1} 5(-13) - 4(-23) = 27$

Solution: $(-13, -23)$

$$-65 + 92 = 27 \checkmark$$

$\textcircled{2} -2(-13) + (-23) = 3$

$26 + (-23) = 3 \checkmark$

$$9. \begin{cases} 3x - 5y = 13 & \textcircled{1} \\ x + 4y = 10 & \textcircled{2} \end{cases}$$

step 1: $\textcircled{2} x = -4y + 10$ step 3: $\textcircled{2} x = -4(1) + 10$

step 2: $\textcircled{1} 3(-4y + 10) - 5y = 13$ $x = -4 + 10$

$-12y + 30 - 5y = 13$ $x = 6$

$$-17y = -17$$

$$y = 1$$

step 4: check $(6, 1)$

$\textcircled{1} 3(6) - 5(1) = 13$

$18 - 5 = 13 \checkmark$

Solution: $(6, 1)$

$\textcircled{2} 6 + 4(1) = 10$

$6 + 4 = 10 \checkmark$

A #36

Key

P+II p. 439 #11-15, 26-27, 31-32, 36
-440

$$11. \begin{cases} x+y=0 & \textcircled{1} \\ x-2y=6 & \textcircled{2} \end{cases}$$

Step 1: $\textcircled{2} \quad x=2y+6$ Step 3: $\textcircled{2} \quad x=2(-2)+6$
Step 2: $\textcircled{1} \quad 2y+6+y=0$ $x=-4+6$
 $3y=-6$ $x=2$
 $y=-2$ Step 4: check $\textcircled{1} \quad 2+(-2)=0 \checkmark$
 $\textcircled{2} \quad 2-2(-2)=6 \checkmark$

Solution: $(2, -2)$

$$12. \begin{cases} 2x+y=9 & \textcircled{1} \\ 4x-y=-15 & \textcircled{2} \end{cases}$$

Step 1: $\textcircled{1} \quad y=-2x+9$ Step 3: $\textcircled{1} \quad y=2(-1)+9$
Step 2: $\textcircled{2} \quad 4x-(-2x+9)=-15$ $y=2+9$
 $4x+2x-9=-15$ $y=11$
 $6x=-6$ Step 4: check $\textcircled{1} \quad 2(-1)+11=9$
 $x=-1$ $-2+11=9 \checkmark$
 $\textcircled{2} \quad 4(-1)-11=-15$
 $-4-11=-15 \checkmark$

Solution: $(-1, 11)$

$$13. \begin{cases} 5x+2y=9 & \textcircled{1} \\ x+y=-3 & \textcircled{2} \end{cases}$$

Step 1: $\textcircled{2} \quad y=-x+(-3)$ Step 3: $y=-5+(-3)$
Step 2: $\textcircled{1} \quad 5x+2(-x+(-3))=9$ $y=-8$
 $5x+(-2x)+(-6)=9$ Step 4: check $\textcircled{1} \quad 5(5)+2(-8)=9$
 $3x=15$ $25+(-16)=9 \checkmark$
 $x=5$ $\textcircled{2} \quad 5+(-8)=-3 \checkmark$

Solution: $(5, -8)$

$$14. \begin{cases} 5x+4y=32 & \textcircled{1} \\ 9x-y=33 & \textcircled{2} \end{cases}$$

Step 1: $\textcircled{2} \quad y=9x-33$ Step 3: $\textcircled{2} \quad y=9(4)-33$
Step 2: $\textcircled{1} \quad 5x+4(9x-33)=32$ $y=36-33$
 $5x+36x+(-132)=32$ $y=3$
 $41x=164$ Step 4: check $\textcircled{1} \quad 5(4)+4(3)=32$
 $x=4$ $20+12=32 \checkmark$
 $\textcircled{2} \quad 9(4)-3=33$
 $36-3=33 \checkmark$

Solution: $(4, 3)$

A#36 continued

Key

P4.11 p. 439 #15, 26-27, 31-32, 36

15. $\begin{cases} 11x - 7y = -14 & \textcircled{1} \\ x - 2y = -4 & \textcircled{2} \end{cases}$ step 1: $\textcircled{2} \times 10 \rightarrow 10x - 20y = -40$
 step 2: $\textcircled{1} - \textcircled{2} \rightarrow 11(2y - 4) - 7y = -14$
 $22y + (-44) - 7y = -14$
 $15y = 30$
 $y = 2$

Solution: (0, 2)

step 3: $\textcircled{2} \times 2 \rightarrow x = 2(2) - 4$
 $x = 4 - 4$
 $x = 0$
 step 4: check $\textcircled{1} 11(0) - 7(2) = -14 \checkmark$
 $\textcircled{2} 0 - 2(2) = -4 \checkmark$

26. $\begin{cases} \frac{1}{2}x + \frac{1}{4}y = 5 & \textcircled{1} \\ x - \frac{1}{2}y = 1 & \textcircled{2} \end{cases}$ step 1: $\textcircled{2} \times \frac{1}{2} \rightarrow x - \frac{1}{4}y = \frac{1}{2}$
 step 2: $\textcircled{1} - \textcircled{2} \rightarrow \frac{1}{2}x + \frac{1}{4}y - (x - \frac{1}{4}y) = 5 - \frac{1}{2}$
 $\frac{1}{4}y + \frac{1}{4}y = 5 - \frac{1}{2}$
 $\frac{1}{2}y = \frac{9}{2}$
 $y = 9$

Solution: ($\frac{11}{2}$, 9)

step 3: $\textcircled{2} \times \frac{1}{2} \rightarrow x = \frac{1}{2}(9) + 1$
 $x = \frac{9}{2} + \frac{2}{2}$
 $x = \frac{11}{2}$
 step 4: check $\textcircled{1} \frac{1}{2}(\frac{11}{2}) + \frac{1}{4}(9) = 5$
 $\frac{11}{4} + \frac{9}{4} = \frac{20}{4} = 5 \checkmark$
 $\textcircled{2} \frac{11}{2} - \frac{1}{2}(9) = 1$
 $\frac{11}{2} - \frac{9}{2} = \frac{2}{2} = 1 \checkmark$

27. $\begin{cases} x + \frac{1}{3}y = -2 & \textcircled{1} \\ -8x - \frac{2}{3}y = 4 & \textcircled{2} \end{cases}$ step 1: $\textcircled{1} \times 3 \rightarrow x + \frac{1}{3}y = -2$
 step 2: $\textcircled{2} - 8(\textcircled{1}) \rightarrow -8(x + \frac{1}{3}y) - \frac{2}{3}y = 4 - 8(-2)$
 $-\frac{8}{3}y + 16 - \frac{2}{3}y = 4$
 $-\frac{10}{3}y + 16 = 4$
 $-\frac{10}{3}y = -12$
 $y = -6$

Solution: (0, -6)

step 3: $\textcircled{1} \times 3 \rightarrow x = -\frac{1}{3}(-6) + (-2)$
 $x = 2 + (-2)$
 $x = 0$
 step 4: check $\textcircled{1} 0 + \frac{1}{3}(-6) = -2 \checkmark$
 $\textcircled{2} -8(0) - \frac{2}{3}(-6) = 4 \checkmark$

31. $\begin{cases} b = \text{\# of bags of popcorn} & b = 2p & \textcircled{1} \\ p = \text{\# of pretzels} & 2.5b + 2p = 336 & \textcircled{2} \end{cases}$

step 1: Done step 2: $\textcircled{2} \times 2 \rightarrow 2.5(2p) + 2p = 336$
 $5p + 2p = 336$
 $7p = 336$
 $p = 48$

step 3: $b = 2(48)$
 $b = 96$
 step 4: check $\textcircled{1} 96 = 2(48) \checkmark$
 $\textcircled{2} 2.5(96) + 2(48) = 336$
 $240 + 96 = 336 \checkmark$

The parents sold 48 pretzels and 96 bags of popcorn.

A#36 continued

Key

Pt II p. 440 #32, 36

$$\begin{cases} T = \# \text{ of tubes} \\ C = \# \text{ of "cooler" tubes} \end{cases} \begin{cases} T + C = 26 & \textcircled{1} \\ 15T + 7.5C = 360 & \textcircled{2} \end{cases}$$

step 1: $\textcircled{1} T = -C + 26$

step 3: $\textcircled{1} T = -4 + 26$

step 2: $\textcircled{2} 15(-C + 26) + 7.5C = 360$

$$T = 22$$

$$-15C + 390 + 7.5C = 360$$

step 4: check $\textcircled{1} 22 + 4 = 26 \checkmark$

$$-7.5C = -30$$

$$\textcircled{2} 15(22) + 7.5(4) = 360$$

$$C = 4$$

$$330 + 30 = 360 \checkmark$$

The group rented 22 tubes and 4 "cooler" tubes.

$$\begin{cases} Q = \# \text{ of quarters} \\ D = \# \text{ of dimes} \end{cases} \begin{cases} D = Q + 3 & \textcircled{1} \\ .1D + .25Q = 4.5 & \textcircled{2} \end{cases}$$

step 1: \checkmark step 2: $\textcircled{2} .1(Q + 3) + .25Q = 4.5$ step 3: $\textcircled{1} D = 12 + 3$

$$.1Q + .3 + .25Q = 4.5$$

$$D = 15$$

$$.35Q = 4.2$$

$$Q = 12$$

Laura has 12 quarters (and 15 dimes).