

Systems of Linear Equations Review

Answer key Final answers only. Try first, then check.

CORE SKILLS

- K1** a) Yes: $1 + 4 = 5$ and $2(1) - 4 = -2$
 b) No: $4 + 1 = 5$, but $2(4) - 1 = 7 \neq -2$
 c) $(6, 4)$
- K2** a) $(3, 4)$
 b) $(5, 2)$
 c) $(2, -3)$
- K3** a) $(3, 1)$
 b) $(5, -2)$
 c) $(2, -1)$
- K4** a) One solution (slopes 2 and 3 differ)
 b) Infinitely many (both are $y = \frac{3}{2}x - 2$)
 c) One solution (slopes $\frac{1}{2}$ and $\frac{2}{3}$ differ)
- K5** a) s = smaller, L = larger: $s + L = 42$, $L = 2s + 6$
 b) s = student tickets, a = adult tickets: $s + a = 220$, $8s + 12a = 2160$
 c) s = students, t = teachers: $s = 3t$, $s + t = 52$

REAL WORLD

- A1** a) $p + h = 64$, $9p + 5h = 440$ (p poutines, h hot dogs)
 b) 30 poutines and 34 hot dogs
 c) $p = 62.5$, $h = -12.5$: a negative, fractional number of hot dogs is impossible, so the record has an error (even 50 poutines bring in only \$450).
- A2** a) $A(v) = 60 + 8v$, $B(v) = 15v$
 b) $v = \frac{60}{7} \approx 8.6$, $C \approx \$128.57$
 c) 8 visits: Gym B (\$120 vs \$124). 9 visits: Gym A (\$132 vs \$135). Never: the costs are equal only at $v = \frac{60}{7}$, which is not a whole number.
- A3** a) $1.5(c + r) = 12$ and $3(c - r) = 12$, i.e. $c + r = 8$, $c - r = 4$
 b) $c = 6$ km/h, $r = 2$ km/h
 c) $c - r = 6 - 7 = -1$ km/h: she drifts downstream at 1 km/h, so she never makes it. The time $\frac{12}{-1} = -12$ h has no meaning.

THINK IT THROUGH

- T1** a) $2(2.5) - 0 = 5 \neq 10$, so it fails the second equation.
 b) The constant was not doubled: $2x - y = 10$ becomes $4x - 2y = 20$. Then $5y = -10$, so the solution is $(4, -2)$.
 c) x was found from the first equation, so the point lies on that line by construction. A check must use **both** equations, especially the one not used to find x .
- T2** a) $k = -4$
 b) e.g. $x - 2y = 5$ (any $x - 2y = c$ with $c \neq 3$)
 c) $(3, 0)$ satisfies $2x + ky = 6$ for every k , and also $3x - 6y = 9$, so the lines always share a point. When the slopes match ($k = -4$), they are the same line.

BOSS LEVEL

- Boss**
- a) $(3, 2)$
 - b) $(2, 1)$
 - c) e.g. $(1, 1)$ and $(2, \frac{2}{3})$; $x = \frac{1}{2}$ (it would force $\frac{1}{y} = 0$)
-

Free worksheet · vertexmath.ca · Free to print and share for classroom use

Free to print, copy, adapt and share for classroom use · CC BY-NC 4.0 · © VertexMath



vertexmath.ca

Hints, answers &
more worksheets