The Line Cook Bistro

Assessment Menu · choose your meal and show what you know

Name: _____

Date: _____

How to order

1. Order **4 Appetizers** (5 points each), **4 Entrées** (10 points each) and **2 Chef's Specials** (20 points each). The most you can earn is **100 points**.
2. Your 10 dishes must include **at least one of each skill**: WRITE, MODEL, SYSTEMS and REGION (the label next to each dish).
3. Mark your choices on the order form below **and** on the dishes themselves ("My pick"). Only marked dishes are graded, and you cannot swap a dish after turning it in.
4. Show your work in the space for each dish. Points are given for correct steps as well as correct answers.
5. Appetizers and Entrées are on pages 2 and 3. The Chef's Specials are on page 4. Look at every page before you choose!

Appetizers

5 pts each · choose 4

- ☐ **A1** (WRITE)
- ☐ **A2** (WRITE)
- ☐ **A3** (MODEL)
- ☐ **A4** (SYSTEMS)
- ☐ **A5** (REGION)
- ☐ **A6** (REGION)

Entrées

10 pts each · choose 4

- ☐ **E1** (WRITE)
- ☐ **E2** (REGION)
- ☐ **E3** (MODEL)
- ☐ **E4** (SYSTEMS)
- ☐ **E5** (SYSTEMS)
- ☐ **E6** (WRITE)

Chef's Specials

20 pts each · choose 2

- ☐ **S1** (WRITE)
- ☐ **S2** (MODEL)
- ☐ **S3** (SYSTEMS)
- ☐ **S4** (REGION)

My skill check (circle each skill you have covered): WRITE · MODEL · SYSTEMS · REGION

Course	Dishes	Points each	Possible	Score (teacher)
Appetizers	4	5	20	
Entrées	4	10	40	
Chef's Specials	2	20	40	
Total			**100**	

Appetizers

5 points each · choose 4 · Warm-ups

Name: _____

A1 WRITE ☐ My pick · 5 pts

A linear function $f(x)$ has $f(-2) = 5$ and $f(4) = -7$. **(a)** Find the slope. **(b)** Write the equation in point-slope form using $(-2, 5)$. **(c)** Write $f(x)$ in slope-intercept form. **(d)** Write it in standard form $Ax + By = C$.

A2 WRITE ☐ My pick · 5 pts

Line ℓ is $3x - 4y = 8$. **(a)** Find its slope. **(b)** Write the equation of the line through $(8, -3)$ that is **parallel** to ℓ. **(c)** Write the equation of the line through $(6, 1)$ that is **perpendicular** to ℓ. Use slope-intercept form.

A3 MODEL ☐ My pick · 5 pts

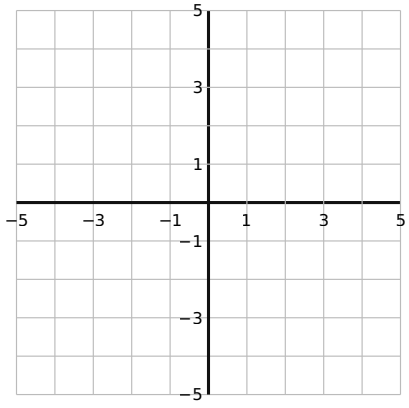
A stockpot is draining. It holds 88 quarts after 2 minutes and 70 quarts after 5 minutes. **(a)** Find the rate of change, with units. **(b)** Write a linear model $V(t)$. **(c)** What does the V-intercept mean? **(d)** When are 40 quarts left?

A4 SYSTEMS ☐ My pick · 5 pts

Solve each system. Say whether it has one solution, no solution or infinitely many. **(a)** $y = 2x - 3$ and $4x - 2y = 6$ **(b)** $y = 3x + 1$ and $6x - 2y = 5$ **(c)** $x + y = 7$ and $3x - y = 5$

A5 REGION ☐ My pick · 5 pts

Graph $2x - 3y < 6$ on the grid. **(a)** Should the boundary be solid or dashed? Why? **(b)** Shade the correct side and show the test point $(0, 0)$.



A6 REGION ☐ My pick · 5 pts

A system is $y > x - 2$ and $x + y \le 6$. Is each point a solution? **(a)** $(1, 3)$ **(b)** $(2, 5)$ **(c)** $(4, 2)$ **(d)** $(0, 0)$. In (c), the point satisfies one inequality; explain why it is still not a solution.

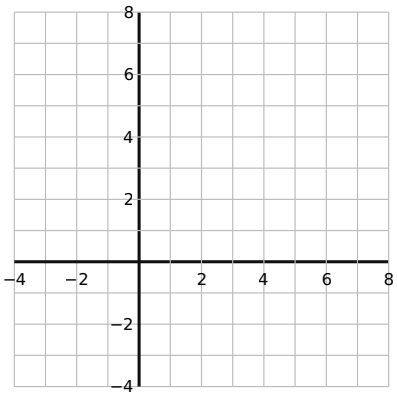
Entrées

10 points each · choose 4 · Multi-step problems

Name: _____

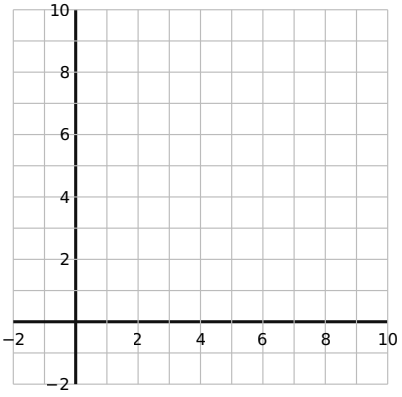
E1 WRITE ☐ My pick · 10 pts

Line ℓ passes through $(-3, -1)$ and $(3, 3)$. **(a)** Write ℓ in slope-intercept form. **(b)** Line m is perpendicular to ℓ and passes through (3, 3). Write m in point-slope form and find its x-intercept. **(c)** Graph both lines on the grid and name their intersection.



E2 REGION ☐ My pick · 10 pts

Graph the system on the grid: $y > \frac{1}{2}x - 1$ and $2x + y \le 9$. **(a)** Which boundary is dashed? **(b)** Shade the solution region. **(c)** Find the point where the boundaries meet. Is it a solution? **(d)** Is (3, 3) a solution?



E3 MODEL ☐ My pick · 10 pts

A bike courier charges C(m) dollars for m miles:

miles m	2	5	9
cost C ($)	11	17	25

(a) Show the data are linear. **(b)** Write C(m). **(c)** Interpret the slope and the C-intercept. **(d)** A rival charges R(m) = 2.5m + 4. For what m do they cost the same? Which is cheaper for longer trips?

E4 SYSTEMS ☐ My pick · 10 pts

Catering prices: 3 pasta trays and 2 salad trays cost \$96; 2 pasta trays and 5 salad trays cost \$141. **(a)** Define variables, write a system and solve it by elimination. **(b)** Making n trays costs C = 13n + 300 dollars and earns R = 25n dollars. How many trays to break even? What is the revenue then?

E5 SYSTEMS ☐ My pick · 10 pts

(a) Solve by elimination:

$$\begin{cases} x + y + z = 6 \\ 2x - y + z = 3 \\ x + 2y - z = 2 \end{cases}$$

(b) Show that x + y + z = 4, 2x + 2y + 2z = 9, x − y = 1 has no solution. **(c)** A student solving another system reaches 0 = 0. What does that mean?

E6 WRITE ☐ My pick · 10 pts

(a) The table shows a linear function.

x	1	3	6
f(x)	7	13	22

Show that it is linear and write f(x). **(b)** Write $y - 1 = -\frac{2}{3}(x + 3)$ in standard form Ax + By = C with integer coefficients and A > 0. **(c)** Write the horizontal and the vertical line through (5, −2).

Chef’s Specials

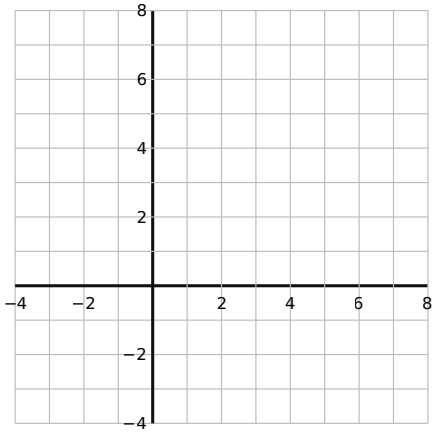
20 points each · choose 2 · Multi-part challenges

Name: _____

S1 WRITE

☐ My pick · 20 pts

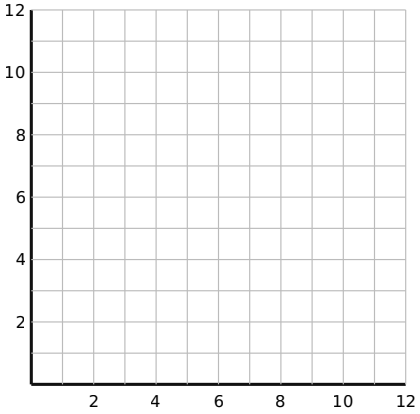
A(−2, 1) and B(6, 5) are the endpoints of a segment. **(a)** Find its midpoint M. **(b)** Write the perpendicular bisector of AB in slope-intercept form. **(c)** Show that P(3, 1) is on the bisector and is equally far from A and B. **(d)** Graph A, B, M and the bisector on the grid, and find where the bisector crosses the x-axis.



S2 MODEL

☐ My pick · 20 pts

A bakery’s online orders *y* in week *x* after launch: (1, 2), (2, 4), (3, 5), (4, 8), (5, 11). A calculator gives the line of best fit y = 2.2x − 0.6 with r = 0.98 (to the nearest hundredth). **(a)** Plot the points and graph the line. **(b)** Interpret the slope. **(c)** Predict weeks 7 and 20; which is less reliable? **(d)** Find the residual at week 4.



S3 SYSTEMS

☐ My pick · 20 pts

Receipts at the bistro (x = soup, y = salad, z = sandwich price): one of each costs $21; 2 soups, 1 salad and 3 sandwiches cost $44; 3 soups, 2 salads and 1 sandwich cost $38. **(a)** Write a system. **(b)** Solve it by elimination. **(c)** A receipt says 3 of each cost $60. Is that possible? **(d)** Find the cost of 4 soups, 3 salads and 2 sandwiches.

S4 REGION

☐ My pick · 20 pts

The bistro bakes x loaves and y pies a day. Oven hours: 2x + y ≤ 16. Prep hours: x + y ≤ 10. At most 7 pies. Profit: P = 4x + 5y dollars. **(a)** Graph the feasible region (x ≥ 0, y ≥ 0). **(b)** Find every vertex. **(c)** Find the maximum profit and where it occurs. **(d)** If P became 5x + 4y, which vertex would win?

