

El Camino College
Mathematics 43
Equations Gateway - Help Sheet

This sheet is to provide you with further information as you work toward achieving 90% proficiency on this gateway. As you look through the key ideas below, try to create a realistic picture of what you understand and what you don't — the first attempt at the gateway should help you with this. While preparing for the second attempt, if necessary, you should take full advantage of working with your peers, seeking help from other students, tutors in the Math Study Center, your SI coach and your instructor. The use of calculators will be prohibited for this gateway.

1. Find the perimeter or area of a rectangle with given dimensions.

Example 1: Find the area of a rectangle whose width is 5 in. and whose length is 7 in.

Solution: 35 in^2

Practice: Find the perimeter of a square whose sides measure 9 m.

2. Solve a percent problem given in the form P percent of B is A.

Example: What percent of 90 is 18? $90P = 18 \rightarrow P = \frac{18}{90} = 0.2 = 20\%$

Practice:

a) What is 7% of 620?

b) 8% of what is 32?

3. Solve a linear equation of the form $ax + b = c$ where a , b , and c are integers.

Example: Solve: $2x + 13 = 5$

$$2x = -8$$

$$x = -4$$

Practice:

a) $5x + 7 = -13$

b) $3x + 25 = 4$

4. Solve a linear equation of the form $ax + b = c$ where a , b , and c are rational numbers.

Example: Solve: $\frac{1}{2}x + \frac{5}{6} = \frac{1}{3}$

$$\frac{1}{2}x = \frac{1}{3} - \frac{5}{6}$$

$$\frac{1}{2}x = \frac{-3}{6}$$

$$x = \left(-\frac{3}{6}\right) \div \frac{1}{2} = -1$$

Practice:

a) $\frac{2}{3}x + 1 = -\frac{7}{9}$

b) $5x + \frac{5}{8} = \frac{3}{4}$

5. Solve a multistep linear equation with integral coefficients.

Example: Solve: $2(3x - 4) = -5x - 2$

Solution: $x = -\frac{6}{11}$

Practice: Solve: $-2x + 3 = 2(15 - 7x)$

6. Translate an English phrase to a mathematical expression with two operations.

Example: Translate: The sum of three times a number and four. $3x + 4$

Practice:

a) Translate: Three less than twice a number.

b) Translate: Twice the difference of the square of a number and six.

7. Graph a linear equation given in slope-intercept form.

Practice:

a) Given $y = \frac{1}{2}x - 2$, graph the line. | |

b) Given $y = -\frac{3}{2}x + 3$, graph the line.

8. Graph a linear equation given in standard form.

Practice:

a) Given $3x - 2y = 12$, graph the line.

b) Given $4y + 2x = -8$, graph the line.

9. Given a non-linear equation, create a table of solutions.

Example:

Create a table containing 4 solutions to the equation $y = 2x^2 - 1$

x	y
-2	7
-1	1
0	-1
1	1

Practice: Create a table containing 4 solutions to the equation $y = |2 - 3x| + 5$

10. Solve a proportion.

Example: Solve: $\frac{x+1}{7} = \frac{2x}{9}$

$$14x = 9(x + 1)$$

$$14x = 9x + 9$$

$$5x = 9$$

$$x = \frac{9}{5}$$

Practice: Solve: $\frac{2x+1}{7} = \frac{-3x}{5}$