

## SKILLS PORTFOLIO B

### LINEAR EQUATIONS AND LINEAR INEQUALITIES

Answer the following questions in your portfolio:

1. What is a linear equation in one variable?

Give two different examples of linear equations in one variable.

In your own words, explain what solving an equation means.

What properties of equality are used in the process of solving a linear equation in one variable?

How many solutions can a linear equation have?) Give one example for each situation.

2. Give two different examples of linear inequalities in one variable.

In your own words, what does it mean to solve an inequality?

What properties of inequalities are used in the process of solving a linear inequality in one variable?

3. Tell whether each statement is an equation. It is not necessary to rewrite the entire statement in your portfolio.

a) $x = 2$	d) $3 - 3w > 2$	g) $\frac{z-5}{6} = 2$	h) $2c + 3(c-1) = -2 - c$
b) $x + 7 = 0$	e) $7x < 8$	f) $5 = a - 2$	i) $\frac{b}{3} = \frac{1}{3}$
c) $y - 3$			

4. Determine whether the given equations are identity, contradiction or conditional:

a) $3u - 2(u-5) - u = u - 3 - (u-8)$	b) $5(x-1) = 5x - 1$	c) $2(x-3) = 2x - 6$
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5. Solve each equation and check your solution.

a) $3x = 3$	b) $b + 7 = \frac{20}{3}$	c) $6x + 5 = x + 5(x+1)$
d) $3 - 2x = -7 - 2x$	e) $\frac{x}{2} = 3x + 1$	f) $\frac{2}{3}(v-4) = 2$
g) $-19x = 0$	h) $-3(x-5) - 2x = 5(3-x) + 4x$	i) $\frac{5}{6}x - \frac{2}{3} = \frac{1}{2}$
j) $\frac{5}{6} = \frac{2u-3}{5}$	k) $\frac{3(n-2)}{5} = \frac{n+6}{6}$	l) $9(6+x) = -7(2+x)$

6. Solve each inequality, graph the solution set on the number line, and use interval notation for the solution set.

a) $x + 2 > 5$	b) $\frac{3x-3}{2} < 2x + 2$	c) $2z + 1 + z > 3z + 9$
d) $-x + 10 < -x + 20$	e) $-2(2x+3) \geq 14$ ;	f) $-\frac{2}{5} < \frac{x-4}{3} \leq 4$
g) $x - 3 > 2x + 3(x-1)$	h) $-1 < \frac{x+1}{2} \leq \frac{5}{2}$	i) $\frac{7}{5} < 2 - x$ ;
j) $1 < 2x - 3 \leq 6$	k) $2 \leq -x - 3 \leq 5$	l) $-7 < -7x \leq 0$

7. What is a linear equation in two variables? Give an example.

How do you graph a linear equation in two variables?

What is the graph of a linear equation in two variables?

What coordinate system is used to graph a linear equation in two variables?

8. Plot each point on a rectangular coordinate system.

A(2,5), B(1,-3), C(0,4), D(-3, -2), E(-1, 0), F( 0, 0)

9. Graph each equation on a separate rectangular coordinate system.

a)  $y = x - 5$

b)  $x + y = 4$

c)  $y = 3$

d)  $2x + 1 = 0$

e)  $3x + 4y = 12$

10. Find the slope of each line

a)  $\frac{x}{5} - \frac{y}{2} = 1$ ;

b)  $2y = 3$ ;

c)  $x + \frac{1}{3}y + 1 = 3$

d)  $9x + 12y = 36$

11. Write an equation for the line that passes through the given point and has the given slope:  $(-3,1)$ ,  $m = \frac{7}{3}$ .

a) Put your equation into slope-intercept form.

b) Put your equation in standard form with integer coefficients.

12. Tell whether the given lines are parallel, perpendicular, or neither:

a)  $y = 3x + 2$  and  $y - 2 = -\frac{1}{3}(x + 1)$ ;

b) a line with slope 5 and a line with slope  $\frac{10}{2}$ .

13. 7. What is a linear inequality in two variables? Give an example.

How do you graph a linear inequality in two variables?

What is the graph of a linear inequality in two variables?

14. Graph each inequality.

a)  $y \leq 3x + 1$

b)  $2x - 3y > 6$

c)  $y > x - 5$