

**9.1 Classwork: Algebra skills assessment**

*Do not use a calculator. Do not convert values to decimals.*

Reference: Chili Math, Solving Literal Equations

<https://www.chilimath.com/lessons/intermediate-algebra/literal-equations/>

**Simplify each expression by “collecting like terms”**

1. (a)  $2x + 4 - x + 11$

(d)  $2a + \sqrt{5} + 7a + 3\sqrt{5}$

(b)  $5y - 4 - 7y + y$

(e)  $x\sqrt{3} - x\sqrt{3} + x + 1$

(c)  $14 + 5\pi - 2\pi + 4$

(f)  $3\pi x + 4 + 2\pi x - 7$

**Solve each equation for the unknown**

One step.

2. (a)  $2x = 12$

(c)  $3a = \pi$

(b)  $4z = -8$

(d)  $2y = \sqrt{5}$

Two steps.

3. (a)  $7x + 4 = 11$

(c)  $4m - \sqrt{2} = 3\sqrt{2}$

(b)  $-4b + 5 = -3$

(d)  $2y - 3\pi = \pi$

## 4. Fractional coefficients

(a)  $\frac{1}{2}(6 - 2x) = 4x$

(b)  $11 = \frac{1}{3}x + 2x - 10$

**Working with polynomials**

## 5. Simplify each expression by “collecting like terms”

(a)  $4x^2 + 3x - 7 - 2x^2 - x + 4$

(b)  $3(a^2 - 2a + 1) - 2(a^2 - a - 4)$

**Slope-intercept form**6. What is the slope and  $y$ -intercept of each equation?

(a)  $y = 2x - 3$

(b)  $4x + 2y = 6$

**Function substitution**

7. (a) Given  $f(x) = 4x + 7$ .  
Simplify  $f(2)$ .

(b) Given  $f(x) = -\frac{(12 + 4x)}{11}$ .  
Simplify  $f(-3)$ .

**Parallel and perpendicular linear equations**

8. What is the equation of the line with a slope of 2 passing through the point  $(0, 1)$ ?  
hint:  $y - y_1 = m(x - x_1)$
9. What is the equation of a line parallel to  $y = -2x + 1$  with a  $y$ -intercept of 4?
10. What is the slope of a line perpendicular to the line  $x - 2y = 16$ ?

**Rounding and calculations**

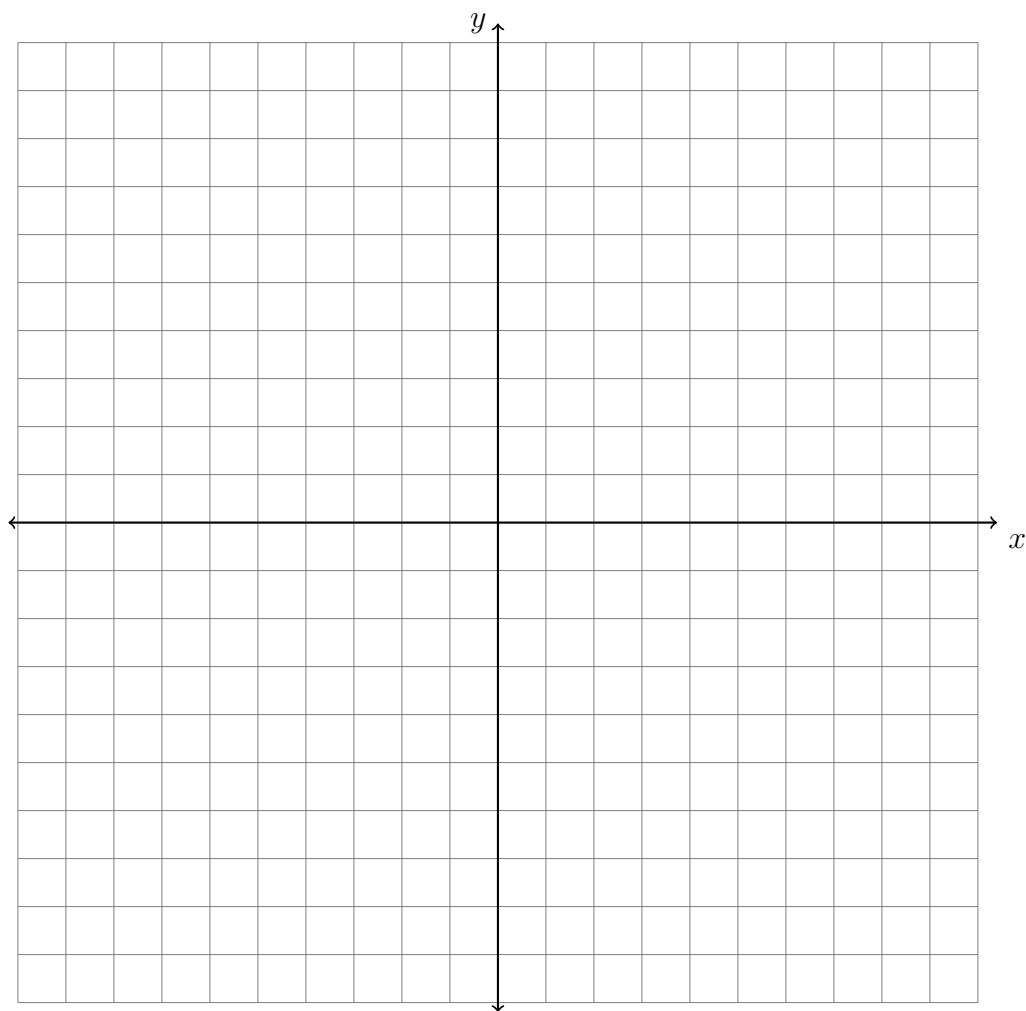
11. Perform each calculation, writing down the full calculator display and then rounding to the *nearest hundredth*.
- |   |   |
|---|---|
| (a) $A = 15.944732$                             | (e) $V = 199.19711$                         |
| (b) $W = 3.4 \times 9.8 \times 4.3 \times 0.15$ | (f) $W = \frac{1}{3}(13)3.3^2 \times 1.175$ |
| (c) $V = \frac{1}{3}\pi(3.4)^2(6.1)$            | (g) $V = \frac{1}{3}\pi(12.4)^2(8.1)$       |
| (d) $P = 8.6 + \frac{1}{2}\pi(8.6)$             | (h) $P = 12 + \frac{1}{4}\pi(12)$           |

12. Oceanside Bike Rental Shop charges a 17 dollar bike fee plus 6 dollars an hour for renting a bike. Jeffrey paid 53 dollars total. How many hours did he pay to have the bike checked out?
13. Three friends go bowling. The cost per person per game is \$5.30. The cost to rent shoes is \$2.50 per person. Their total cost is \$55.20. How many games did they play?
14. The admission fee at a small fair is \$1.50 for children and \$4.00 for adults. On a certain day, 40 people enter the fair and \$85.00 is collected. How many children and how many adults attended?

15. Solve the system of equations by graphing each line and marking the intersection as an ordered pair.

$$x + y = 7$$

$$y = 3x + 3$$



Solve each system algebraically.

16.  $2x - 4y = 14$   
 $5x + 4y = 7$

17.  $2x - y = -7$   
 $3x + 4y = 17$