Unit 9: Algebra Name:
21 March 2022

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/

1. Which expressions must be equal to $2\sqrt{7} + 3\sqrt{7}$?

   ☐ $+\sqrt{7} + \sqrt{7}$
   ☐ $5y - 4 - 7y + y$
   ☐ $14 + 5\pi - 2\pi + 4$
   ☐ $2a + \sqrt{5} + 7a + 3\sqrt{5}$
   ☐ $x\sqrt{3} - x\sqrt{3} + x + 1$
   ☐ $3\pi x + 4 + 2\pi x - 7$

Simplify each expression by "collecting like terms"

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

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

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

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

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

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

Solve each equation for the unknown

One step.

3. (a) $2x = 12$

   (b) $4z = -8$

   (c) $3a = \pi$

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

Two steps.

4.

$7x + 4 = 11$

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

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

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

5. Fractional coefficients

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

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

Working with polynomials

6. 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

7. What is the slope and y-intercept of each equation?

   (a) $y=2x-3$

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

Function substitution

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

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

Parallel and perpendicular linear equations

9. What is the equation of the line with a slope of 2 passing through the point $(0, 1)$? hint: $y - y_1 = m(x - x_1)$

10. What is the equation of a line parallel to $y = -2x + 1$ with a y-intercept of 4?

11. What is the slope of a line perpendicular to the line $x - 2y = 16$?

Rounding and calculations

12. Perform each calculation, writing down the full calculator display and then rounding to the *nearest hundredth*.

    (a) $A = 15.944732$

    (b) $W = 3.4 \times 9.8 \times 4.3 \times 0.15$

    (c) $V = \frac{1}{3}\pi(3.4)^2(6.1)$

    (d) $P = 8.6 + \frac{1}{2}\pi(8.6)$

    (e) $V = 199.19711$

    (f) $W = \frac{1}{3}(13)3.3^2 \times 1.175$

    (g) $V = \frac{1}{3}\pi(12.4)^2(8.1)$

    (h) $P = 12 + \frac{1}{4}\pi(12)$

13. 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?

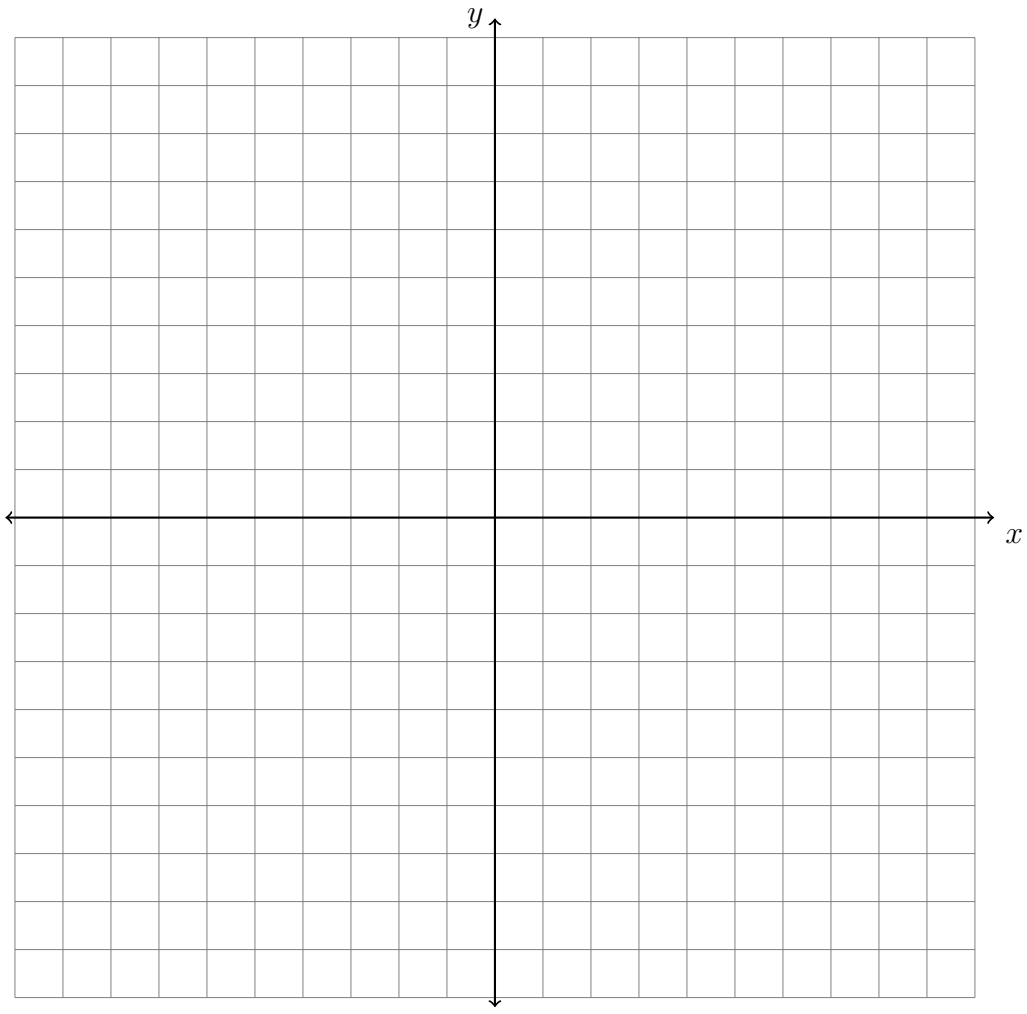
14. Three friends go bowling. The cost per person per game is \$5.30. The cost to rent shoes is \$2.50 per person. Their total cost is \$55.20. How many games did they play?

15. 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?

16. 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.

17. $2x - 4y = 14$
$5x + 4y = 7$

18. $2x - y = -7$
$3x + 4y = 17$