

CP Algebra 2
Summer Packet
2018

Name: _____

Objectives for CP Algebra 2 Summer Packet 2018

I. Number Sense and Numerical Operations (Problems: 1 to 42)

- Use the Order of Operations to evaluate expressions. (p. 6)
- Evaluate expressions using given values. (p. 7)
- Use formulas. (p. 8)
- Identify properties of real numbers. (p. 13)
- Find the additive and multiplicative inverse of a number. (p. 13)
- Use the properties of real numbers to simplify expressions. (p. 12-14)
- Translate verbal expressions into algebraic expressions. (p. 20)
- Solve equations using the Properties of Equality. (p. 21-22)
- Solve equations for another variable. (p. 22)
- Evaluate expressions involving absolute value. (p. 28)
- Solve inequalities. (p. 33-35)
- Solve compound inequalities. (p. 40-41)

II. Functions and Relationships (Problems: 43 to 50)

- Find functional values. (p. 59)
- Write linear equations in standard form. (p. 64)
- Graph linear equations using the x-intercept and y-intercept. (p. 65)
- Find the slope of a line. (p. 68-69)
- Graph a line given a point and the slope. (p. 69)
- Graph parallel or perpendicular lines. (p. 70-71)
- Write an equation of a line given the slope and a point on the line. (p. 75-76)
- Write an equation of a line parallel or perpendicular to a given line. (p. 77-78)

Directions: Complete each problem, **showing all work in the space provided below the problem.** You **MUST** show work or explain your solution in order to receive credit for the answer. There are hints for each problem in the right hand margin of the page.
CIRCLE YOUR ANSWERS!

QUESTION

HINT

Find the value of each expression.

**Remember Order of Operations:
PEMDAS**

1. $4 + 8(4) \div 2 - 10$

Step 1: Simplify parentheses or brackets.

Step 2: Evaluate all powers.

2. $5 \bullet 7 - 2(5 + 1) \div 3$

Step 3: Do all multiplication and/or division from left to right.

Step 4: Do all additions and/or subtraction from left to right.

3. $0.5[7 - (8 - 6)^2] - 1$

4. $\frac{1}{2}(3^2 + 5 \bullet 7) - 8$

5. $\frac{6^2 + 4(2^4)}{28 + 9 \bullet 8}$

Evaluate each expression if $a = -0.5$, $b = 4$, $c = 5$, $d = -3$.

Substitute values into the expression, then follow Order of Operations.

6. $ab^2 + c$

7. $bc + d \div a$

8. $7ab - 3d$

QUESTION

Evaluate each expression if $a = -0.5$, $b = 4$,
 $c = 5$, $d = -3$.

9.
$$\frac{3ab^2 - d^3}{a}$$

10. The formula $F = \frac{9}{5}C + 32$ gives the degrees Fahrenheit for a given temperature in degrees Celsius. What is the temperature in degrees Fahrenheit when the temperature is -40 degrees Celsius?

Name the property illustrated by each equation.

11. $(4 + 9a)2b = 2b(4 + 9a)$

12. $3\left(\frac{1}{3}\right) = 1$

13. $a(3 - 2) = a \bullet 3 - a \bullet 2$

14. $(2a)b = 2(ab)$

15. $5a + (-5a) = 0$

16. Name the additive inverse and multiplicative inverse for $-4\frac{3}{5}$.

HINT

Substitute values into the expression, then follow Order of Operations.

Substitute the Celsius degrees into the given formula.

Properties of Real Numbers:

Commutative

Associative

Identity

Inverse

Distributive

What would you add to the number to get to 0? What would you multiply the number by to get to 1?

QUESTION**HINT****Simplify each expression.**

Use the Distributive Property and the Order of Operations.

17. $8(3a - b) + 4(2b - a)$

18. $8(2.4r - 3.1q) - 6(1.5r + 2.4q)$

19. $2(15 + 45c) + \frac{5}{6}(12 + 18c)$

20. $3(4 - 2x + y) - 4(5 + x - y)$

21. A subway train was carrying 103 passengers. At the next three stops, 15 people got on and 9 got off, 27 got on and 13 got off, and 8 got on and 53 got off. How many passengers were then on the train?

Write an algebraic expression to represent each verbal expression.**Example:** 18 less than the quotient of a number and 3.

22. the sum of six times a number and 25

$$\frac{n}{3} - 18$$

23. 7 less than fifteen times a number

24. four times the square of a number increased by five times the same number

25. the difference of nine times a number and the quotient of 6 and the same number

QUESTION

Solve each equation.

26. $4z + 11 = 3$

27. $2(x - 3) = x + 3$

28. $0.3(2r - 3) = 0.2r + 0.9$

29. $2m - (1 - m) = 11 - m$

30. $\frac{6x - 2(x - 4)}{3} = 8$

Solve each equation or formula for the specified variable.

31. $I = prt$; for p

32. $P = 2l + 2w$; for w

33. $ax + by = c$; for y

34. $A = 2\pi r^2 + 2\pi rh$; for h

HINT

-Use Distributive Property first if needed.

-Combine like terms on each side of the equation.

-Use Addition and Subtraction Properties of Equality to move the variables to one side and the constants to the other.

-Use Multiplication and Division Properties of Equality to isolate the variable.

-Do the same steps that you do for solving an equation with one variable.

Example: $\frac{3pq}{r} = 12$ for p

$$r\left(\frac{3pq}{r}\right) = (12)r$$

$$3pq = 12r$$

$$\frac{3pq}{3q} = \frac{12r}{3q}$$

$$p = \frac{12r}{3q}$$

QUESTION

35. Adam purchased a shirt at regular price. Later, when the shirts were on sale, he purchased two more at \$2 off the regular price. He spent a total of \$41 for the three shirts. What is the regular price of the shirt?

Evaluate each expression if $w = -4$, $x = 2$, $y = \frac{1}{2}$, **and** $z = -6$.

36. $|x + 5| - |2w|$

37. $|z| - 3|5yz|$

38. $3|wx| + \frac{1}{4}|4x + 8y|$

Solve each inequality. Then graph the solution set on a number line.

39. $4(b - 7) + 6 < 22$

HINT

Choose a variable to represent the regular price and then write an equation to describe the situation. Solve for the variable.

- Substitute the values into the expressions.
- Simplify inside each absolute value sign.
- Find the absolute value of that number.
- Then combine the remaining terms.

Do the same steps that you would do if there were an equal sign. **Remember if you are multiplying or dividing by a negative number you need to reverse the inequality symbol.**



QUESTION**HINT**

40. $4x - 2 > -7(4x - 2)$



41. $-10 < 3x + 2 \leq 14$



42. $\frac{2}{3}b - 2 > 10$ or $\frac{3}{4}b + 5 < -4$



43. Given $f(x) = -2x + 3$; find $f(-6)$.

44. Write in standard form.
Identify A , B , and C .

a. $4y + 4x + 12 = 0$

b. $x = \frac{y}{9} + 7$

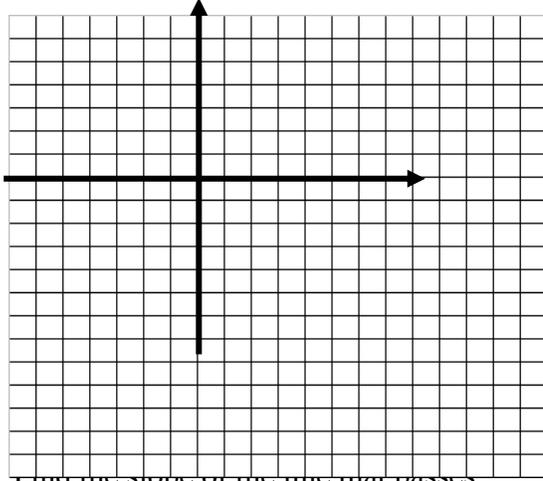
Be sure to perform the steps to **each** of the three parts of the inequality.

Solve each inequality, then graph on the same number line.

Substitute -6 in for x on the right side of the function.**Standard Form of an Equation:** $Ax + By = C$ where $A \geq 0$ (must be a positive number), A and B are not both 0, and A , B , and C are integers (no fractions or decimals) whose greatest common factor is 1.

QUESTION

45. Find the x-intercept and y-intercept of $2x + 5y = 10$. Then graph the equation.



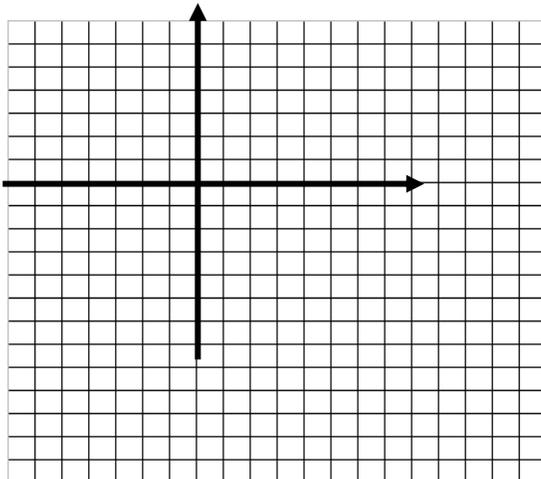
46. Find the slope of the line that passes through each pair of points.

a. $(4, 5), (2, 7)$

b. $(5, -3), (-4, 3)$

47. Graph the line passing through the given point with the given slope.

$$(2, -4); m = \frac{2}{3}$$



HINT

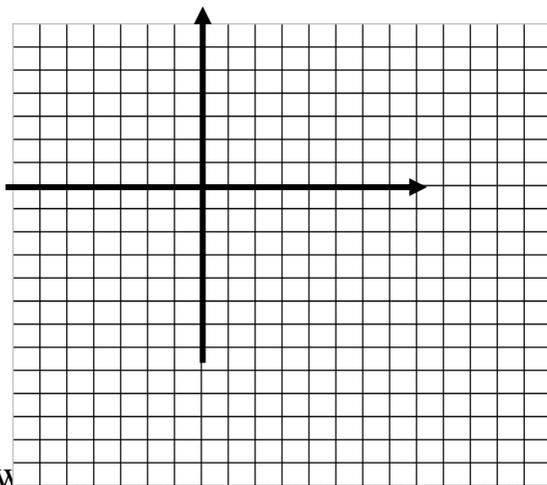
To find x-intercept, substitute 0 in for y.
To find y-intercept, substitute 0 in for x.
Plot each point then connect the points with a line.

Use **Slope Formula**: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Plot the point; use $\frac{\text{rise}}{\text{run}}$ to get other points. Connect with a line.

QUESTION

48. Graph the line that satisfies the following conditions:
passes through $(0, 1)$ and is perpendicular
to a line whose slope is $\frac{1}{3}$.



49. Write an equation in slope-intercept form
for the line with slope $= -2$ and passes
through $(-4, 6)$

50. Write an equation of the line that passes
through $(-1, 5)$ and is parallel to the graph
of $y = 3x + 1$.

HINT

Remember, perpendicular slopes
are negative reciprocals of each other.
Find the perpendicular slope of $\frac{1}{3}$
then plot the point and use $\frac{\text{rise}}{\text{run}}$.

Slope-Intercept Form of a Line

$$y = mx + b$$

Substitute m , x , and y ; then solve for b .
Remember to substitute the b back into
 $y = mx + b$.

Parallel lines have the same slope.
You can use **Slope-Intercept Form**
from above or **Point-Slope Form of a**
Line: $y - y_1 = m(x - x_1)$