

Read each problem carefully. You must show all work in order to receive full credit. Circle your final answers for 11-25. Print letter answers NEATLY for 1-10 (if I can't read it, you don't get credit).

Part I (1 point each)

\_\_\_1. motion formula

a.  $a + b = b + a$

\_\_\_2. commutativity

b.  $\cap$

\_\_\_3. associativity

c. 0

\_\_\_4. additive identity

d.  $d = r \cdot t$

\_\_\_5. multiplicative identity

e. 1

\_\_\_6. additive inverse

f.  $-a$

\_\_\_7. multiplicative inverse

g.  $\cup$

\_\_\_8. distributive property

h.  $a + (b + c) = (a + b) + c$

\_\_\_9. union

i.  $1/a$

\_\_\_10. intersection

j.  $a(b + c) = ab + ac$

Part II (6 points each)

11.  $A = \{1,5,10,20\}, B = \{5,10,15,20\}$  Find  $A \cap B$ .

12.  $A = \{1,2,3,4,5\}, B = \{3,4,5\}$  Find  $A \cup B$ .

13. Write in set-builder notation:  $(-\infty, 4]$

14. Write in interval notation:  $\{x \mid -2 \leq x < 6\}$

15. Simplify.  $-|-16| - |24|$

16. Simplify.  $\frac{2}{3} - \left[\frac{3}{8} + \frac{5}{6}\right] \div \frac{3}{5}$

17. Evaluate the variable expression when  $a = 2$ ,  $b = 3$ ,  $c = -1$ , and  $d = -4$ .

$$-3d \div \left| \frac{ab - 4c}{2b + c} \right|$$

18. Translate into a variable expression. Do not simplify.

*the difference between the square of a number and the total of twelve and three times the number*

19. Solve for x.  $5 - 6[2x - 2(x + 3)] = 8 - x$

20. Solve for  $x$ .  $2[3(x + 4) - 2(x + 1)] = 5x + 3(1 - x)$

21. Find three consecutive even integers such that twice the sum of the first and third integers is twenty more than the second integer.

22. Fifty liters of pure maple syrup that costs \$10 per liter are mixed with imitation maple syrup that costs \$4 per liter. How much imitation maple syrup is needed to make a mixture that costs \$5 per liter?

23. Two airplanes start from the same point and fly in opposite directions. The first plane is flying 50 mph slower than the second plane. In 4 h, the planes are 1800 mi apart. Find the rate of each plane.

24. How many quarts of water must be added to 5 qt of an 80% antifreeze solution to make a 50% antifreeze solution?

25. Solve. Write the solution set in interval notation.  $3x + 7 < 10$  or  $2x - 1 \geq 5$