

Algebraic Concepts for Middle School (6 - 8)

Name _____

Read each problem carefully. Answer as many as you can. Write answers clearly. You may write on this test. You may not use a calculator.

1. $y + 4 = 10$. What is the value of y ?

$y =$ _____

2. In Alaska the temperature was -15° F in the morning; by noon the temperature had increased by 20° F. By 9:00 p.m. the temperature had dropped 30° F. What temperature was it at 9:00 p.m.?

3. Simplify the following expressions:

a) $4(12 - 3^2)$ _____

b) $-12 + (3 + 6)$ _____

c) $-20 \div 5$ _____

d) $2(4 + 8) + 6(8 - 3)$ _____

4. Let $n = 3$ and solve for x .

a) $4(2n - 5) = x$

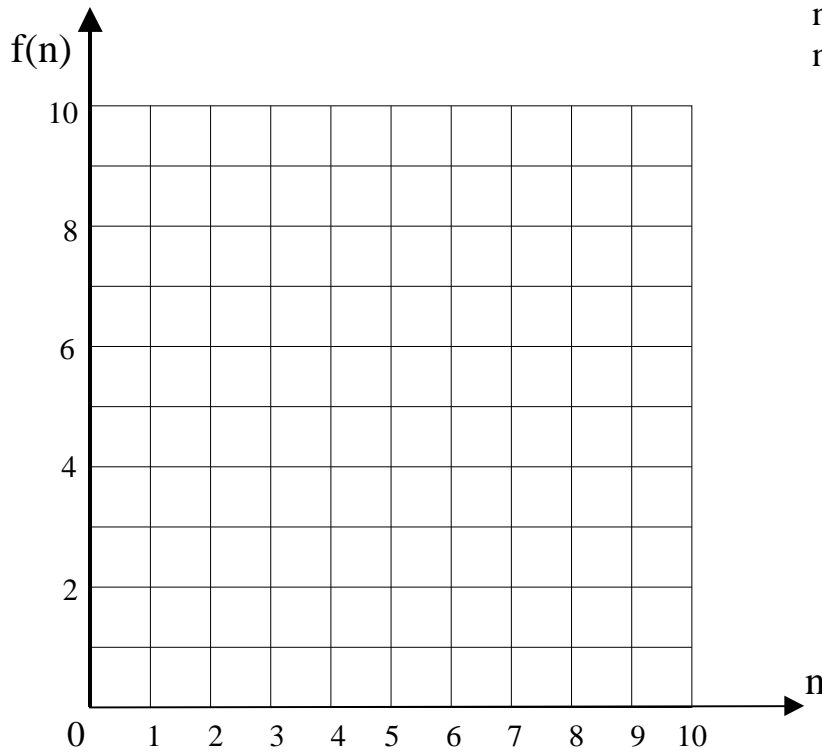
$x =$ _____

b) $2(n + 4) - 5n^2 = x$

$x =$ _____

9. Graph the function $f(n) = 3n$. Use the following values of n :

- $n = 1$
- $n = 2$
- $n = 3$



10. Write the following as a mathematical expressions. Use r as the variable.

a) five less than a number _____

b) half of the sum of a number and nine _____

11. Write the following as a mathematical equation. Use n as the variable.

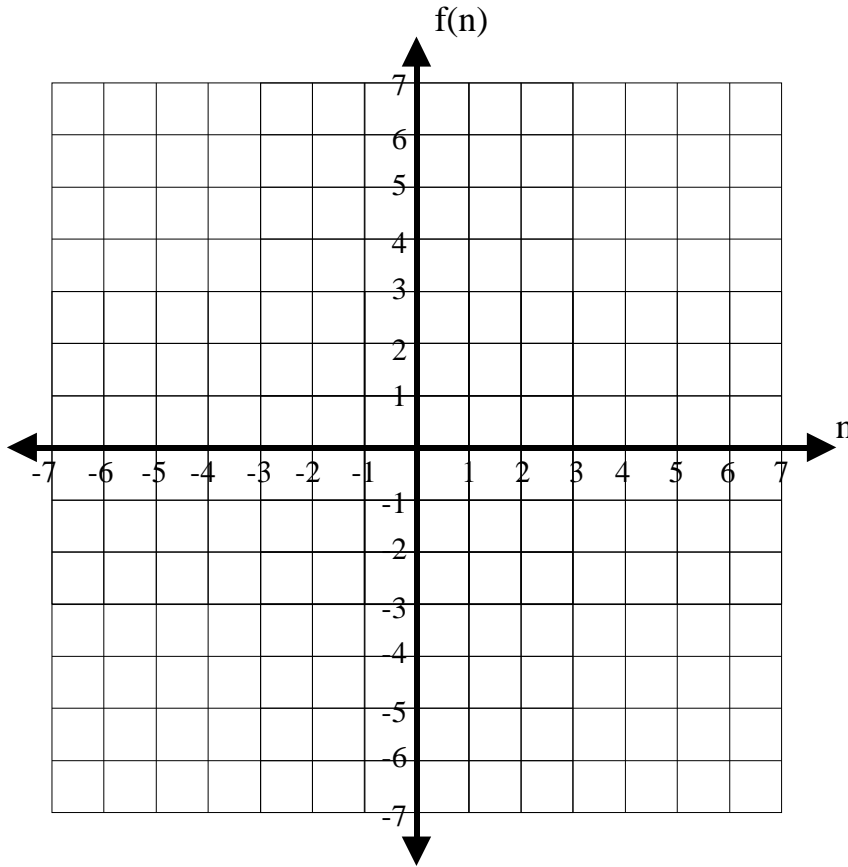
Five times a number is the sum of the number plus twelve.

12. Use the distributive property to multiply the following:

a) $(a + b)(a + b)$ _____

b) $(a + 1)(7 - 2)$ _____

13. Complete the t-table, then graph for the following linear function: $f(n) = 2n + 1$



Use given values

n	f(n)
-2	
-1	
0	
1	
3	

14. Name the slope of $f(n) = 2n + 1$.

15. Name the y-intercept of $f(n) = 2n + 1$.

16. Circle all of the following that show an example of commutative properties.

a) $3 + 5 = 8$

d) $8 - 3 = 3 - 8$

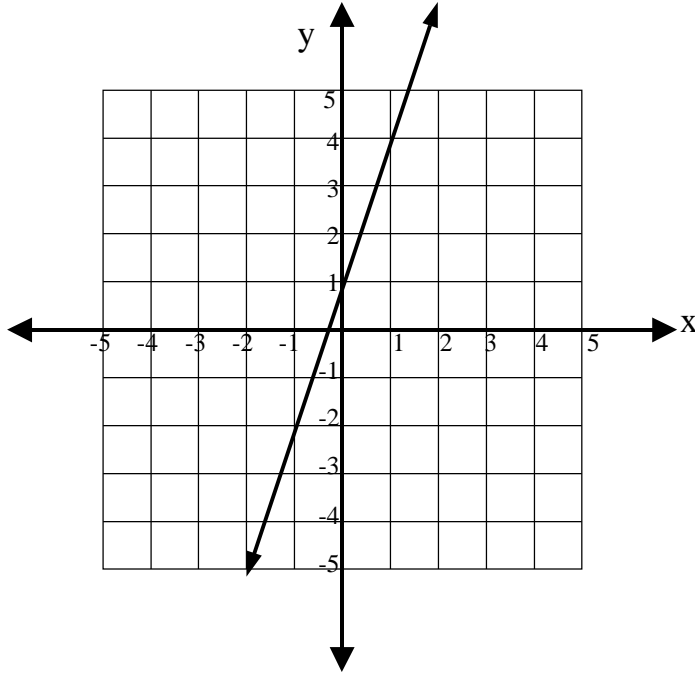
b) $3 \cdot 5 = 5 \cdot 3$

e) $3 + 5 = 9 - 1$

c) $3 + 5 = 5 + 3$

f) $3 \cdot 5 = 15$

17. Use the graph below to find the slope and the y-intercept of the line.



slope

y- intercept

18. Solve for n: $6n + 7 = 8n - 13$.

n= _____

19. Explain why your solution to problem 18 is correct.
