Name _____

Date _____ Pd. _____

Notes: Factoring using the Distributive Property

Multiplying	Factoring
$3(a + b) = 3a + 3b$	
$x(y - z) = xy - xz$	
$6y(2x + 1) = 6y(2x) + 6y(1)$ $= 12xy + 6y$	

Example 1 **Use the Distributive Property to factor $12mn + 80m^2$.**

Example 2 **Factor $6ax + 3ay + 2bx + by$ by grouping.**

Zero Product Property	

Example **Solve $9x^2 + x = 0$. Then check the solutions.**

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Exit Card: Factoring using the Distributive Property

A function for the number of handshakes for p people is given by $H(p)=\frac{1}{2}p^2-\frac{1}{2}p$.

Which of the following represents the **complete** factorization of *H(p)*?

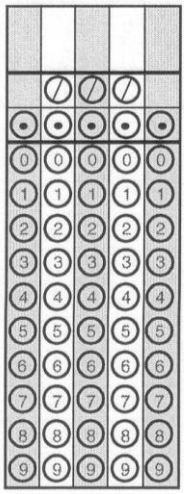
A. $\frac{1}{2}(p^2-p)$ **B.** $p\left(\frac{1}{2}p-\frac{1}{2}\right)$ **C.** $\frac{1}{2}p(p-1)$ **D.** $\frac{1}{2}p(p)$

The table below shows the number of handshakes that occur when each person in a group shakes every other persons hand once.

Number of People	Handshakes
2	1
3	3
4	6
5	10

A function for the number of handshakes for p people is given by $H(p)=\frac{1}{2}p^2-\frac{1}{2}p$.

If there are 8 people, how many handshakes will occur?



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Homework: Pages 484 – 486 (17, 19, 26, 30, 42 – 44, 60, 61, 64)

17. Factor $16a + 4b$

19. Factor $x^3y^2 + x$

26. Factor $a + a^2b^2 + a^3b^3$

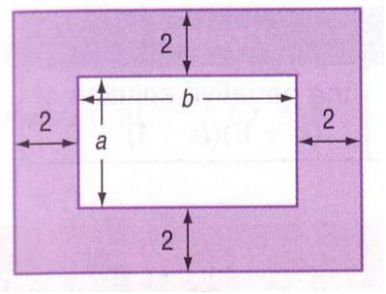
30. Factor $x^2 + 2x + 3x + 6$

Albertina is scheduling the games for a softball league. To find the number of games she needs to schedule, she uses the equation $g = \frac{1}{2}n^2 - \frac{1}{2}n$, where g represents the number of games needed for each team to play each other team exactly once and n represents the number of teams.

42. Write this equation in factored form.

43. How many games are needed for 7 teams to play each other exactly three times?

44. Write an expression in factored form for the area of the shaded region.



60. In a pool at a water park, a dolphin jumps out of the water traveling at 20 feet per second. If height, *h*, in feet, above the water after *t* seconds is given by the formula $h = 20t - 16t^2$. How long is the dolphin in the air before returning to the water?

61. Malik popped a ball straight up with an initial upward velocity of 45 feet per second. The height, *h*, in feet, of the ball above the ground is modeled by the equation $h = 2 + 45t - 16t^2$. How long was the ball in the air if the catcher catches the ball when it is 2 feet above the ground.

64. The total number feet in *x* yards, *y* feet, and *z* inches is

A $3x + y + \frac{z}{12}$

B $12(x + y + z)$

C $x = 3y + 36z$

D $\frac{x}{36} + \frac{y}{12} + z$