

Factoring Worksheet

Name: _____

Factor the following questions completely (remember to look for a common factor first)

******Please complete each question on a separate piece of paper******

1) $x^2 + 3x + 2$

2) $x^2 + 9x + 8$

3) $x^2 + 2x - 3$

4) $x^2 - 10x + 25$

5) $x^2 - 11x + 30$

6) $x^2 - 30x + 144$

7) $2x^2 + 5x + 3$

8) $6x^2 + x - 12$

9) $5x^2 - 9x - 2$

10) $5x^2 - 16x + 3$

11) $5x^2 - 9x - 18$

12) $2x^2 - x - 1$

13) $4x^2 - 18x + 14$

14) $9x^2 + 3x - 6$

15) $20x^2 + 8x - 28$

16) $26x^2 + 50x + 24$

17) $9x^2 + 15x - 66$

18) $2x^2 - 10x + 12$

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Factor the following questions completely (remember to look for a common factor first)

****Please complete each question on a separate piece of paper****

$$1) x^2 + 3x + 2 \quad \begin{matrix} \otimes 2 \\ \oplus 3 \end{matrix} \left\{ \begin{matrix} 1 \\ 2 \end{matrix} \right.$$

$$= (x+1)(x+2)$$

$$2) x^2 + 9x + 8 \quad \begin{matrix} \otimes 8 \\ \oplus 9 \end{matrix} \left\{ \begin{matrix} 1 \\ 8 \end{matrix} \right.$$

$$= (x+1)(x+8)$$

$$3) x^2 + 2x - 3 \quad \begin{matrix} \otimes -3 \\ \oplus 2 \end{matrix} \left\{ \begin{matrix} 3 \\ -1 \end{matrix} \right.$$

$$= (x+3)(x-1)$$

$$4) x^2 - 10x + 25 \quad \begin{matrix} / & DP & \backslash \\ x^2 & & 5^2 \end{matrix}$$

$$= (x-5)^2$$

$$5) x^2 - 11x + 30 \quad \begin{matrix} \otimes 30 \\ \oplus -11 \end{matrix} \left\{ \begin{matrix} -5 \\ -6 \end{matrix} \right.$$

$$= (x-5)(x-6)$$

$$6) x^2 - 30x + 144 \quad \begin{matrix} \otimes 144 \\ \oplus -30 \end{matrix} \left\{ \begin{matrix} -6 \\ -24 \end{matrix} \right.$$

$$= (x-6)(x-24)$$

$$7) 2x^2 + 5x + 3 \quad \begin{matrix} \otimes 6 \\ \oplus 5 \end{matrix} \left\{ \begin{matrix} 2 \\ 3 \end{matrix} \right.$$

$$= 2x^2 + 2x + 3x + 3$$

$$= 2x(x+1) + 3(x+1)$$

$$= (2x+3)(x+1)$$

$$8) 6x^2 + x - 12 \quad \begin{matrix} \otimes -72 \\ \oplus 1 \end{matrix} \left\{ \begin{matrix} -9 \\ 8 \end{matrix} \right.$$

$$= 6x^2 + 9x - 8x - 12$$

$$= 3x(2x+3) - 4(2x+3)$$

$$= (3x-4)(2x+3)$$

$$9) 5x^2 - 9x - 2 \quad \begin{matrix} \otimes -10 \\ \oplus -9 \end{matrix} \left\{ \begin{matrix} -10 \\ 1 \end{matrix} \right.$$

$$= 5x^2 - 10x + x - 2$$

$$= 5x(x-2) + 1(x-2)$$

$$= (5x+1)(x-2)$$

$$10) 5x^2 - 16x + 3 \quad \begin{matrix} \otimes 15 \\ \oplus -16 \end{matrix} \left\{ \begin{matrix} -15 \\ -1 \end{matrix} \right.$$

$$= 5x^2 - 15x - x + 3$$

$$= 5x(x-3) - 1(x-3)$$

$$= (5x-1)(x-3)$$

$$11) 5x^2 - 9x - 18 \quad \begin{matrix} \otimes -90 \\ \oplus -9 \end{matrix} \left\{ \begin{matrix} -15 \\ 6 \end{matrix} \right.$$

$$= 5x^2 - 15x + 6x - 18$$

$$= 5x(x-3) + 6(x-3)$$

$$= (5x+6)(x-3)$$

$$12) 2x^2 - x - 1 \quad \begin{matrix} \otimes -2 \\ \oplus -1 \end{matrix} \left\{ \begin{matrix} -2 \\ 1 \end{matrix} \right.$$

$$= 2x^2 - 2x + x - 1$$

$$= 2x(x-1) + 1(x-1)$$

$$= (2x+1)(x-1)$$

$$13) 4x^2 - 18x + 14$$

$$= 2(2x^2 - 9x + 7) \quad \begin{matrix} \otimes 14 \\ \oplus -9 \end{matrix} \left\{ \begin{matrix} -2 \\ -7 \end{matrix} \right.$$

$$= 2(2x^2 - 2x - 7x + 7)$$

$$= 2(2x(x-1) - 7(x-1))$$

$$= 2(2x-7)(x-1)$$

$$14) 9x^2 + 3x - 6 \quad \begin{matrix} \otimes -6 \\ \oplus 1 \end{matrix}$$

$$= 3(3x^2 + x - 2)$$

$$= 3(3x^2 + 3x - 2x - 2)$$

$$= 3(3x(x+1) - 2(x+1))$$

$$= 3(3x-2)(x+1)$$

$$15) 20x^2 + 8x - 28 \quad \begin{matrix} \otimes -35 \\ \oplus 2 \end{matrix}$$

$$= 4(5x^2 + 2x - 7)$$

$$= 4(5x^2 - 5x + 7x - 7)$$

$$= 4(5x(x-1) + 7(x-1))$$

$$= 4(5x+7)(x-1)$$

$$16) 26x^2 + 50x + 24 \quad \begin{matrix} \otimes 156 \\ \oplus 25 \end{matrix}$$

$$= 2(13x^2 + 25x + 12)$$

$$= 2(13x^2 + 13x + 12x + 12)$$

$$= 2(13x(x+1) + 12(x+1))$$

$$= 2(13x+12)(x+1)$$

$$17) 9x^2 + 15x - 66 \quad \begin{matrix} \otimes -66 \\ \oplus 5 \end{matrix} \left\{ \begin{matrix} 11 \\ -6 \end{matrix} \right.$$

$$= 3(3x^2 + 5x - 22)$$

$$= 3(3x^2 - 6x + 11x - 22)$$

$$= 3(3x(x-2) + 11(x-2))$$

$$= 3(3x+11)(x-2)$$

$$18) 2x^2 - 10x + 12 \quad \begin{matrix} \otimes -35 \\ \oplus 2 \end{matrix}$$

$$= 2(x^2 - 5x + 6)$$

$$= 2(x-3)(x-2)$$