

Answers to factoring worksheet ( $x^2+bx+c$ )

1.  $(b+7)(b+1)$

2.  $(n-10)(n-1)$

3.  $(m-9)(m+10)$

4.  $(n-2)(n+6)$

5.  $(n-1)(n-9)$

6.  $(b+8)(b+8) = (b+8)^2$

15.  $2(n+9)(n-6)$

16.  $5(n^2+2n+4)$

17.  $2(k+5)(k+6)$

22.  $4(v+1)(v-2)$   
 $4(v-2)(v+1)$

### 3.6 Polynomials of the form $ax^2+bx+c$

Reverse the process of multiplication  
to factor trinomials of the form  $ax^2+bx+c$

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1<sup>st</sup> multiply:

$$(2x+5)(3x+1)$$

$$2x(3x+1) + 5(3x+1)$$

$$6x^2 + 2x + 15x + 5$$

$$6x^2 + 17x + 5$$

Now factor

$$5x^2 - 14x + 8$$

$$5x^2 - 10x - 4x + 8$$

$$5x(x-2) - 4(x-2)$$

$$(5x-4)(x-2)$$

$$\begin{array}{r} 40 \\ -40 \overline{) -1} \\ -10 \overline{) -4} \end{array}$$

Ex: Factor  $6x^2 + 5x - 4$

$$6x^2 - 3x + 8x - 4$$

$$3x(2x-1) + 4(2x-1)$$

$$(3x+4)(2x-1)$$

$$\begin{array}{r} -24 \\ -1 \overline{) 24} \\ -2 \overline{) 12} \\ -3 \overline{) 8} \\ -4 \overline{) 6} \\ 1 \overline{) -24} \\ 2 \overline{) -12} \\ 3 \overline{) -8} \\ 4 \overline{) -6} \end{array}$$

check:  $(3x+4)(2x-1)$

$$3x(2x-1) + 4(2x-1)$$

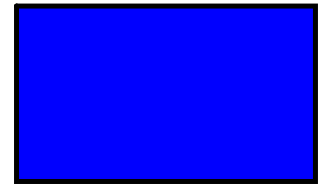
$$6x^2 - 3x + 8x - 4$$

$$6x^2 + 5x - 4$$

Ex: Factor  $2x^2 + 13x + 21$

$$\begin{array}{r|l} 42 & \\ \hline 1 & 42 \\ 2 & 21 \\ 3 & 14 \\ 6 & 7 \end{array}$$

$$\begin{aligned} & 2x^2 + 6x + 7x + 21 \\ & 2x(x + 3) + 7(x + 3) \\ & (2x + 7)(x + 3) \end{aligned}$$



Ex: Factor  $3x^2 - 20x - 63$

$$\begin{array}{r|l} -189 & \\ \hline 7 & -27 \end{array}$$

$$\begin{aligned} & 3x^2 + 7x - 27x - 63 \\ & x(3x + 7) - 9(3x + 7) \\ & (x - 9)(3x + 7) \end{aligned}$$

Ex: Factor  $2x^2 + 15x + 7$   
 $(2x + 1)(x + 7)$

Factor:  $3x^2 + 5x - 12$   
 $(3x - 4)(x + 3)$

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