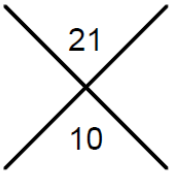
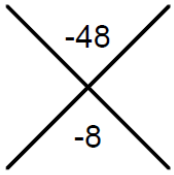
Diamond Math Problems

Complete the diamond problems. The top cell contains the **product** of the numbers in the left and right cells, while the bottom contains the **sum**.

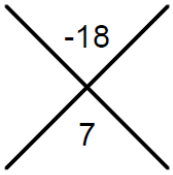
(1)



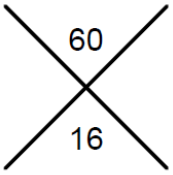
(2)



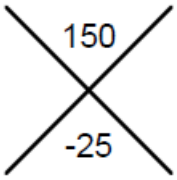
(3)



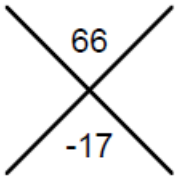
(4)



(5)



(6)



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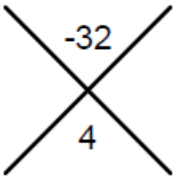
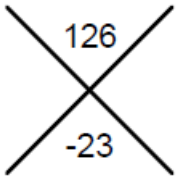


(8)



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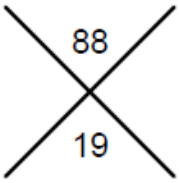

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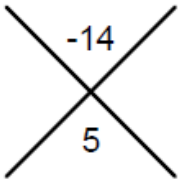

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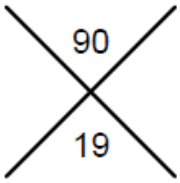
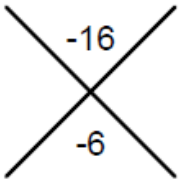


(12)



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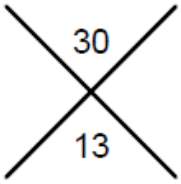

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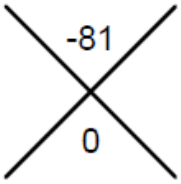

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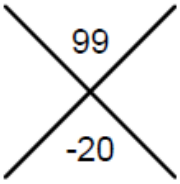

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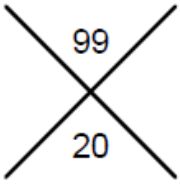
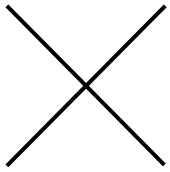
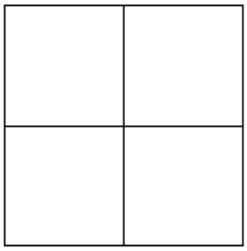
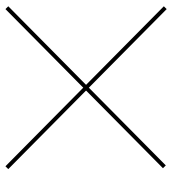
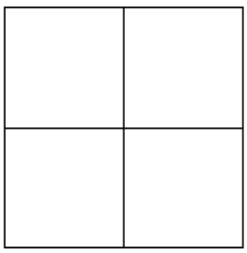


Factoring Trinomials

Example: $x^2 - 4x - 32$

Steps (written out)	Steps (worked out)
1) Multiply *a* and *c* together. Place that number in the bottom of the x. Place *b* in the top of the x. Find two numbers that **multiply** to get the bottom number and **add** to get the top number.	
2) Create a 2x2 box and place the first term of your **original** binomial in the first box. Place the last term of your **original** binomial in the last box. Fill in the remaining 2 boxes with the numbers on the left and right of your x from above. Be sure to place an x after each number.	
3) Find the GCF of each row and column and write it in the corresponding area. Write these as the two binomials for the factored form.	
4) Check you work by multiplying the binomials together to see if you get your original trinomial.	Factored Form: _____

Example: $5v^2 + 27v + 10$

Steps (written out)	Steps (worked out)
1) Multiply *a* and *c* together. Place that number in the bottom of the x. Place *b* in the top of the x. Find two numbers that **multiply** to get the bottom number and **add** to get the top number.	
2) Create a 2x2 box and place the first term of your **original** binomial in the first box. Place the last term of your **original** binomial in the last box. Fill in the remaining 2 boxes with the numbers on the left and right of your x from above. Be sure to place an x after each number.	
3) Find the GCF of each row and column and write it in the corresponding area. Write these as the two binomials for the factored form.	
4) Check you work by multiplying the binomials together to see if you get your original trinomial.	Factored Form: _____

1) $3x^2 + 8x + 5$

2) $4a^2 - a - 5$

3) $4x^2 - 11x + 6$

4) $3x^2 + 17x + 10$

5) $6x^2 - 5x - 1$

6) $2m^2 + 5m + 2$

7) $6m^2 - 11m - 10$

8) $4v^2 - v - 14$

Factoring – Special Cases

When factoring quadratics, there are two types of special cases.

Difference of Two Squares $(x^2 - a^2) = (x + a)(x - a)$

Perfect Square Trinomials $((ax)^2 + 2abx + b^2) = (ax + b)^2$

$((ax)^2 - 2abx + b^2) = (ax - b)^2$

When factoring quadratics that are special cases, you can still factor in the same way that we have previously done. The only difference is that you may have to add a 0 term in your expression or change the way you write final answer.

1) $x^2 + 12x + 36$

2) $x^2 - 9$

3) $4x^2 - 25$

4) $4x^2 - 16x + 16$

5) $x^2 + 20x + 100$

6) $9x^2 - 16y^2$