

Remember:

$$(a + b)^2 = a^2 + 2ab + b^2$$

and

$$(a - b)^2 = a^2 - 2ab + b^2$$

Today we're starting with trinomials that fit the Perfect Square Trinomial pattern, and factoring them into a binomial squared.

$$x^2 - 10x + 25 = (x - 5)^2$$

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Consider the following trinomials

$$\begin{array}{ccc} x^2 + 6x + 9 & & \\ x \cdot x & 3 \cdot 3 & \\ 2(x \cdot 3) = 6x & & \end{array}$$

This is a P□T

$$\begin{array}{ccc} x^2 + 10x + 9 & & \\ x \cdot x & 3 \cdot 3 & \\ 2(x \cdot 3) \neq 10x & & \end{array}$$

This is NOT a P□T!

If it fits the P□T pattern, then use the two factors to write a square binomial  $(x + 3)^2$

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thinking color  
Try these:

answer color

$$\begin{array}{ccc} x^2 + 8x + 16 & \text{P}\square\text{T} & n^2 - 16n + 64 & \text{P}\square\text{T} \\ a^2 = x^2 & & a^2 = n^2 & \\ a = x & & a = n & \\ b^2 = 16 & & b^2 = 64 & \\ b = 4 & & b = 8 & \\ 2ab = 8x & & 2ab = 16n & \\ (x + 4)^2 & & (n - 8)^2 & \end{array}$$
  
$$\begin{array}{ccc} 9g^2 - 12g + 4 & \text{P}\square\text{T} & 4t^2 + 36t + 81 & \text{P}\square\text{T} \\ a^2 = 9g^2 & & a^2 = 4t^2 & \\ a = 3g & & a = 2t & \\ b^2 = 4 & & b^2 = 81 & \\ b = 2 & & b = 9 & \\ 2ab = 12g & & 2ab = 36t & \\ (3g - 2)^2 & & (2t + 9)^2 & \end{array}$$

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In 9.4 we talked about the only time that two binomials would ever multiply to make a binomial. Who remembers what's special about this case?

*The Difference of Two Squares:*

$$a^2 - b^2 = (a + b)(a - b)$$

This is pure memorization!! Anytime there are only 2 terms, check to see if they're both perfect squares!!

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|   |   |
|---|---|
| <p>thinking<br/>color</p> <p>Factor</p>   | <p>answer<br/>color</p>   |
| $x^2 - 36$<br>D2 □<br>$(x+6)(x-6)$<br>$a^2 = x^2$ $b^2 = 36$<br>$a = x$ $b = 6$<br>$9v^2 - 4$<br>D2 □<br>$(3v+2)(3v-2)$<br>$a^2 = 9v^2$ $b^2 = 4$<br>$a = 3v$ $b = 2$ | $p^2 - 49$<br>D2 □<br>$(p+7)(p-7)$<br>$a^2 = p^2$ $b^2 = 49$<br>$a = p$ $b = 7$<br>$4w^2 - 1$<br>D2 □<br>$(2w+1)(2w-1)$ |

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|  |   |   |
|--|---|---|
| $8y^2 - 50$<br>D2<br>$2(4y^2 - 25)$<br>D2 □<br>$2(2y+5)(2y-5)$ | $3c^2 - 75$<br>D2<br>$3(c^2 - 25)$<br>D2 □<br>$3(c+5)(c-5)$ | $28k^2 - 7$<br><br><br><br>$7(4k^2 - 1)$<br>$7(2k+1)(2k-1)$ |
|--|---|---|

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Homework  
page 493 # 2-52 even  
SHORTCUTS ONLY!!!!