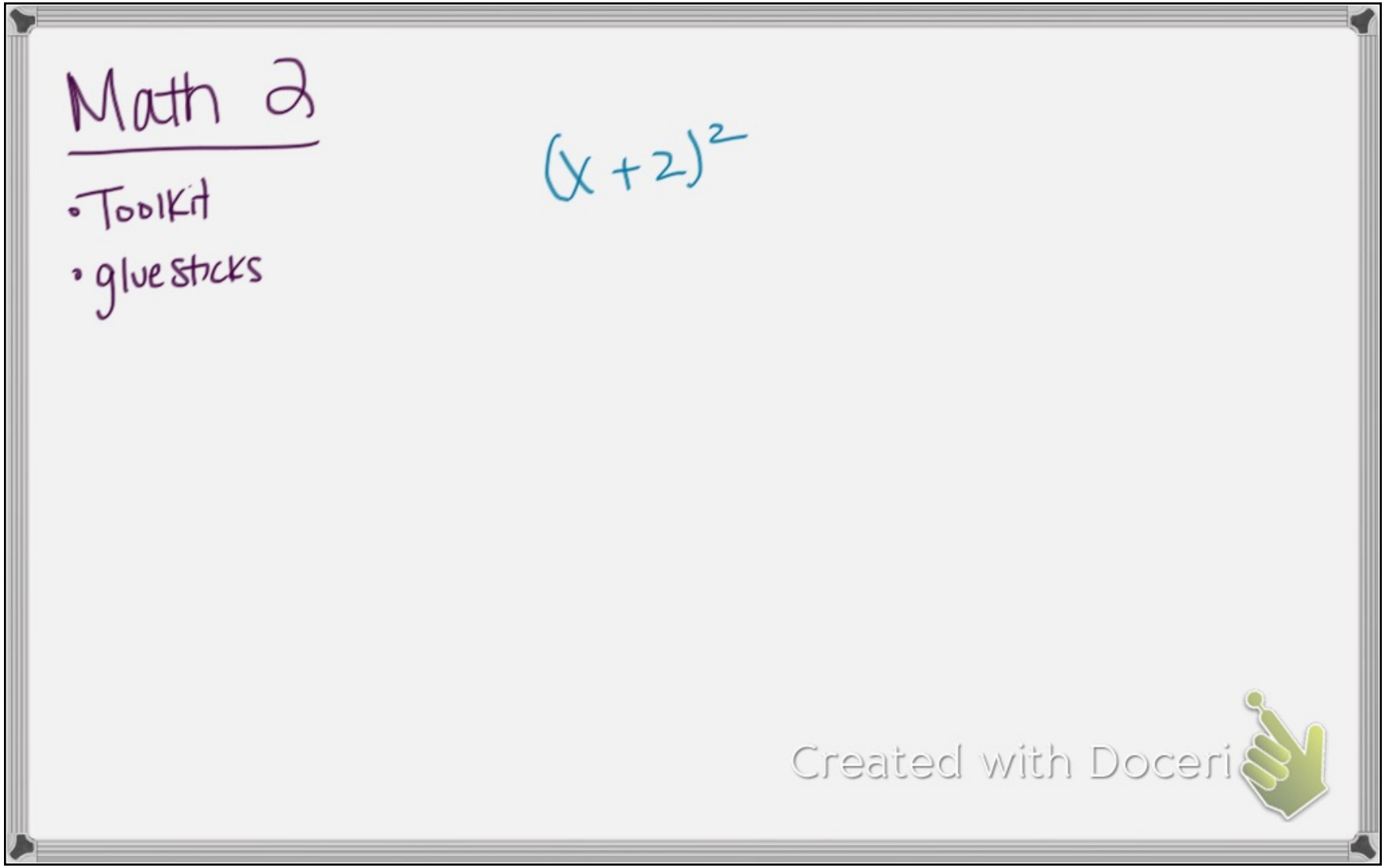
Math 2
• Toolkit
• glue sticks
$(x+2)^2$
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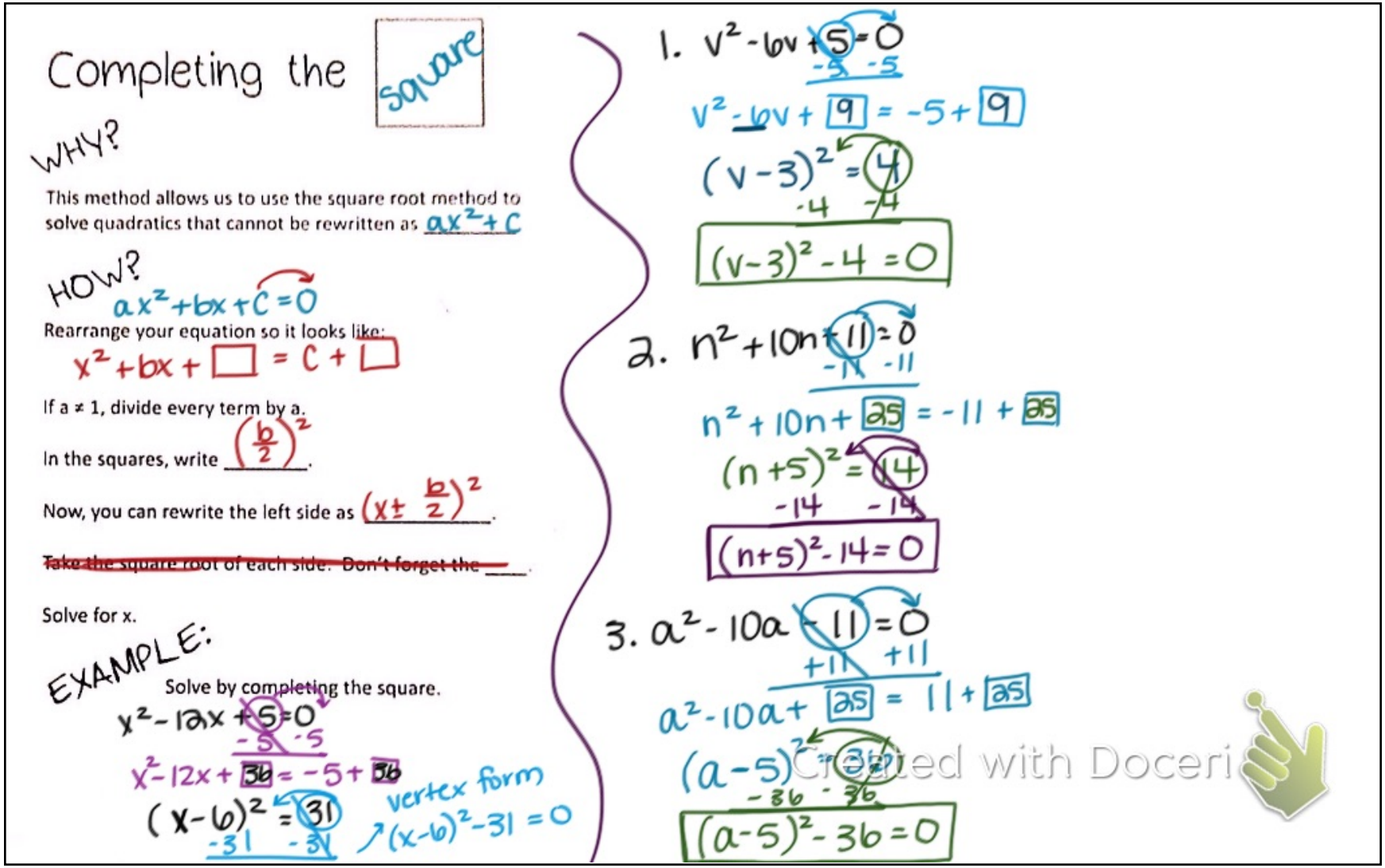
Completing the square
WHY?
This method allows us to use the square root method to solve quadratics that cannot be rewritten as ax^2+c
HOW?
$ax^2+bx+c=0$
Rearrange your equation so it looks like:
$x^2+bx+\square=c+\square$
If a ≠ 1, divide every term by a.
In the squares, write $\left(\frac{b}{2}\right)^2$.
Now, you can rewrite the left side as $(x\pm\frac{b}{2})^2$.
~~Take the square root of each side. Don't forget the ±~~
Solve for x.
EXAMPLE:
Solve by completing the square.
$x^2-12x+5=0$
$x^2-12x+36=-5+36$
$(x-6)^2=31$
$-31\ \ -31$
vertex form
$(x-6)^2-31=0$
1. $v^2-6v+5=0$
$v^2-6v+9=-5+9$
$(v-3)^2=4$
$-4\ \ -4$
$(v-3)^2-4=0$
2. $n^2+10n+11=0$
$n^2+10n+25=-11+25$
$(n+5)^2=14$
$-14\ \ -14$
$(n+5)^2-14=0$
3. $a^2-10a+11=0$
$a^2-10a+25=11+25$
$(a-5)^2=36$
$-36\ \ -36$
$(a-5)^2-36=0$
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16. $2x^2 - 8x + 16 = 0$

$-16 \quad -16$

$2x^2 - 8x + \square = -16 + \square$

$2(x^2 - 4x + \boxed{4}) = -16 + \boxed{8}$

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

$-2 \quad -2$

$\boxed{2(x-2)^2 - 2 = 0}$

17. $2v^2 - 4v + 16 = 0$

$+16 \quad +16$

$2v^2 - 4v + \square = 16 + \square$

$2(v^2 - 2v + \boxed{1}) = 16 + \boxed{2}$

$2(v-1)^2 = 18$

$-18 \quad -18$

$\boxed{2(v-1)^2 - 18 = 0}$

13. $n^2 + 24 = -10n$

$+10n \quad +10n$

$n^2 + 10n + 24 = 0$