SYNTHETIC DIVISION

EXAMPLE:

Divide:
$$X^3 - 2X^2 - 8X - 35$$
by $(X - 5)$.

ZERO IS **5**

GRAB THE COEFFICIENTS
$$X^3 - 2X^2 - 8X - 35$$

5 | 1 -2 -8 -35

ADD ADD ADD

5 15 35

MULTIPLY

1 ×5 3 ×5 7 ×5 0 ✓

MULTIPLY ADD REPEAT MULTIPLY ADD REPEAT MULTIPLY ADD REPEAT...

ANSWER → $X^2 + 3X + 7$

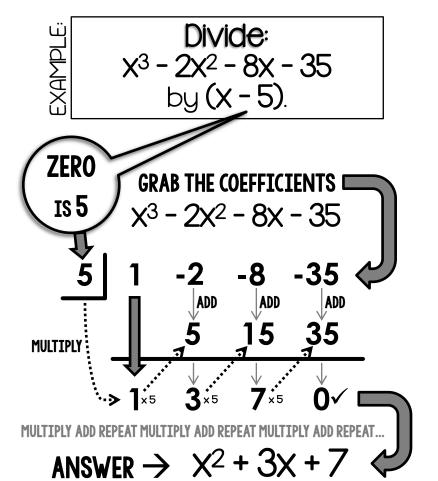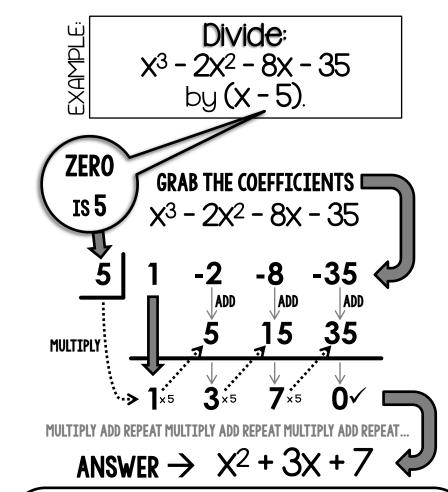**STEPS**
1: write the known zero in the house
2: list out the coefficients
3: bring down the 1st coefficient
4: multiply the 1st coefficient by house number
5: write the product under the 2nd coefficient
6: add down
7: repeat
8: use final numbers to write polynomial
9: use the Quadratic Formula to find the other zeros