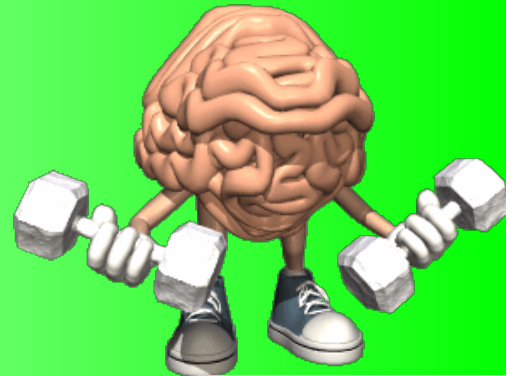Expand and Simplify

$$(x-3)^3 - (x+2)^2$$

$$= (x-3)(x-3)(x-3) - (x+2)(x+2)$$

$$= (x^2 - 3x - 3x + 9)(x-3) - (x^2 + 2x + 2x + 4)$$

$$= (x^2 - 6x + 9)(x-3) - (x^2 + 4x + 4)$$

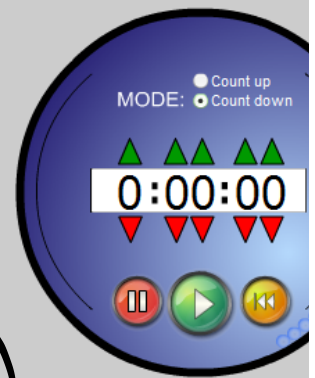$$= x^3 - 3x^2 - 6x^2 + 18x + 9x - 27 - (x^2 + 4x + 4)$$

watch sign

$$= x^3 - 9x^2 + 27x - 27 - x^2 - 4x - 4$$

collect like terms

$$= x^3 - 9x^2 - x^2 + 27x - 4x - 27 - 4$$

$$= x^3 - 10x^2 + 23x - 31$$

Expand and Simplify

$$(x-3)^3 - (x+2)^2$$

$$(x-3)(x-3)(x-3) \quad - \quad (x+2)(x+2)$$

$$(x^2 - 3x - 3x + 9)(x-3) \quad - \quad (x^2 + 2x + 2x + 4)$$

$$(x^2 - 6x + 9)(x-3) \qquad -x^2 - 4x - 4$$

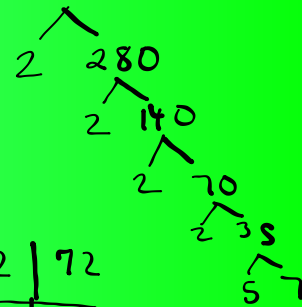$$x^3 - 3x^2 - 6x^2 + 18x + 9x - 27 - x^2 - 4x - 4$$

$$\boxed{x^3 - 10x^2 + 23x - 31}$$

Quiz Tuesday

- Prime factorization

Example: Prime factorization of 560

$$560 = 2 \times 2 \times 2 \times 2 \times 5 \times 7$$

```
2   280
  2   140
    2   70
      2   35
          5   7
```

- Greatest Common Factor

Example: 56, 72

$LCM = 2 \times 2 \times 2 \times 7 \times 9 = 504$

$GCF = 2 \times 2 \times 2 = 8$

Example: $(3xy + 6x^2y^3 - 24x)$

$$3x(y + 2xy^3 - 8)$$

	52	72
2	28	36
2	14	18
2	7	9

- Multiplying polynomials

Example: $(2x-7)(5x+3)^2$

$$(2x-7)(5x+3)(5x+3)$$

$$= (10x^2 + 6x - 35x - 21)(5x+3)$$

Combine like terms

$$= (10x^2 - 29x - 21)(5x+3)$$

$$= 50x^3 + 30x^2 - 145x^2 - 87x - 105x - 63$$

collect like term

$$= 50x^3 - 115x^2 - 192x - 63$$

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  Questions 9cd, 15ce, 18c, ~~22c~~

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  Question 1a~~bc~~, ~~2ab~~, 4a~~c~~

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  Questions ~~6(a)~~, ~~10~~, ~~14~~, ~~15b~~, 16c