Are there any questions from last day's assigned work you would like to see on the board?
Correct 3.1.1 from previous lesson
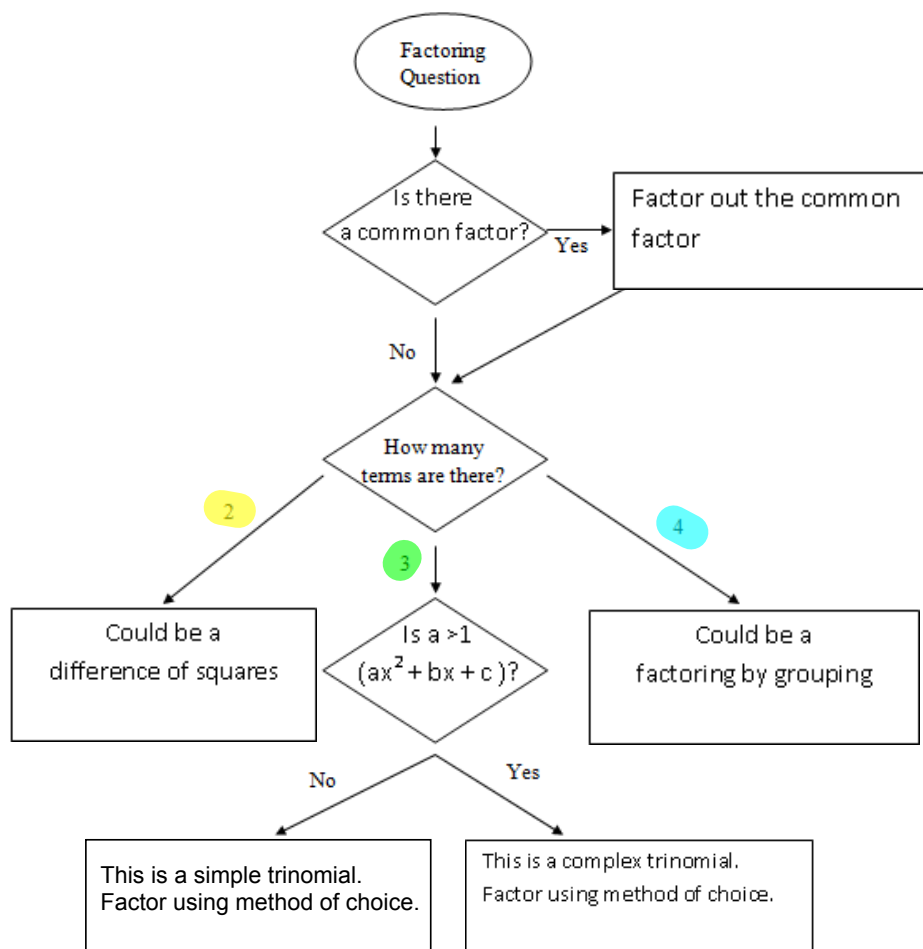Check "Part C", and Last day's Assigned Pracce: 3.1.3

Today's Learning Goal(s):

By the end of the class, I will be able to:

a) factor any polynomial using common factoring first.
b) factor a binomial which is a difference of squares.
c) factor various trinomials.
d) use grouping and the methods above to
     factor cubic and quartic expressions.

3.2.2: Factoring Strategies

Date: _Oct. 10/19_

Factoring is the process where a _polynomial expression_ is written as a _product_ of other algebraic expressions.

```
                    ┌─────────────┐
                    │  Factoring  │
                    │  Question   │
                    └─────────────┘
                           │
                           ▼
                   ╱  Is there   ╲          ┌──────────────────────┐
                  ╱ a common factor? ╲ Yes  │ Factor out the common │
                   ╲              ╱  ───────▶│ factor                │
                    ╲          ╱            └──────────────────────┘
                       │ No
                       ▼
                   ╱ How many ╲
                  ╱ terms are there? ╲
            (2) ╱                    ╲ (4)
               ╱        (3) │          ╲
              ▼             ▼           ▼
    ┌──────────────┐  ╱ Is a >1  ╲  ┌──────────────┐
    │ Could be a   │ ╱ (ax²+bx+c)? ╲ │ Could be a   │
    │ difference   │  ╲           ╱  │ factoring by │
    │ of squares   │   ╲        ╱    │ grouping     │
    └──────────────┘  No ╲    ╱ Yes  └──────────────┘
                        ▼      ▼
              ┌────────────────┐ ┌────────────────────┐
              │ This is a      │ │ This is a complex   │
              │ simple         │ │ trinomial.          │
              │ trinomial.     │ │ Factor using method │
              │ Factor using   │ │ of choice.          │
              │ method of      │ └────────────────────┘
              │ choice.        │
              └────────────────┘
```

Factoring is used to solve polynomial equations and to graph polynomial function Factoring will be used in this unit to accomplish these tasks.

3.2.3: Let's Practice Factoring

Date: Oct. 10/19

1. Factor by common factoring.

a) $a^3b^2 + ab^3$

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

b) $25x^8 - 30x^5 + 35x$

$$= 5x(5x^7 - 6x^4 + 7)$$

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

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

$y^2 + 0y - 81$

2. Factor as a difference of squares.

a) $y^2 - 81$

$$= (y-9)(y+9)$$

b) $9m^2 - 1$

$$= (3m+1)(3m-1)$$

c) $169x^2 - 144z^2$

$$= (13x - 12z)(13x + 12z)$$

3. Factor as a simple trinomial.

a) $t^2 + 3t - 10$ P: -10
S: 3

$$= t^2 + 5t - 2t - 10$$

$$= t(t+5) - 2(t+5)$$ -2 +5

$$= (t+5)(t-2)$$

1 +10

b) $x^2 - 10x - 24$

$$= (x+2)(x-12)$$

1 -24
2 -12
3 -8
4 -6

c) $x^2 - 8x + 16$

$$= (x-4)(x-4)$$

d) $x^4 + 6x^2 + 8$

$$= (x^2 + 2)(x^2 + 4)$$

4. Factor.

a) $3m^2 - m - 30$ P: -90
S: -1

$$= 3m^2 + 9m - 10m - 30$$

$$= 3m(m+3) - 10(m+3)$$

$$= (m+3)(3m-10)$$

1 90
2 45
3 30
4
5 18
6 15
7
8
9 -10

b) $8m^2 - 5m - 3$ P: -24 S: -5

$$= 8m^2 + 3m - 8m - 3$$

$$= m(8m+3) - 1(8m+3)$$

$$= (8m+3)(m-1)$$

1 -24
2 -12
3 -8
4 -6
5
6

c) $7x^2 + x - 8$

$$= 7x^2 + 8x - 7x - 8$$ 9 -10

$$= x(7x+8) - 1(7x+8)$$

$$= (7x+8)(x-1)$$

5. Factor by grouping.

a) $a^2 - 2a + ad - 2d$

$= a(a-2) + d(a-2)$

$= (a-2)(a+d)$

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

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

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

c) $y^3 + y^2 + 2y + 2$

$= y^2(y+1) + 2(y+1)$

$= (y^2+2)(y+1)$

6. Factor fully. It might be necessary to use more than one factoring strategy in order to fully factor these polynomial expressions.

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

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

$= x(x-2)(x-1)$

b) $2x^4 - 18x^2$

$= 2x^2(x^2 - 9)$

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

c) $x^3 - x^2 - 4x + 4$

$= x^2(x-1) - 4(x-1)$

$= (x-1)(x^2-4)$

$= (x-1)(x-2)(x+2)$

Today's Assigned Practice includes: 3.2.4 & 3.2.5
Factoring Quiz 3.1 on Wednesday, Oct. 16, 2019