Warm up week 10

Solve the equations by factoring: ( )( )

1) $4x^2+32x+63$

1,4
2,2

1,63
3,21
7,9

$(2x+7)(2x+9)$ ✓

14x
18x

2) $8x^2+2x-3$

1,8
2,4

1,3

$(7x-1)(4x+3)$ ✓

-4x
6x

Homework Questions?

48] $16 \cdot \frac{1}{16}s^2 = 4 \cdot 16$

$\sqrt{s^2} = \sqrt{64}$

$s = \pm 8$

$s = 8$
$s = -8$

Self Scoring Scale

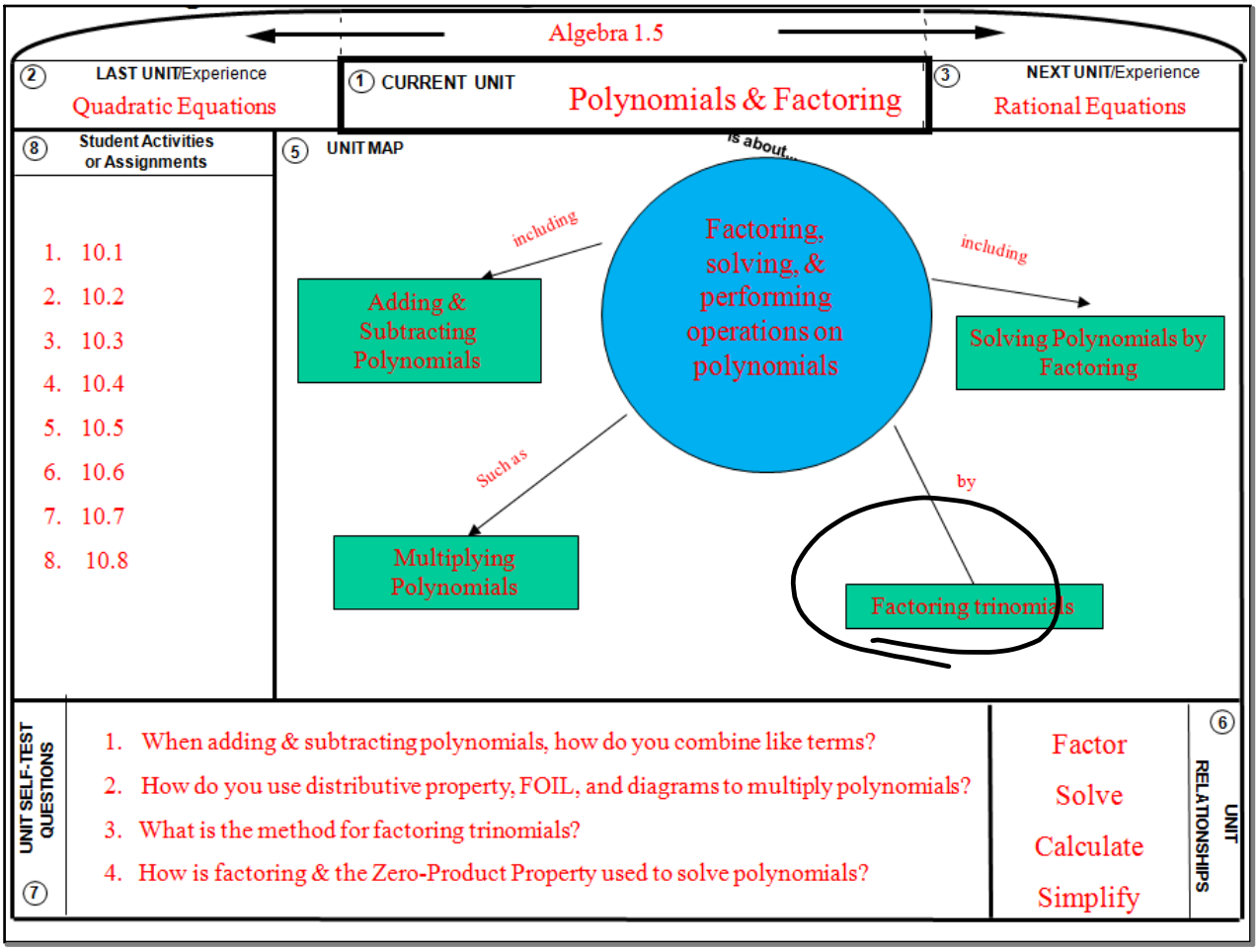
4- I can *summarize* the concepts and explain it to others.

3- I can *apply* the concepts to answer questions correctly.

2- I can *apply* the concepts but with some *mistakes*.

1- I *need help* to know how to apply the concepts.

0- I *can't* apply the concepts even with help.



10.7 Factoring Special Products

Goals:

- Use special product patterns to factor quadratic polynomials.
- Solve quadratic equations by factoring.

EQ: How do you solve $m^2 - 4$?

Perfect Squares

0, 1, 4, 9, 16, 25, 36, 49, 64,

81, 100, 121, 144, 169, 196, 225

FACTORING SPECIAL PRODUCTS

$\sqrt{9x^2} - \sqrt{16}$

Difference of Two Squares Pattern

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

Example

$9x^2 - 16 = (3x + 4)(3x - 4)$

12x, -12x

Perfect Square Trinomial Pattern

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

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

Example

$x^2 + 8x + 16 = (x + 4)^2$

$x^2 - 12x + 36 = (x - 6)^2$

16, 4, 4, 8

$(x+4)(x+4)$

4x, 4x

36, -6, -6, -12

$(x-6)(x-6)$

-6x, -6x

Example 1: Factoring the Difference of Two Squares

a) $n^2 - 225$ → $n^2 + 0n - 225$

$(n + 15)(n - 15)$ ✓

15n, -15n

b) $121x^2 - 144$

$(11x + 12)(11x - 12)$ ✓

132x, -132x

c) $\frac{243p^2}{3} - \frac{147}{3}$

$-49 + 81p^2$

$81p^2 - 49$

$3(81p^2 - 49)$

$3(9p - 7)(9p + 7)$ ✓

-63p, 63p

Example 2: Factoring Perfect Square Trinomials

a) $x^2 + 40x + 400$

$(x+20)(x+20)$ ✓

20x 20x

400 | 20 20 | 40

b) $9y^2 - 12y + 4$

36 | -6 -6 | -12

$(x-\frac{6}{9})(x-\frac{6}{9})$

$(x-\frac{2}{3})(x-\frac{2}{3})$

$(3x-2)(3x-2)$ ✓

-6x -6x

$(3y-2)(3y-2)$

-6y -6y

c) $5c^2 + 40c + 80$

$\frac{5}{5} \quad \frac{5}{5} \quad \frac{5}{5}$

$5(c^2+8c+16)$

$5(c+4)(c+4)$ ✓

4c 4c

$5(c+4)^2$

Try It Complete the following exercises.

1. Factor $\frac{16}{25}m^2 - \frac{1}{4}$.

$\sqrt{\frac{16}{25}m^2} - \sqrt{\frac{1}{4}}$

$\left(\frac{4}{5}m - \frac{1}{2}\right)\left(\frac{4}{5}m + \frac{1}{2}\right)$ ✓

$-\frac{4}{10}m$ $\frac{4}{10}m$

FINISH: p.615 #48-59
(Due Wednesday)

10.7 Homework

p.622 #6-11, 18-48even

$x^2 - y^2$

$(x + y)(x - y)$