

Warm Up

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

	$2x$	-3
$2x$	$4x^2$	$-6x$
-3	$-6x$	9

$4x^2 - 9$

$$(5x - 2)(5x - 2)$$

$$\begin{array}{r} 5x - 2 \\ \hline 25x^2 - 9 \end{array}$$

	$5x$	-2
$5x$	$25x^2$	$-10x$
-2	$-10x$	4

$25x^2 - 20x + 4$

$$25x^2 - 20x + 4$$

Homework Questions?

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*.

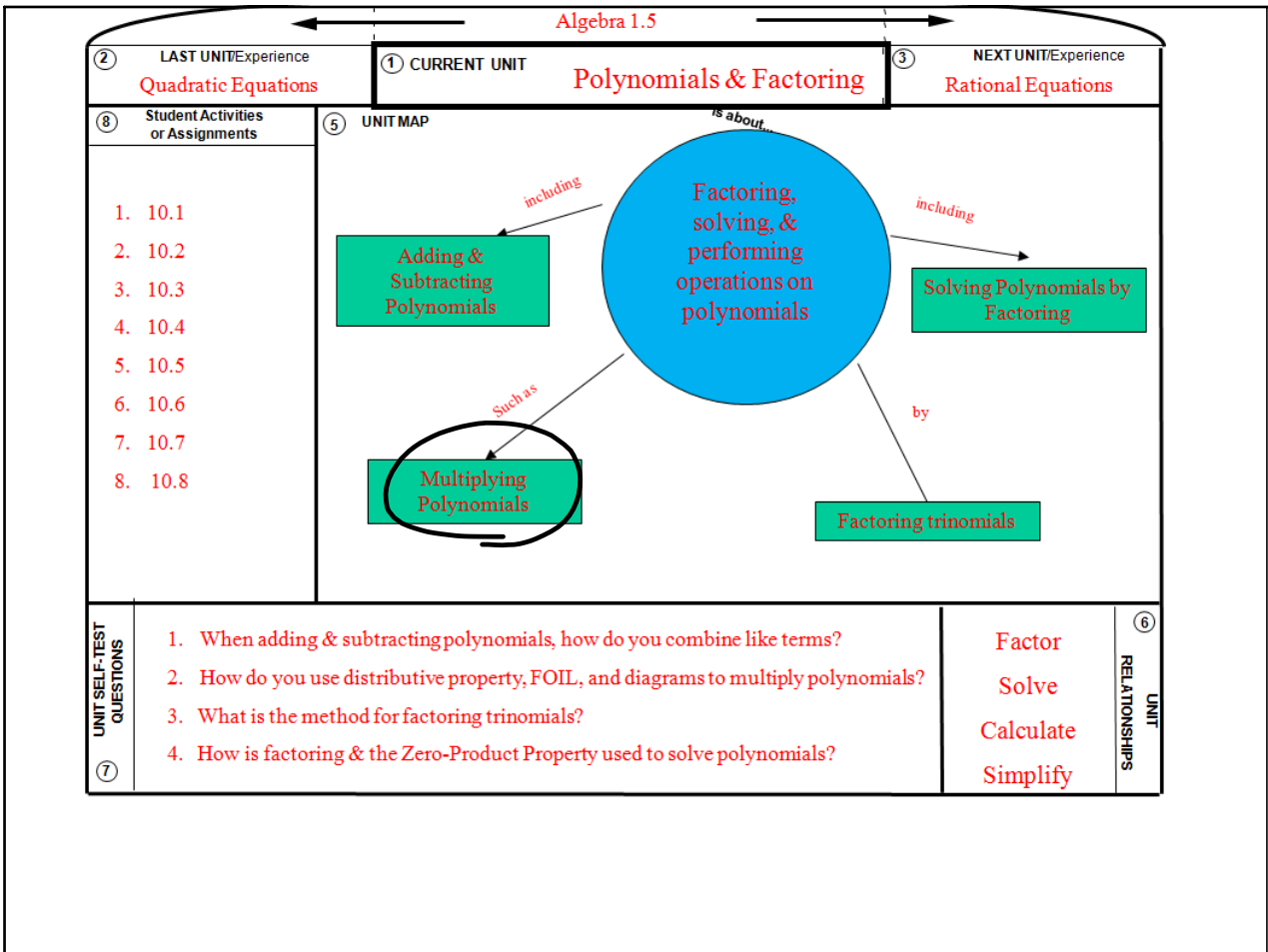
1- I *need help* to know how to apply the concepts.

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

10.3 Special Products of Polynomials

- Goals:**
- Use special patterns for the product of a sum and a difference, and for the square of a binomial.
 - Use special products as real-life models.

EQ: How do you solve $(3x - 4)^2$?



SPECIAL PRODUCT PATTERNS

Sum and Difference Pattern
 $(a + b)(a - b) = a^2 - b^2$ Example: $(3x - 4)(3x + 4) = 9x^2 - 16$

Square of a Binomial Pattern
 $(a + b)^2 = a^2 + 2ab + b^2$ Example: $(x + 4)^2 = (x+4)(x+4)$
 $(a - b)^2 = a^2 - 2ab + b^2$ Example: $(2x - 6)^2 = (2x-6)(2x-6)$

$(\quad)^2 = (\quad) (\quad)$

x	x	4)
x	x ²	4x)
4	4x	16)

$x^2 + 8x + 16$

Example 1: Using the Sum and Difference PatternFind the product $(9w + 3)(9w - 3)$.

	$9w$	-3
$9w$	$81w^2$	$-27w$
3	$27w$	-9

$81w^2 - 9$

Example 2: Squaring a Binomial

Find the product.

a. $(12x + 4)^2$

$(12x + 4)(12x + 4)$

	$12x$	4
$12x$	$144x^2$	$48x$
4	$48x$	16

$144x^2 + 96x + 16$

b. $(3k - 2m)^2$

$(3k - 2m)(3k - 2m)$

	$3k$	$-2m$
$3k$	$9k^2$	$-6km$
$-2m$	$-6km$	$4m^2$

$9k^2 + 4m^2 - 12km$

Example 3: Special Products and Mental Math

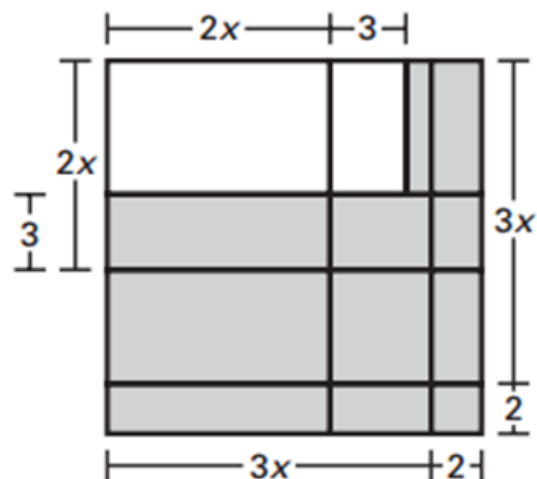
Use mental math to find the product.

a. $47 \cdot 53$

b. 63^2

Example 4: Finding an Area

Geometry Connection - Find an expression for the area A of the shaded region.



Example 5: Modeling a Punnett Square

Science Connection - The Punnett square at the right is an area model that shows the possible results of crossing two pea plants that are each heterozygous for pod color, carrying the dominant green-pod allele G and the recessive yellow-pod allele g . Each parent pea plant passes along only one allele for color to its offspring.

Show how the square of a binomial can be used to model the Punnett square.

	G	g
G	GG (green)	Gg (green)
g	Gg (green)	gg (yellow)

Try It Complete the following exercises.

1. Find the product $(11m + 2)(11m - 2)$.

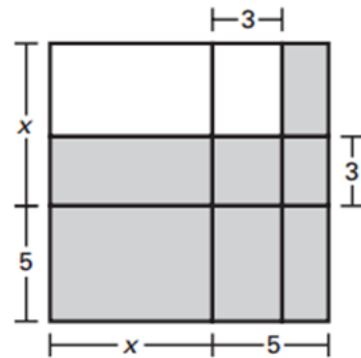
$$\begin{array}{r}
 11m \quad -2 \\
 11m \quad 2 \\
 \hline
 121m^2 \quad -22m \\
 22m \quad -4 \\
 \hline
 121m^2 - 4
 \end{array}$$

2. Find the product $(9c - 1)^2 = (9c - 1)(9c - 1)$

$$\begin{array}{r}
 9c \quad -1 \\
 9c \quad -1 \\
 \hline
 81c^2 \quad -9c \\
 -9c \quad 1 \\
 \hline
 81c^2 - 18c + 1
 \end{array}$$

3. Explain how to use mental math to evaluate the power 99^2 .

4. Find an expression for the area of the shaded region.



5. Two pea plants are crossed, each heterogoneous for seed shape. Their seed shape genes consist of the dominant round-seed-shape allele and the recessive wrinkled-seed-shape allele. What percent of the offspring will theoretically have wrinkled seeds?

Summary

EQ: How do you solve $(3x - 4)^2$?

$$(3x - 4)(3x - 4)$$

10.3 Homework

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$$7) \boxed{(x+1)^2} = \underline{(x+1)(x+1)}$$