Name ______________________ Date ___________________________

Proving Polynomial Identities - Guided Lesson Explanation

For all the problems in this section, we know that the square of a binomial is:

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

$(a – b)^2 = a^2 – 2ab + b^2$

Explanation#1

We can see that $(3x + 4y)^2$ is the square of a binomial just like

$(a + b)^2$. So, we will find $(3x + 4y)^2$ with this formula.

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

We will replace (a) with 3x and (b) with 4y, then solve.

$(3x + 4y)^2$

$= (3x)^2 + 2(3x)(4y) + 4y^2$

$= 9x^2 + 24xy + 16y^2$

Explanation#2

We can see that $\left(\frac{x}{2} - \frac{y}{3}\right)^2$ is the square of a binomial just like

$(a - b)^2$. So, we will find $\left(\frac{x}{2} - \frac{y}{3}\right)^2$ with this formula.

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

We will replace (a) with $\frac{x}{2}$ and (b) with $\frac{y}{3}$, then solve.

$\left(\frac{x}{2} - \frac{y}{3}\right)^2$

$= \left(\frac{x}{2}\right)^2 - 2\left(\frac{x}{2}\right)\left(\frac{y}{3}\right) + \left(\frac{y}{3}\right)^2$

$= \frac{x^2}{4} - \frac{1}{3}xy + \frac{y^2}{9}$

Name ______________________ Date __________________________

Explanation#3

We can see that $(6g + 2h)^2$ is the square of a binomial just like

$(a + b)^2$. So, we will find $(6g + 2h)^2$ with this formula.

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

We will replace (a) with 6g and (b) with 2h, then solve.

$(6g + 2h)^2$

$= (6g)^2 + 2(6g)(2h) + 2h^2$

$= 36g^2 + 24gh + 4h^2$ Divide everything by 4 to get in simplest form.

$= 9g^2 + 6gh + h^2$