

After the hwk quiz do the following:

Expand each.

1. $(11x + \frac{2}{3})(4x - \frac{7}{3})$ 2. $(\frac{1}{6}c - 7)(5c - \frac{3}{4})$

1. $(11x + \frac{2}{3})(4x - \frac{7}{3})$

Handwritten work for problem 1 using the FOIL method:

$11x$	$+\frac{2}{3}$
$4x$	$-\frac{7}{3}$
$44x^2$	$-\frac{77}{3}x$
$+\frac{8}{3}x$	$-\frac{14}{9}$

Summing the terms:

$$44x^2 - \frac{77}{3}x + \frac{8}{3}x - \frac{14}{9}$$

$$= 44x^2 - \frac{69}{3}x - \frac{14}{9}$$

2. $(\frac{1}{6}c - 7)(5c - \frac{3}{4})$

Handwritten work for problem 2 using the FOIL method:

$\frac{1}{6}c$	$5c$	$-\frac{3}{4}$
$-\frac{3}{24} = -\frac{1}{8}c$		
-7	$-35c$	$+\frac{21}{4}$

Handwritten result for problem 2:

$$\frac{5}{6}c^2 - \frac{281}{8}c + \frac{21}{4}$$

Handwritten calculation for problem 2:

$$\frac{1}{6} \cdot \frac{-35}{1} - \frac{1}{8}$$

$$= -\frac{280}{8} - \frac{1}{8} = -\frac{281}{8}$$

Sec 9-4: Expanding Special Cases

Expand each. Notice what happens.

1. $(d + 7)(d - 7)$

$$d^2 - 49$$

2. $(w - 5)(w + 5)$

$$w^2 - 25$$

The middle 2 terms cancel

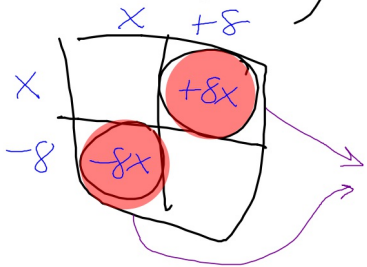
The difference of perfect squares

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

Perfect Squares:

1
4
9
16
25
36
49
64
81
100...

$$(x + 8)(x - 8)$$



These are opposites so they cancel.

Expand each.

1. $(c + 4)(c - 4)$

$$c^2 - 16$$

2. $(a + 11)(a - 11)$

$$a^2 - 121$$

Expand each.

1. $(e + 21)(e - 21)$

$$e^2 - 441$$

2. $(19k - 31)(19k + 31)$

$$361k^2 - 961$$

Expand.

1. $(3g^4 - 5h^2)(3g^4 + 5h^2)$

$$(3g^4)^2 - (5h^2)^2$$

$$9g^8 - 25h^4$$

Expand each.

1. $(m + 3)^2$

$$(m+3)(m+3)$$

$$m^2 + 6m + 9$$

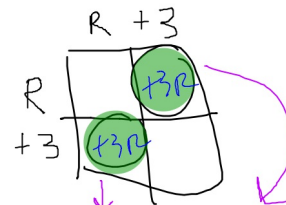
What do you notice?

The middle term is twice the constant in the orig. problem & the last term is the square of the constant in the orig. prob.

2. $(Q - 9)^2 = (Q - 9)(Q - 9)$

$$Q^2 - 18Q + 81$$

$$(R+3)^2 = (R+3)(R+3)$$



These are the same so the final result is two times one of them

What is the shortcut for expanding $(R - 10)^2$

Only works if the coefficient of the variable is 1

$$R^2 - 2(10) + (10)^2$$

$$R^2 - 20R + 100$$

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

Expand each.

1. $(G + 5)^2$

$$\begin{array}{c} \underline{G^2} \quad \quad \quad \underline{+10G} \quad \quad \quad \underline{+25} \\ \quad \quad \quad \uparrow \\ \quad \quad \quad 2 \cdot 5 \end{array}$$

2. $(A - 8)^2$

$$\begin{array}{c} \underline{A^2 - 16A + 64} \\ \quad \quad \quad \uparrow \\ \quad \quad \quad 2(-8) \end{array}$$

Expand.

$$(3n + 8)^2$$

$$9n^2 + 48n + 64$$

What is the shortcut to finding the middle term?

$$2(3n \cdot 8)$$

	$3n$	$+8$
$3n$	$9n^2$	$+24n$
$+8$	$+24n$	$+64$

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

$$(3n + 8)^2$$

$\uparrow$ $\uparrow$
 $a=3n$ $b=8$

$$(3n)^2 + 2(3n)(8) + (8)^2$$

$$\boxed{9n^2 + 48n + 64}$$

Expand.

$$1. (5e - 6)^2$$

$$\underline{25e^2} - \underline{60e} + \underline{36}$$

$$\uparrow$$

$$2(5e)(-6)$$

$$2. (2B + 9)^2 = (2B+9)(2B+9)$$

$$\underline{4B^2} + \underline{36B} + \underline{81}$$

$$\uparrow$$

$$2(2B)(9)$$

Expand.

$$(3e - 5f)^2$$

$$2ab = 2(3e)(-5f) = -30ef$$

$$\frac{9e^2}{(3e)^2} - \underline{30ef} + \frac{25f^2}{(-5f)^2}$$