Are there any questions from last day's assigned work you would like to see on the board?
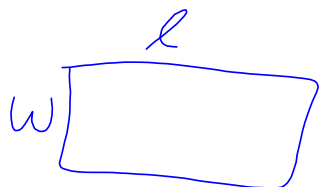
Last day's work: p. 204 #1 - 9   4, 9, 6, 8, 5

Be prepared for tomorrow's Unit 3 Summative!!

p. 204 **3.** You can choose whether you are provided the equation of a quadratic
function in standard form, factored form, or vertex form. If you needed to
know the information listed, which form would you choose and why?
   a) the vertex
   b) the y-intercept
   c) the zeros
   d) the axis of symmetry
   e) the domain and range

p. 204 **4.** Determine the maximum area of a rectangular field that can be enclosed by
2400 m of fencing.

ℓ

w

Let L and w represent the length and width respecvely in m.

$$A = \ell w$$
$$= \ell(1200 - \ell)$$
$$= 1200\ell - \ell^2$$
$$= -\ell^2 + 1200\ell$$

$$P = 2\ell + 2w$$
$$2400 = 2\ell + 2w$$
$$1200 = \ell + w$$
$$1200 - \ell = w$$

$$A \, of \, S : \ell = \frac{-b}{2a}$$
$$= \frac{-1200}{2(-1)}$$
$$= 600$$

if $\ell = 600$
$$A = 600(1200 - 600)$$
$$= 600(600)$$
$$= 360\,000 \, m^2$$

p. 204 **5.** Determine the equation of the inverse of $f(x) = 2(x-1)^2 - 3$.

$$x = 2(y-1)^2 - 3$$

$$x + 3 = 2(y-1)^2$$

$$\frac{x+3}{2} = (y-1)^2$$

$$\pm\sqrt{\frac{x+3}{2}} = y - 1$$

$$1 \pm \sqrt{\frac{x+3}{2}} = y \quad \text{or} \quad y = \pm\sqrt{\frac{x+3}{2}} + 1$$

p. 204

6. a) Simplify $(2 - \sqrt{8})(3 + \sqrt{2})$.

c) Explain why the answer to part (a) has fewer terms than the answer to part (b).

b) Simplify $(3 + \sqrt{5})(5 - \sqrt{10})$.

$$= 6 + 2\sqrt{2} - 3\sqrt{8} - \sqrt{16}$$

$$= 6 + 2\sqrt{2} - 3\sqrt{4}\sqrt{2} - 4$$

$$= 6 + 2\sqrt{2} - 3(2)\sqrt{2} - 4$$

$$= 6 + 2\sqrt{2} - 6\sqrt{2} - 4$$

$$= 2 - 4\sqrt{2}$$

$$= 15 - 3\sqrt{10} + 5\sqrt{5} - \sqrt{50}$$

$$= 15 - 3\sqrt{10} + 5\sqrt{5} - \sqrt{25}\sqrt{2}$$

$$= 15 - 3\sqrt{10} + 5\sqrt{5} - 5\sqrt{2}$$

p. 204   **7.** Calculate the value of k such that $kx^2 - 4x + k = 0$ has one root.

p. 204   **8.** Does the linear function $g(x) = 6x - 5$ intersect the quadratic function $f(x) = 2x^2 - 3x + 2$? How can you tell? If it does intersect, determine the point(s) of intersection.

$g(x) = f(x)$

$6x - 5 = 2x^2 - 3x + 2$

$0 = 2x^2 - 3x - 6x + 2 + 5$

$0 = 2x^2 - 9x + 7$

$b^2 - 4ac$

$= (-9)^2 - 4(2)(7)$

$= 81 - 56$

$= 25$

$\therefore b^2 - 4ac \geq 0$

$\therefore$ they intersect

$0 = 2x^2 - 9x + 7$

$= (2x - 7)(x - 1)$

$\therefore x = \frac{7}{2}$ or $x = 1$

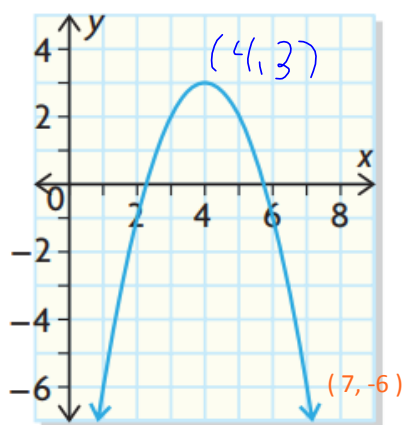$g\left(\frac{7}{2}\right) = 6\left(\frac{7}{2}\right)^{3} - 5$

$= 21 - 5$

$= 16$

$g(1) = 6x - 5$

$= 6(1) - 5$

$= 1$

$\therefore \left(\frac{7}{2}, 16\right)$ and $(1, 1)$ are the POIs.

p. 204   **9.** Determine the equation in standard form of the parabola shown below.

(4, 3)

(7, -6)

(6, -1)

(2, -1)

$$y = a(x-h)^2 + k$$

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

$$-6 = a(7-4)^2 + 3$$

$$-6 = a(3)^2 + 3$$

$$-6 - 3 = 9a$$

$$-9 = 9a$$

$$a = -1$$

$$\therefore y = -1(x-4)^2 + 3$$

$$= -(x^2 - 8x + 16) + 3$$

$$= -x^2 + 8x - 16 + 3$$

$$= -x^2 + 8x - 13$$

Today's Learning Goal(s):

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

a) evaluate a power involving an integer exponent.

b) simplify expressions involving integer exponents.

4.2 Working with Integer Exponents

Date: _Oct. 21/19_

Ex.1 Simplify.

a) $(5^3)(5^4)$

$= 5^{3+4}$

$= 5^7$

b) $13^6 \div 13^2$

$= 13^{6-2}$

$= 13^4$

c) $(6^3)^4$

$= 6^{3 \times 4}$

$= 6^{12}$

$$b^m \times b^n = b^{m+n} \qquad b^m \div b^n = b^{m-n} \qquad (b^m)^n = b^{mn}$$

d) $3^4 \div 3^4$

$= 3^{4-4}$

$= 3^0$

or d) $3^4 \div 3^4$

$= 81 \div 81$

$= 1$

e) $5^3 \div 5^5 \longrightarrow \dfrac{5^3}{5^5}$

$= 5^{3-5}$

$= 5^{-2}$

$= \dfrac{1 \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{5} \cdot 1}{5 \cdot 5 \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{5}}$

$= \dfrac{1}{5^2}$

$$b^0 = 1$$

$$\therefore b^{-n} = \frac{1}{b^n}$$

Name	Symbol	Multiple of the Metre	Multiple as a Power of 10
terametre	Tm	1 000 000 000 000	10^{12}
gigametre	Gm	1 000 000 000	10^9
megametre	Mm	1 000 000	10^6
kilometre	km	1 000	10^3
hectometre	hm	100	10^2
decametre	dam	10	10^1
metre	m	1	
decimetre	dm	0.1	
centimetre	cm	0.01	
millimetre	mm	0.001	
micrometre	μm	0.000 1	
nanometre	nm	0.000 01	
picometre	pm	0.000 001	
femtometre	fm	0.000 000 001	
attometre	am	0.000 000 000 001	

km hm dam m dm cm mm
kg hg dag g dg cg mg
kL haL daL L dL cL mL

Ex.2 Evaluate. Express your answers as simplified rationals.
(vs. simplify)

a) 6^{-2}

$= \left(\frac{1}{6}\right)^{2}$

$= \frac{1}{6^2}$ ← Simplified

$= \frac{1}{36}$ ← Evaluated

b) $(-4)^{-2}$

$= \left(-\frac{1}{4}\right)^{2}$

$= \frac{1}{16}$

c) -4^{-2}

$= -\left(4^{-2}\right)$

$= -\left(\frac{1}{4}\right)^{2}$

$= -\frac{1}{16}$

d) $\left(\frac{3}{4}\right)^{-2}$

$= \left(\frac{4}{3}\right)^{2}$

$= \frac{4^2}{3^2}$

$= \frac{16}{9}$

or $\left(\frac{3}{4}\right)^{-2}$

$= \frac{1}{\left(\frac{3}{4}\right)^{2}}$

$= 1 \div \left(\frac{3}{4}\right)^{2}$

$= 1 \div \frac{9}{16}$

$= 1 \times \frac{16}{9}$

$= \frac{16}{9}$

e) $\dfrac{\left(5^{-4}\right)\left(5^{-2}\right)}{\left(5^{-3}\right)}$

$= 5^{-4+(-2)-(-3)}$

$= 5^{-4-2+3}$

$= 5^{-3}$

$= \frac{1}{5^3}$

$= \frac{1}{125}$

f) $\dfrac{\left(8^{-4}\right)\left(2^{3}\right)}{\left(16^{-2}\right)}$

$= \dfrac{\left(\left(2\right)^{3}\right)^{-4}\left(2^{3}\right)}{\left(2^{4}\right)^{-2}}$

Extra Practice (you try)

g) $2^{5}\left(-10\right)^{-2}$ h) $15^{-4} \times \left(\dfrac{15^{2}}{15^{8}}\right)^{-1}$ i) $\left(3^{0}+3^{2}\right)^{-1}$ j) $\dfrac{4^{5}}{2^{-3}} \times \dfrac{2^{-1}}{4^{3}}$

Are there any questions from last day's assigned work you would like to see on the board?

Last day's work: p. 204 #1 - 9

Be prepared for tomorrow's Unit 3 Summative!!

Recall: $(-2)^4$ vs -2^4

$$= (-2)(-2)(-2)(-2) \qquad = -(2)(2)(2)(2)$$

$$= 16 \qquad\qquad\qquad = -16$$

READ p.221

Today's Assigned Practice includes:

p. 212 #1 – 10 (If any of these understandings are missing, get help ASAP!)

pp. 221-223 #(1 – 9)ace, 11b, 13acegi, 16ace