Learning Goal 5.3	I can multiply and divide polynomials by a constant, monomial

Developing			
1. Multiply or divide the following polynomials. Use algebra tiles if you like.			
a.	$5(-x^2+2x-4)$	b.	$3(-2x^2+2x-2)$
c.	$4(1+2x^2+5x)$	d.	$7(x^2+5x)$
e.	$2(2x^2+8x-1)$	f.	$6(4x-2x^2+4)$
g.	$8(4x^2+7x-1)$	h.	$10(3x-x^2+5)$
i.	$\frac{7x+14}{7}$	j.	$\frac{-6x^2+9x-6}{3}$
k.	$\frac{6x^2+2x+4}{2}$	l.	$\frac{-5x^2+10x-5}{5}$
m.	$\frac{12x-8x^2+4}{4}$	n.	$\frac{8x^2+24x-16}{8}$
o.	$\frac{-6x^2+18x-6}{3}$	p.	$\frac{-6x^2+18x-12}{6}$

e. $2(2x^2+8x-1)$

$= 4x^2 + 16x - 2$

n. $\frac{8x^2+24x-16}{8}$

$= 1x^2 + 3x - 2$

$= x^2 + 3x - 2$

Proficient			
2. Multiply or divide the following polynomials.			
a.	$-5(-a^2+2a-4)$	b.	$-3(-2b^2+2b-2)$
c.	$-4(1+2d^2+5d)$	d.	$-7(c^2+5c)$
e.	$\frac{6g^2+2gh+4h^2}{-2}$	f.	$\frac{8j+24jk-16k}{-8}$
g.	$\frac{7x^5+14x^3}{-7}$	h.	$\frac{-6m^2n+18mn^2-12n^3}{-6}$
i.	$2y(2x^2+8x-1)$	j.	$9x^3(4x-2x^2+4)$
k.	$6mn(4p+7m-n)$	l.	$-3q^2(3q-q^2+5q^3)$
m.	$\frac{-6x^5+18x^3}{3x^2}$	n.	$\frac{-6x^5+18x^3+12x^4}{-6x^2}$

o.	$\frac{12m^4n - 8m^3n^2 + 4m^2n^3}{4mn}$	p.	$\frac{-6z^2 + 21z^3}{-3z^2}$
q.	$(2y + 1)(3x - 1)$	r.	$(x + 6)(6 - x)$
s.	$(x + 5)^2$	t.	$(3a + b)(3b + a)$
u.	$(x + 2)(x - 4)$	v.	$(2x - 1)(x - 6)$
w.	$(x - 4)^2$	x.	$(x + 4)^2$
y.	$\frac{x^2 + 5x + 6}{x + 2}$	z.	$\frac{x^2 + 8x + 7}{x + 7}$
aa.	$\frac{x^2 + 6x + 8}{x + 4}$	bb.	$\frac{x^2 + 7x + 10}{x + 2}$
cc.	$\frac{x^2 + 7x + 12}{x + 3}$	dd.	$\frac{x^2 + 8x + 16}{x + 4}$

b. $-3(-2b^2 + 2b - 2)$

$= 6b^2 - 6b + 6$

g. $\frac{7x^5 + 14x^3}{-7}$

$= -1x^5 - 2x^3$

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

p. $\frac{-6z^2 + 21z^3}{-3z^2}$

$= \frac{-6z^2}{-3z^2} + \frac{21z^3}{-3z^2}$

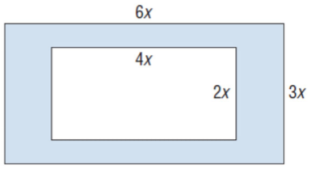
$= +2z^{2-2} - 7z^{3-2}$

$= 2z^0 - 7z^1$

$= 2 - 7z$

Extending

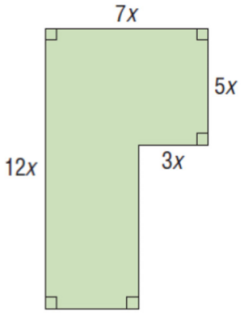
3. This diagram shows one rectangle inside another. Determine the area of the shaded region.



4. The area of a rectangular deck is $8d^2 + 20d$ square metres. The deck is $4d$ metres long. Determine a polynomial that represents the width of the deck.

5. The polynomial $54s^2$ represents the surface area of a cube. Determine a polynomial that represents the area of one face. Determine the polynomial that represents the length of one side.

6. Find the polynomial that represent the area of the polygon.



7. Factor the following polynomials.

a. $x^2 + 4x + 4$	b. $x^2 + 5x + 6$
c. $x^2 + 8x + 12$	d. $x^2 + 6x + 8$
e. $x^2 + 10x + 25$	f. $x + 8x + 15$
g. $x^2 + 10x + 9$	h. $x^2 + 7x + 10$
i. $x^2 + 10x + 16$	j. $x^2 + 14x + 40$
k. $x^2 + 10x + 21$	l. $x^2 + 9x + 20$
m. $x^2 - x - 6$	n. $x^2 - 4x + 4$
o. $x^2 + 3x - 10$	p. $x^2 + 5x - 14$

4. The area of a rectangular deck is $8d^2 + 20d$ square metres. The deck is $4d$ metres long. Determine a polynomial that represents the width of the deck.

Area $= 8d^2 + 2d$
$= l \times w$

$4d$ | w

Area = length × width

$\frac{8d^2+2d}{4d} = \frac{4d \times w}{4d}$

$w = \frac{8d^2 + 2d}{4d}$

$= \frac{8d^2}{4d} + \frac{2d}{4d}$

$= 2d^{2-1} + \frac{1}{2}d^{1-1}$

$= 2d^1 + \frac{1}{2}d^0$

$= 2d + \frac{1}{2}$

The width of the deck is represented by $2d + \frac{1}{2}$.