REVIEW OF FACTORING:

Factor.

a) $3x^2 + 3x - 6$ GCF = 3

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

$3(x-1)(x+2)$

x	+
-2	1
-1x2	-1+2

b) $\frac{1}{2}x^2 - x - 4$

$\frac{1}{2}x^2 - x - 4$

$x^2 - 2x - 8$

$(x-4)(x+2)$

x	+
-8	-2
-4x2	-4+2

c) $0.49j^2 - 36k^2$ Binomial → Difference of Squares.

$0.7j \times 0.7j$ $6k \cdot 6k$

$(0.7j - 6k)(0.7j + 6k)$

d) $-2(n+3)^2 + 12(n+3) + 14$ Let $b = n+3$

$-2b^2 + 12b + 14$ GCF = -2

$-2(b^2 - 6b - 7)$

$-2(b-7)(b+1)$

x	+
-7	-b
-7x1	-7+1=-b

e) $4(x-2)^2 - 0.25(y-4)^2$ Let $a = x-2$ and $b = y-4$

$4a^2 - 0.25b^2$

$2a \cdot 2a$ $0.5b \cdot 0.5b$

$(2a + 0.5b)(2a - 0.5b)$

$[2(x-2) + 0.5(y-4)][2(x-2) - 0.5(y-4)]$

$(2x - 4 + 0.5y - 2)(2x - 4 - 0.5y + 2)$

$(2x + 0.5y - 6)(2x - 0.5y - 2)$

Ex 1) Determine the roots of each quadratic equation. Verify your solutions.

a) $x^2 - 10x + 25 = 0$

$(x-5)(x-5)=0$

$x-5=0$ $\quad +5 \quad +5$

$x=5$

$x-5=0$ $\quad +5 \quad +5$

$x=5$

1 distinct real root (5,0)

b) $x^2 - 16 = 0$

$(x+4)(x-4)=0$

$x+4=0$ $\quad -4 \quad -4$

$x=-4$

$x-4=0$ $\quad +4 \quad +4$

$x=4$

2 distinct real roots (-4,0) and (4,0)

c) $3x^2 - 2x - 8 = 0$ GCF = 1

-24

x	+
-24	-2
-6x4	-6+4=-2

$3x^2-6x+4x-8=0$

$3x(x-2)+4(x-2)=0$

$(x-2)(3x+4)=0$

$x-2=0$ $\quad +2 \quad +2$

$x=2$

$3x+4=0$ $\quad -4 \quad -4$

$3x=-4$

$\frac{3x}{3}=\frac{-4}{3}$

$x=-4/3$

2 distinct real roots (2,0) and (-4/3,0)

Ex 2) A waterslide ends with the slider dropping into a deep pool of water. The path of the slider after leaving the lower end of the slide can be approximated by the quadratic function $h(d) = -\frac{1}{6}d^2 - \frac{1}{6}d + 2$, where h is the height above the surface of the pool and d is the horizontal distance the slider travels from the lower end of the slide, both in feet. What is the horizontal distance the slider travels before dropping into the pool after leaving the lower end of the slide?

$h(d) = -\frac{1}{6}d^2 - \frac{1}{6}d + 2$

$= \frac{-1}{6}(d^2 + d - 12)$

$= \frac{-1}{6}(d-3)(d+4)$

$0 = \frac{-1}{6}(d-3)(d+4)$

$(d-3)=0$ $\quad +3 \quad +3$

$d=3$

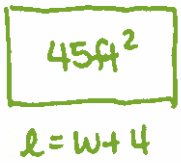
$d+4=0$ $\quad -4 \quad -4$

$d=-4$

horizontal distance $= 3-(-4) = 7$ feet.

The slider travels 7 feet after leaving the lower end of the slide.

Ex 3) The area of a rectangular Ping-Pong table is $45\,ft^2$. The length is 4 ft more than the width. What are the dimensions of the table?



$A = \ell \times w$

$A = w(w+4)$

$45 = w^2 + 4w$ Find w.

$-45 \quad -45$

$0 = w^2 + 4w - 45$

$0 = (w - 5)(w + 9)$

$w - 5 = 0 \quad w + 9 = 0$

$+5 \quad +5 \quad -9 \quad -9$

$w = 5 \quad w = -9$

reject as width cannot be negative.

$\ell = w + 4$

$= 5 + 4$

$= 9$

The dimensions are 5ft and 9 ft.

Pg. 229 # 1- 4, 7, 8abc, 9abcd, 11, 12, 16, 17, 19, 20, 23, 24

*1 - 4 is more factoring review