Example 7^{24} Sec 6.1 (1)

EX1 → 13

2 → 17

3 → 27, 28

4 → 29, 35

5 → 35,

6 57

(13.) $\frac{x^2 - 25}{x^2 - 3x - 28} = \frac{(x+5)(x-5)}{(x+4)(x-7)}$ ($5^2 \to x^2 - 5^2$)

undefined ?

$0 = (x+4) \cdot (x-7)$

$(x+4) = 0$ or $(x-7) = 0$

$x+4=0$ or $x-7=0$ (3)

$-4\ -4$ $\quad +7\ +7$

$x=-4$ $\quad x=7$

(17.) $\dfrac{50a^2b}{40ab^3} = \dfrac{5\cdot a^2\cdot b}{4\cdot a\cdot b^3}$

$\frac{50}{40}=\frac{5}{4}$

$= \boxed{\dfrac{5a}{4b^2}}$

Alternately

$\dfrac{5\cdot a\cdot a\cdot b}{4\cdot a\cdot b\cdot b^2} = \dfrac{5a}{4b^2}$

alt.

$$\frac{5a^2 \cdot b}{4ab^3}$$

$$= \frac{5}{4} \cdot \frac{a^2}{a^1} \cdot \frac{b^1}{b^3}$$

$$= \frac{5}{4} \cdot a^1 \cdot b^{-2} \qquad \begin{matrix} 2-1=1 \\ 1-3=-2 \end{matrix}$$

$$= \frac{5}{4} \cdot a^1 \cdot \frac{1}{b^2} = \frac{5a}{4b^2}$$

alt 2

$$\frac{5a^2b}{4ab^3}$$

$$\frac{5\,a^2\,b}{4\,a\,b^3}$$

GCF table in your mind

a, a^2	b, b^3
GCF $= \hat{a}$	GCF $= \hat{b}$

$$\frac{5 \cdot \hat{a} \cdot a \cdot \hat{b}}{4 \cdot \hat{a} \cdot \hat{b} \cdot b^2} \leftarrow \text{GCF} = \frac{5a}{4b^2}$$

GCF

(27.) $\dfrac{-2y+6}{-8y}$

Factor this first. Need GCF

$-2y+6$ ← GCF = 2

$= -2 \cdot y + 2 \cdot 3$

$= 2 \cdot (-y + 3)$

$\dfrac{2 \cdot (-y+3)}{-8 \cdot y} = \dfrac{2 \cdot (-y+3)}{-2 \cdot 4 \cdot y}$

$= \dfrac{(-y+3)}{-4y}$

MOST FAVORED METHOD:

$$\frac{-2y+6}{-8y} \rightarrow \frac{-(2y-6)}{-8y}$$

$$= \frac{-(2 \cdot y - 2 \cdot 3)}{-8y}$$

$$= \frac{-(2 \cdot y - 2 \cdot 3)}{-2 \cdot 4 \cdot y}$$

$$= \frac{-2 \cdot (y-3)}{-2 \cdot 4 \cdot y}$$

$$= \frac{(y-3)}{4y}$$

(28.) 6.1 G.C.F.

$$\frac{4x-12}{6x}$$

Key word: factor

$$\frac{4\cdot(x-3)}{2\cdot 3\cdot x}$$

$$\frac{\cancel{2}\cdot\cancel{2}\cdot(x-3)}{\cancel{2}\cdot 3\cdot\cancel{x}} = \frac{2(x-3)}{3\cdot x}$$

$$= \frac{2(x-3)}{3x}$$

29.) GCF = $3a$ FACTOR

$$\frac{6a^2+39}{2a^2+7a} = \frac{3a\cdot(2a+1)}{7a\cdot(a+1)}$$

GCF = $7a$

F.C. 6.1 when you fully factor: NO WORRIES.

Fully factor and cancel

35.

$$\frac{x^2-6x+16}{x^2-16} = \frac{(x-4)(x-4)}{(x+4)(x-4)}$$

$$= \frac{(x-4)}{(x+4)}$$

x^2-4

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

(51)

PRIME → $a-b$

$$\frac{a-b}{4b-4a} = \frac{(-1)(b-a)}{4(b-a)} = \frac{-1}{4}$$

GCF = 4

$(a-b) = -(b-a)$

6.2

1 (c.) → 17, 23

*caution

2 → 47

3 → 59*, 57, 51

4 → (65)

F.C. Factor!!!
Factor and cancel

(17.)

$$\frac{n^2-6n+5}{n+6} \cdot \frac{n-6}{n^2+36}$$

PRIME

$$\frac{(n-1)(n-5)}{(n+6)} \cdot \frac{(n-6)}{(n^2+36)}$$

Moral:

$$n^2-141n+140$$

$$(n-1)(n-140)$$

23.

$$\frac{x^2+2x-3}{x^2+4x-5} \cdot \frac{x^2-3x-10}{x^2+5x+6}$$

$$= \frac{(x+3)(x-1)}{(x+5)(x-1)} \cdot \frac{(x+2)(x-5)}{(x+2)(x+3)}$$

$$= \frac{(x-5)}{(x+5)}$$

(47.)

$$\frac{4x-8}{x+2} \div \frac{x-2}{x^2-4}$$

$$\frac{4x-8}{x+2} \cdot \frac{x^2-4}{x-2}$$

$$\frac{4(x-2)}{(x+2)} \cdot \frac{(x+2)(x-2)}{(x-2)}$$

$$\frac{4(x-2)}{1} = 4(x-2)$$

$$(n^2+5n+6) \div \frac{n+3}{n^2-4}$$

$$(n+2)(n+3) \cdot \frac{(n+3)}{(n+2)(n-2)}$$

$$= \frac{(n+3)(n+3)}{(n-2)} = \frac{(n+3)^2}{(n-2)}$$

(52.)

$$\frac{a+2}{a-1} \div \frac{3a+6}{a-5}$$

$$\frac{a+2}{a-1} \cdot \frac{a-5}{3a+6}$$

$$\frac{(a+2)}{(a-1)} \cdot \frac{(a-5)}{3(a+2)}$$

$$= \frac{(a-5)}{3(a-1)} = \frac{a-5}{3(a-1)}$$

(53.) $(n^2+5n+6) \div \frac{n^2-4}{n+3}$