

Warm-up

1. $425 \div 12$ using long division

$$\begin{array}{r} 35 \\ 12 \overline{) 425} \\ \underline{-(36)} \\ 65 \\ \underline{-(60)} \\ 5 \end{array} \quad 35 \text{ R } 5$$

$$\begin{array}{r}
 \overline{193} \\
 5 \overline{) 965} \\
 \underline{-5} \\
 46 \\
 \underline{-45} \\
 15 \\
 15
 \end{array}
 \quad 3 \times 5 = 15$$

$$\begin{array}{r}
 x^2 + 2x + 4 \\
 x - 2 \overline{) x^3 + 0x^2 + 0x - 8} \\
 \underline{-(x^3 - 2x^2)} \\
 2x^2 + 0x \\
 \underline{-(2x^2 - 4x)} \\
 4x - 8 \\
 \underline{-(4x - 8)} \\
 \text{☺}
 \end{array}$$

Long Division of Polynomials

1. $(x^2 + 3x - 43) \div (x + 8)$

$$\begin{array}{r} x - 5 \\ \underline{x+8 \overline{) x^2 + 3x - 43}} \\ \cancel{x^2} + 8x \\ \hline - 5x - 43 \\ \underline{+ 5x + 40} \\ - 3 \end{array}$$

$x - 5 \frac{-3}{x + 8}$

2. $(y^3 + 5y^2 - 7y + 2) \div (y - 2)$

$$\begin{array}{r}
 y^2 + 7y + 7 \\
 y - 2 \overline{) y^3 + 5y^2 - 7y + 2} \\
 \underline{-(y^3 + 2y^2)} \\
 3y^2 - 7y + 2 \\
 \underline{-(3y^2 + 6y)} \\
 -13y + 2 \\
 \underline{-(13y - 26)} \\
 28 \\
 \end{array}$$

$\frac{y^2 + 7y + 7 + 16}{y - 2}$

$\frac{16}{y - 2}$

Missing Power in the Dividend

3. $(k^3 - 17k + 32) \div (k + 5)$

$$\begin{array}{r}
 \underline{\underline{x+5}} \overline{) x^3 + 0x^2 - 17x + 32} \\
 \underline{\cancel{m(x^3 + 5x^2)}} \\
 -5x^2 - 17x \\
 \underline{\cancel{m(+5x^2 + 25x)}} \\
 8x + 32 \\
 \underline{\cancel{m(8x + 40)}} \\
 -8
 \end{array}$$

$x^2 - 5x + 8 \quad \frac{-8}{x+5}$

4. $(6a^2 + 11a - 10) \div (3a - 2)$

$$\begin{array}{r} 2a + 5 \\ \underline{3a - 2} \overline{) 6a^2 + 11a - 10} \\ \underline{6a^2 + 4a} \\ 15a - 10 \\ \underline{15a + 10} \\ 0 \end{array}$$

$2a + 5$

it is a factor!

5. $(9x^2 - 6x - 8) \div (3x + 2)$

$$\begin{array}{r} 3x - 4 \\ \underline{3x + 2} \overline{) 9x^2 - 6x - 8} \\ \underline{m(9x^2 + 6x)} \\ -12x - 8 \\ \underline{m(+12x + 8)} \\ 0 \end{array}$$

$3x - 4$

it is a factor!



