

Do the following using long division without a calculator. Give any remainder as a fraction

$$\frac{1784}{12} =$$

$$\begin{array}{r} 148 \text{ R } 8 \\ 12 \overline{) 1784} \\ \underline{-12} \\ 58 \\ \underline{-48} \\ 104 \\ \underline{-96} \\ 8 \end{array}$$

$$\begin{array}{r} 15 \text{ quotient} \\ 8 \text{ divisor} \overline{) 120} \end{array}$$

dividend

Polynomial Long Division:

$$\frac{x^2 + 9x + 20}{x + 4} \Rightarrow x + 4 \overline{) x^2 + 9x + 20} = x + 5$$

$$\begin{array}{r} 1 \\ 52 \overline{) 8923} \\ \underline{-52} \\ 372 \end{array}$$

$$\begin{array}{r} x + 5 \\ x + 4 \overline{) x^2 + 9x + 20} \\ \underline{-x^2 + 4x} \\ 5x + 20 \\ \underline{-5x + 20} \\ 0 \end{array}$$

Find this quotient.

$$\begin{array}{r} x + 11 \text{ R } 20 \\ x - 3 \overline{) x^2 + 8x - 13} \\ \underline{-x^2 + 3x} \\ 11x - 13 \\ \underline{-11x + 33} \\ 20 \end{array}$$

OR

$$\frac{x^2 + 8x - 13}{x - 3} = x + 11 + \frac{20}{x - 3}$$

Find this quotient.

$$\begin{array}{r}
 \textcircled{2x - 16} \quad R \ 111 \\
 2x + 5 \overline{) 4x^2 - 22x + 31} \\
 \underline{- 4x^2 + 10x} \\
 -32x + 31 \\
 \underline{- -32x - 80} \\
 111
 \end{array}$$

Find this quotient.

$$\begin{array}{r}
 \underline{2x^4 - 10x^3 + 2x^2 - 2x - 39} = 2x^3 + 2x + 8 \quad R = 1 \\
 x - 5 \\
 \begin{array}{r}
 2x^3 + 2x + 8 \quad R = 1 \\
 x - 5 \overline{) 2x^4 - 10x^3 + 2x^2 - 2x - 39} \\
 \underline{- 2x^4 - 10x^3} \\
 0 \\
 \underline{2x^2 - 2x} \\
 -8x - 39 \\
 \underline{-8x - 40} \\
 1
 \end{array}
 \end{array}$$

Find this quotient: $\frac{4x^3 + 7x - 9}{x + 3}$

$$x + 3 \overline{) 4x^3 + 0x^2 + 7x - 9}$$

when there is a missing term
you replace it with zero to "hold" its place.