

Front-end Estimation

↳ cut off decimal Place

$$\text{Ex) } 27.67 \approx 27$$

$$25.3 \approx 25$$

Use front-end estimation to add

$$0.36 + 12.4 + 7.5$$

$$\approx 0 + 12 + 7$$

$$\approx 19$$

Rounding Estimation

→ Look at number to the right of the place you want to round off to.

If it is 5 or bigger your place value # rounds up

If smaller than 5, the place value number stays the same.

$$\text{Ex) } 4.678 \text{ Round to tenths}$$

$$\begin{array}{c} \text{up} \\ \curvearrowright \\ \approx 4.7 \end{array}$$

Adding and Subtracting decimals

→ The decimal (.) needs to line up

→ If not the same length, add zeros after the decimal

Ex) $12.1 + 7$

$$\begin{array}{r} 12.1 \\ + 7.0 \\ \hline 19.1 \end{array}$$

understood decimal after whole #

Ex) $120.86 - 4.3$

$$\begin{array}{r} 120.86 \\ - 4.30 \\ \hline 116.56 \end{array}$$

Multiply Decimals

→ Decimal does NOT line up.

→ line up last digit

Ex) 4.36×2.1

$$\begin{array}{r} 4.36 \\ \times 2.1 \\ \hline .436 \\ + 8720 \\ \hline 9.156 \end{array}$$

→ 2 decimal places
→ 1 decimal place

→ total 3 decimal places

$$\begin{array}{r}
 12.4 \\
 \times 45.6 \\
 \hline
 744 \\
 6200 \\
 +49600 \\
 \hline
 565.44
 \end{array}$$

$\leftarrow 6 \times 124$
 $\leftarrow 5 \times 124$
 $\leftarrow 4 \times 124$

Division of decimal

\rightarrow rewrite divisor as whole

\rightarrow move decimal to right to get whole. But what we do to the divisor we do to the dividend.

Ex) $12.64 \div 0.8 \rightarrow 8 \overline{) 126.4}$

\swarrow need to move or $\times 10$
 \nwarrow so need to move or mult by 10

$$\begin{array}{r}
 15.8 \\
 8 \overline{) 126.4} \\
 \underline{80} \\
 46 \\
 \underline{40} \\
 64 \\
 \underline{64} \\
 0
 \end{array}$$

Ex) $72.60 \div 0.12 \rightarrow 12 \overline{) 726.0}$

$$\begin{array}{r}
 60.5 \\
 12 \overline{) 726.0} \\
 \underline{72} \\
 06 \\
 \underline{06} \\
 00 \\
 \underline{00} \\
 0
 \end{array}$$