

# Long Division Scenarios

Example:

**Dividend**  
contains a decimal  
larger value

**Divisor**  
contains a decimal  
smaller value

1. Convert to long division format

Standard Division Format

Long Division Format

Fraction Format

$$7.12 \div 3.2 = \longrightarrow 3.2 \overline{) 7.12} \longleftarrow \frac{7.12}{3.2}$$

2. Multiply the divisor by a power of 10 value (10, 100, 1,000) to make it a whole number

$$3.2 \cdot 10 = 32$$

3. Multiply the dividend by the same power of 10 value

$$7.12 \cdot 10 = 71.2$$

4. Apply the new values to the long division equation

$$32 \overline{) 71.2}$$

5. Put a decimal above the division bracket exactly where it is located in the dividend

$$32 \overline{) 71.2}$$

# Long Division Scenarios

6. Begin the long division process

$$\begin{array}{r} 0. \\ 32 \overline{) 71.2} \\ \underline{\phantom{0}71} \phantom{2} \end{array}$$

I. UNDERSCORE:

Underscore the digit of interest

This starts with the leftmost digit of the dividend

7

II. ASK:

Can 32 fit into 7?

III. RESPONSE:

No

IV. ZERO:

put 0 above the digit of interest

7. Continue the long division process

$$\begin{array}{r} 02. \\ 32 \overline{) 71.2} \\ \underline{\phantom{0}71} \phantom{2} \\ - 64 \phantom{2} \\ \hline \phantom{0}72 \phantom{2} \end{array}$$

I. EXPAND UNDERSCORE:

Expand the digits of interest to the next digit to the right

71

II. ASK:

Can 32 fit into 71?

III. RESPONSE:

Yes

IV. HOW MANY TIMES? :

2

since  $32 \cdot 2 = 64$

put 2 above the digit of interest

V. SUBTRACT:

$71 - 64 = 7$  (Remainder)

VI. DROP:

Drop the next digit in the dividend

# Long Division Scenarios

8. Continue the long division process

$$\begin{array}{r} 02.2 \\ 32 \overline{) 71.20} \\ \underline{64} \phantom{0} \\ 72 \\ \underline{64} \\ 80 \end{array}$$

I. NEW UNDERSCORE:

The difference and newly dropped digit are the new digits of interest

72

II. ASK:

Can 32 fit into 72?

III. RESPONSE:

Yes

IV. HOW MANY TIMES? :

2

since  $32 \cdot 2 = 64$

put 2 above the digit of interest

V. SUBTRACT:

$72 - 64 = 8$  (Remainder)

VI. DROP:

Drop the next digit in the dividend

# Long Division Scenarios

9. Continue the long division process

$$\begin{array}{r} \textcolor{green}{02.22} \\ \textcolor{blue}{32} \overline{) \textcolor{red}{71.200}} \\ \underline{64} \phantom{00} \phantom{00} \\ 72 \phantom{00} \phantom{00} \\ \underline{64} \phantom{00} \phantom{00} \\ \textcolor{red}{80} \phantom{00} \\ \underline{64} \phantom{00} \\ \textcolor{orange}{160} \end{array}$$

I. NEW UNDERSCORE:

The difference and newly dropped digit are the new digits of interest

**80**

II. ASK:

Can **32** fit into **80**?

III. RESPONSE:

Yes

IV. HOW MANY TIMES?:

**2**

since **32** · **2** = 64

put **2** above the **digit of interest**

V. SUBTRACT:

**80** - 64 = **16** (Remainder)

VI. DROP:

Drop the **next digit** in the dividend

# Long Division Scenarios

10. Finish the long division process

$$\begin{array}{r}
 \text{02.225} \\
 \text{32} \overline{) 71.200} \\
 \underline{64} \phantom{00} \phantom{00} \\
 72 \phantom{00} \phantom{00} \\
 \underline{64} \phantom{00} \phantom{00} \\
 80 \phantom{00} \phantom{00} \\
 \underline{64} \phantom{00} \phantom{00} \\
 160 \phantom{00} \\
 \underline{160} \phantom{00} \\
 0
 \end{array}$$

I. NEW UNDERSCORE:

The difference and newly dropped digit are the new digits of interest

160

II. ASK:

Can 32 fit into 160?

III. RESPONSE:

Yes

IV. HOW MANY TIMES? :

5

since  $32 \cdot 5 = 160$

put 5 above the digit of interest

V. SUBTRACT:

$160 - 160 = 0$  (Remainder)

VI. FINISH:

The remainder is 0

There are no digits left to drop

The answer is 2.225

# Long Division Scenarios

Example:

**Dividend**  
contains a decimal  
smaller value

**Divisor**  
contains a decimal  
larger value

1. Convert to long division format

Standard Division Format

Long Division Format

Fraction Format

$$0.712 \div 3.2 = \longrightarrow 3.2 \overline{) 0.712} \longleftarrow \frac{0.712}{3.2}$$

2. Multiply the divisor by a power of 10 value (10 , 100, 1,000) to make it a whole number

$$3.2 \cdot 10 = 32$$

3. Multiply the dividend by the same power of 10 value

$$0.712 \cdot 10 = 7.12$$

4. Apply the new values to the long division equation

$$32 \overline{) 7.12}$$

5. Put a decimal above the division bracket exactly where it is located in the dividend

$$32 \overline{) 7.12}$$

# Long Division Scenarios

6. Begin the long division process

$$\begin{array}{r} 0. \\ 32 \overline{) 7.12} \\ \underline{\phantom{0}7} \phantom{12} \end{array}$$

I. UNDERSCORE:

Underscore the digit of interest

This starts with the leftmost digit of the dividend

7

---

II. ASK:

Can 32 fit into 7?

---

III. RESPONSE:

No

---

IV. ZERO:

put 0 above the digit of interest

7. Continue the long division process

$$\begin{array}{r} 0.2 \\ 32 \overline{) 7.12} \\ \underline{\phantom{0}7} \phantom{12} \\ -64 \phantom{0} \\ \hline \phantom{0}72 \end{array}$$

I. EXPAND UNDERSCORE:

Expand the digits of interest to the next digit to the right

Ignore the decimal

71

---

II. ASK:

Can 32 fit into 71?

---

III. RESPONSE:

Yes

---

IV. HOW MANY TIMES? :

2

since  $32 \cdot 2 = 64$

put 2 above the digit of interest

---

V. SUBTRACT:

$71 - 64 = 7$  (Remainder)

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VI. DROP:

Drop the next digit in the dividend

# Long Division Scenarios

8. Continue the long division process

$$\begin{array}{r} 0.22 \\ 32 \overline{) 7.120} \\ \underline{64} \phantom{0} \phantom{0} \\ 72 \phantom{0} \\ \underline{64} \phantom{0} \\ 80 \end{array}$$

I. NEW UNDERSCORE:

The difference and newly dropped digit are the new digits of interest

72

II. ASK:

Can 32 fit into 72?

III. RESPONSE:

Yes

IV. HOW MANY TIMES? :

2

since  $32 \cdot 2 = 64$

put 2 above the digit of interest

V. SUBTRACT:

$72 - 64 = 8$  (Remainder)

VI. DROP:

Drop the next digit in the dividend



# Long Division Scenarios

9. Continue the long division process

$$\begin{array}{r} 0.222 \\ 32 \overline{) 7.1200} \\ \underline{64} \phantom{00} \phantom{00} \phantom{00} \\ 72 \phantom{00} \phantom{00} \phantom{00} \\ \underline{64} \phantom{00} \phantom{00} \phantom{00} \\ 80 \phantom{00} \phantom{00} \phantom{00} \\ \underline{64} \phantom{00} \phantom{00} \phantom{00} \\ 160 \phantom{00} \phantom{00} \phantom{00} \end{array}$$

I. NEW UNDERSCORE:

The difference and newly dropped digit are the new digits of interest

80

II. ASK:

Can 32 fit into 80?

III. RESPONSE:

Yes

IV. HOW MANY TIMES? :

2

since  $32 \cdot 2 = 64$

put 2 above the digit of interest

V. SUBTRACT:

$80 - 64 = 16$  (Remainder)

VI. DROP:

Drop the next digit in the dividend

# Long Division Scenarios

10. Finish the long division process

$$\begin{array}{r} \text{0.2225} \\ 32 \overline{) 7.1200} \\ \underline{64} \phantom{00} \phantom{00} \phantom{00} \\ 72 \phantom{00} \phantom{00} \phantom{00} \\ \underline{64} \phantom{00} \phantom{00} \phantom{00} \\ 80 \phantom{00} \phantom{00} \phantom{00} \\ \underline{64} \phantom{00} \phantom{00} \phantom{00} \\ 160 \phantom{00} \phantom{00} \\ \underline{160} \phantom{00} \\ 0 \end{array}$$

I. NEW UNDERSCORE:

The difference and newly dropped digit are the new digits of interest

160

II. ASK:

Can 32 fit into 160?

III. RESPONSE:

Yes

IV. HOW MANY TIMES? :

5

since  $32 \cdot 5 = 160$

put 5 above the digit of interest

V. SUBTRACT:

$160 - 160 = 0$  (Remainder)

VI. FINISH:

The remainder is 0

There are no digits left to drop

The answer is 0.2225

# Long Division Scenarios

Example:

**Dividend**  
whole number  
larger value

**Divisor**  
whole number  
smaller value

1. Convert to long division format

Standard Division Format

$$707 \div 70 =$$

Long Division Format

$$70 \overline{) 707}$$

Fraction Format

$$\frac{707}{70}$$

2. Put a decimal above the division bracket exactly where it is located in the dividend

$$70 \overline{) 707.}$$

3. Begin the long division process

$$70 \overline{) 707.} \begin{array}{c} 0 \\ \cdot \end{array}$$

I. UNDERSCORE:

Underscore the digit of interest

This starts with the leftmost digit of the dividend

7

---

II. ASK:

Can 70 fit into 7?

---

III. RESPONSE:

No

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IV. ZERO:

put 0 above the digit of interest

# Long Division Scenarios

4. Continue the long division process

$$\begin{array}{r} 01. \\ 70 \overline{) 707.} \\ \underline{-70} \phantom{0} \\ 07 \end{array}$$

I. EXPAND UNDERSCORE:

Expand the digits of interest to the next digit to the right

70

II. ASK:

Can 70 fit into 70?

III. RESPONSE:

Yes

IV. HOW MANY TIMES?:

1

since  $70 \cdot 1 = 70$

put 1 above the digit of interest

V. SUBTRACT:

$70 - 70 = 0$  (Remainder)

VI. DROP:

Drop the next digit in the dividend

# Long Division Scenarios

5. Continue the long division process

$$\begin{array}{r} 010. \\ 70 \overline{) 707.0} \\ \underline{70} \phantom{0} \\ 070 \end{array}$$

I. NEW UNDERSCORE:

The difference and newly dropped digit are the new digits of interest

07

II. ASK:

Can 70 fit into 7?

III. RESPONSE:

No

IV. ZERO:

put 0 above the digit of interest

V. DROP:

Drop the next digit in the dividend

# Long Division Scenarios

6. Finish the long division process

$$\begin{array}{r} \textcolor{green}{010.1} \\ \textcolor{blue}{70} \overline{) \textcolor{red}{707.0}} \\ \underline{\textcolor{black}{70}} \phantom{0} \\ \textcolor{red}{070} \\ \underline{\textcolor{black}{70}} \\ \textcolor{orange}{0} \end{array}$$

I. NEW UNDERSCORE:

The difference and newly dropped digit are the new digits of interest

**$\textcolor{red}{070}$**

II. ASK:

Can  $\textcolor{blue}{70}$  fit into  $\textcolor{red}{70}$ ?

III. RESPONSE:

Yes

IV. HOW MANY TIMES? :

**$\textcolor{green}{1}$**

since  $\textcolor{blue}{70} \cdot \textcolor{green}{1} = 70$

put  $\textcolor{green}{1}$  above the **digit of interest**

V. SUBTRACT:

$\textcolor{red}{70} - 70 = \textcolor{orange}{0}$  (Remainder)

VI. FINISH:

The remainder is  $\textcolor{orange}{0}$

There are no digits left to drop

The answer is  $\textcolor{green}{10.1}$

# Long Division Scenarios

Example:

**Dividend**  
whole number  
smaller value

**Divisor**  
whole number  
larger value

1. Convert to long division format

Standard Division Format

$$60 \div 96 =$$



Long Division Format

$$96 \overline{)60}$$

Fraction Format

$$\frac{60}{96}$$

2. Put a decimal above the division bracket exactly where it is located in the dividend

$$96 \overline{)60.}$$

3. Begin the long division process

$$96 \overline{)60.} \begin{array}{c} 0 \\ \cdot \end{array}$$

I. UNDERSCORE:

Underscore the digit of interest

This starts with the leftmost digit of the dividend

6

---

II. ASK:

Can 96 fit into 6?

---

III. RESPONSE:

No

---

IV. ZERO:

put 0 above the digit of interest

# Long Division Scenarios

4. Continue the long division process

$$\begin{array}{r} 00. \\ 96 \overline{) 60.} \end{array}$$

I. EXPAND UNDERSCORE:

Expand the digits of interest to the next digit to the right

60

II. ASK:

Can 96 fit into 60?

III. RESPONSE:

No

IV. ZERO:

put 0 above the digit of interest



# Long Division Scenarios

5. Continue the long division process

$$\begin{array}{r} 00.6 \\ 96 \overline{) 60.00} \\ \underline{- 576} \phantom{0} \\ 240 \end{array}$$

I. EXPAND UNDERSCORE:

Expand the digits of interest to the next digit to the right  
Ignore the decimal

600

II. ASK:

Can 96 fit into 600?

III. RESPONSE:

Yes

IV. HOW MANY TIMES?:

6

since  $96 \cdot 6 = 576$

put 6 above the digit of interest

V. SUBTRACT:

$600 - 576 = 24$  (Remainder)

VI. DROP:

Drop the next digit in the dividend

# Long Division Scenarios

6. Continue the long division process

$$\begin{array}{r} \textcolor{green}{00.62} \\ \textcolor{blue}{96} \overline{) \textcolor{red}{60.000}} \\ \underline{\textcolor{black}{576}} \phantom{00} \downarrow \\ \phantom{00} \textcolor{red}{240} \\ \underline{\phantom{00} \textcolor{black}{576}} \phantom{00} \downarrow \\ \phantom{000} \textcolor{orange}{480} \end{array}$$

I. NEW UNDERSCORE:

The difference and newly dropped digit are the new digits of interest

**$\textcolor{red}{240}$**

II. ASK:

Can  $\textcolor{blue}{96}$  fit into  $\textcolor{red}{240}$ ?

III. RESPONSE:

Yes

IV. HOW MANY TIMES? :

**$\textcolor{green}{2}$**

since  $\textcolor{blue}{96} \cdot \textcolor{green}{2} = 192$

put  $\textcolor{green}{6}$  above the **digit of interest**

V. SUBTRACT:

$\textcolor{red}{240} - 192 = \textcolor{orange}{48}$  (Remainder)

VI. DROP:

Drop the **next digit** in the dividend

# Long Division Scenarios

7. Finish the long division process

$$\begin{array}{r} 00.625 \\ 96 \overline{) 60.000} \\ \underline{576} \phantom{00} \downarrow \\ 240 \phantom{00} \\ \underline{240} \phantom{00} \downarrow \\ 480 \phantom{00} \\ \underline{480} \phantom{00} \\ 0 \end{array}$$

I. NEW UNDERSCORE:

The difference and newly dropped digit are the new digits of interest

480

II. ASK:

Can 96 fit into 480?

III. RESPONSE:

Yes

IV. HOW MANY TIMES? :

5

since  $96 \cdot 5 = 480$

put 5 above the digit of interest

V. SUBTRACT:

$480 - 480 = 0$  (Remainder)

VI. FINISH:

The remainder is 0

There are no digits left to drop

The answer is 0.625

# Long Division Scenarios

Example:

**Dividend**  
contains a decimal  
larger value

**Divisor**  
whole number  
smaller value

1. Convert to long division format

Standard Division Format

Long Division Format

Fraction Format

$$4.44 \div 4 = \longrightarrow 4 \overline{) 4.44} \longleftarrow \frac{4.44}{4}$$

2. Put a decimal above the division bracket exactly where it is located in the dividend

$$4 \overline{) 4.44}$$

# Long Division Scenarios

3. Begin the long division process

$$\begin{array}{r} 1. \\ 4 \overline{) 4.44} \\ \underline{-4} \phantom{0} \\ 04 \end{array}$$

I. UNDERSCORE:

Underscore the digit of interest

This starts with the leftmost digit of the dividend

4

II. ASK:

Can 4 fit into 4?

III. RESPONSE:

Yes

IV. HOW MANY TIMES?:

1

since  $4 \cdot 1 = 4$

put 1 above the digit of interest

V. SUBTRACT:

$4 - 4 = 0$  (Remainder)

VI. DROP:

Drop the next digit in the dividend

# Long Division Scenarios

4. Continue the long division process

$$\begin{array}{r} 1.1 \\ 4 \overline{) 4.44} \\ \underline{4} \phantom{0} \downarrow \\ 04 \phantom{0} \downarrow \\ \underline{4} \phantom{0} \downarrow \\ 04 \end{array}$$

I. NEW UNDERSCORE:

The difference and newly dropped digit are the new digits of interest

04

II. ASK:

Can 4 fit into 4?

III. RESPONSE:

Yes

IV. HOW MANY TIMES? :

1

since  $4 \cdot 1 = 4$

put 1 above the digit of interest

V. SUBTRACT:

$4 - 4 = 0$  (Remainder)

VI. DROP:

Drop the next digit in the dividend

# Long Division Scenarios

5. Finish the long division process

$$\begin{array}{r} 1.11 \\ 4 \overline{) 4.44} \\ \underline{4} \phantom{00} \\ 04 \phantom{00} \\ \underline{4} \phantom{00} \\ 04 \phantom{00} \\ \underline{4} \phantom{00} \\ 0 \end{array}$$

I. NEW UNDERSCORE:

The difference and newly dropped digit are the new digits of interest

04

II. ASK:

Can 4 fit into 4?

III. RESPONSE:

Yes

IV. HOW MANY TIMES? :

1

since  $4 \cdot 1 = 4$

put 1 above the digit of interest

V. SUBTRACT:

$4 - 4 = 0$  (Remainder)

VI. FINISH:

The remainder is 0

There are no digits left to drop

The answer is 1.11

# Long Division Scenarios

Example:

**Dividend**  
whole number  
larger value

**Divisor**  
contains a decimal  
smaller value

1. Convert to long division format

Standard Division Format

Long Division Format

Fraction Format

$$8 \div 0.32 = \longrightarrow 0.32 \overline{)8} \longleftarrow \frac{8}{0.32}$$

2. Multiply the divisor by a power of 10 value (10, 100, 1,000) to make it a whole number

$$0.32 \cdot 100 = 32$$

3. Multiply the dividend by the same power of 10 value

$$8 \cdot 100 = 800$$

4. Apply the new values to the long division equation

$$32 \overline{)800.}$$

5. Put a decimal above the division bracket exactly where it is located in the dividend

$$32 \overline{)800.}$$



# Long Division Scenarios

6. Begin the long division process

$$\begin{array}{r} 0 \\ 32 \overline{) 800.} \\ \underline{\phantom{0}80} \phantom{0} \\ \phantom{0}00 \phantom{0} \\ \underline{\phantom{0}00} \phantom{0} \\ \phantom{0}00 \phantom{0} \\ \underline{\phantom{0}00} \phantom{0} \\ \phantom{0}00 \phantom{0} \end{array}$$

I. UNDERSCORE:

Underscore the digit of interest

This starts with the leftmost digit of the dividend

8

II. ASK:

Can 32 fit into 8?

III. RESPONSE:

No

IV. ZERO:

put 0 above the digit of interest

# Long Division Scenarios

7. Continue the long division process

$$\begin{array}{r} 02. \\ 32 \overline{) 800.} \\ \underline{64} \phantom{0} \\ 160 \phantom{0} \end{array}$$

I. EXPAND UNDERSCORE:

Expand the digits of interest to the next digit to the right  
Ignore the decimal

80

II. ASK:

Can 32 fit into 80?

III. RESPONSE:

Yes

IV. HOW MANY TIMES?:

2

since  $32 \cdot 2 = 64$

put 2 above the digit of interest

V. SUBTRACT:

$80 - 64 = 16$  (Remainder)

VI. DROP:

Drop the next digit in the dividend

# Long Division Scenarios

8. Finish the long division process

$$\begin{array}{r} 025. \\ 32 \overline{) 800.} \\ \underline{64} \phantom{0} \\ 160 \\ \underline{160} \\ 0 \end{array}$$

I. NEW UNDERSCORE:

The difference and newly dropped digit are the new digits of interest

160

II. ASK:

Can 32 fit into 160?

III. RESPONSE:

Yes

IV. HOW MANY TIMES?:

5

since  $32 \cdot 5 = 160$

put 5 above the digit of interest

V. SUBTRACT:

$160 - 160 = 0$  (Remainder)

VI. FINISH:

The remainder is 0

There are no digits left to drop

The answer is 25

# Long Division Scenarios

Example:

**Dividend**  
zero

**Divisor**  
any value (except zero)

$$\begin{array}{r} 0 \\ 5 \overline{) 0} \end{array}$$

The quotient is always 0

Example:

**Dividend**  
any value

**Divisor**  
zero

$$\begin{array}{r} \text{undefined} \\ 0 \overline{) 5} \end{array}$$

The quotient is undefined

Example:

**Dividend**  
the same value

**Divisor**  
the same value

$$\begin{array}{r} 1 \\ 7 \overline{) 7} \end{array}$$

The quotient is always 1

# Long Division Scenarios

Example:

**Dividend**

any value (except zero)

**Divisor**

one

$$\begin{array}{r} 9 \\ 1 \overline{) 9} \end{array}$$

The **quotient** is always the same as the **dividend**