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**

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

2. Multiply the divisor by a power of 10 (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

$$7.12 \cdot 10 = 71.2$$

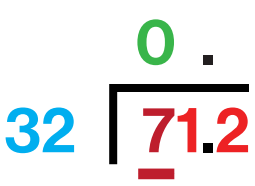
4. Apply the new values to the long division equation

$$32\overline{)71.2}$$

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

Long Division Scenarios

6. Begin the long division process



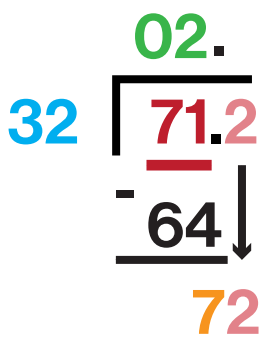
I. UNDERSCORE:
Underscore the digit of interest
This starts with the leftmost digit of the dividend
7

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



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

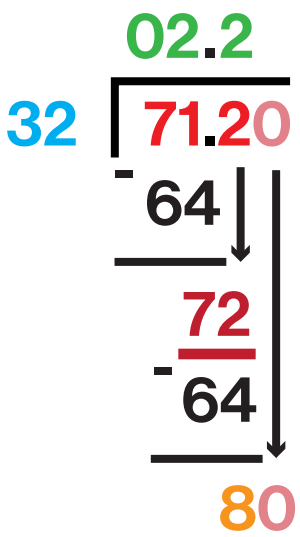
IV. HOW MANY TIMES? :
2
since $32 \cdot 2 = 64$
put 2 above the digit of interest

V. SUBTRACT:
$71 - 64 = 7$ (Remainder)

VI. DROP:
Drop the next digit in the dividend

Long Division Scenarios

8. Continue the long division process



I. NEW UNDERSCORE:

The difference and the 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:

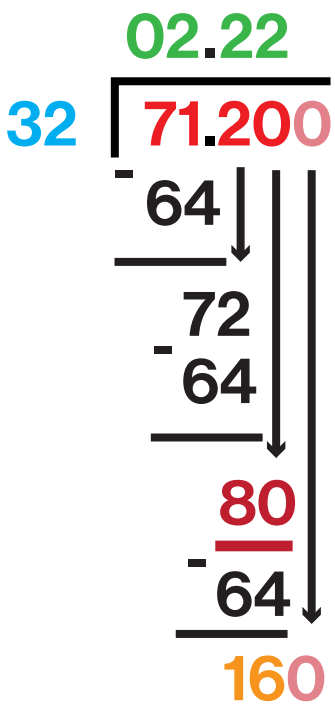
$72 - 64 = 8$ (Remainder)

VI. DROP:

Drop the next digit in the dividend

Long Division Scenarios

9. Continue the long division process



I. NEW UNDERSCORE:

The difference and the 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:

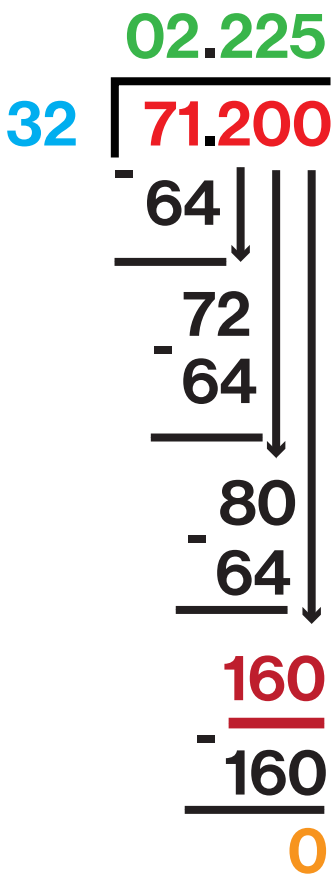
$80 - 64 = 16$ (Remainder)

VI. DROP:

Drop the next digit in the dividend

Long Division Scenarios

10. Finish the long division process



I. NEW UNDERSCORE:

The difference and the 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**

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

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

$$3.2 \cdot 10 = 32$$

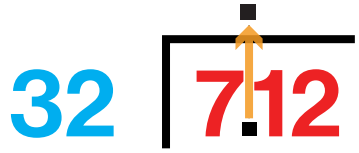
3. Multiply the dividend by the same power of 10

$$0.712 \cdot 10 = 7.12$$

4. Apply the new values to the long division equation

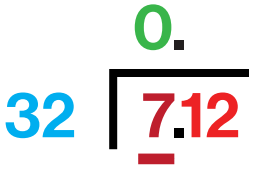
$$32 \overline{)\,7.12}$$

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



Long Division Scenarios

6. Begin the long division process



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

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:

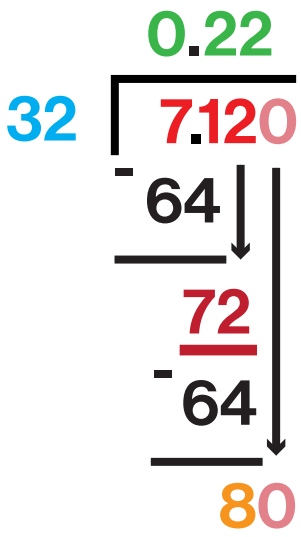
$71 - 64 = 7$ (Remainder)

VI. DROP:

Drop the next digit in the dividend

Long Division Scenarios

8. Continue the long division process



I. NEW UNDERSCORE:

The difference and the 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:

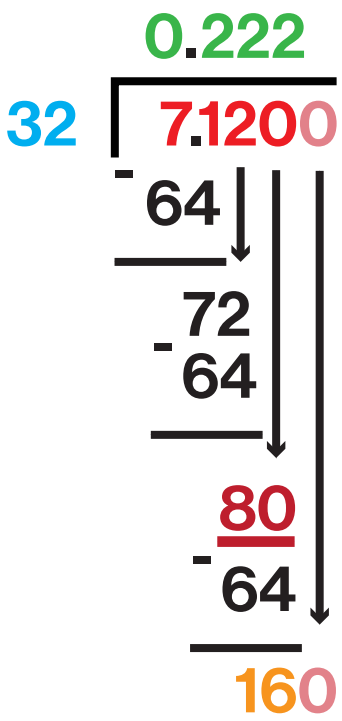
$72 - 64 = 8$ (Remainder)

VI. DROP:

Drop the next digit in the dividend

Long Division Scenarios

9. Continue the long division process



I. NEW UNDERSCORE:

The difference and the 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:

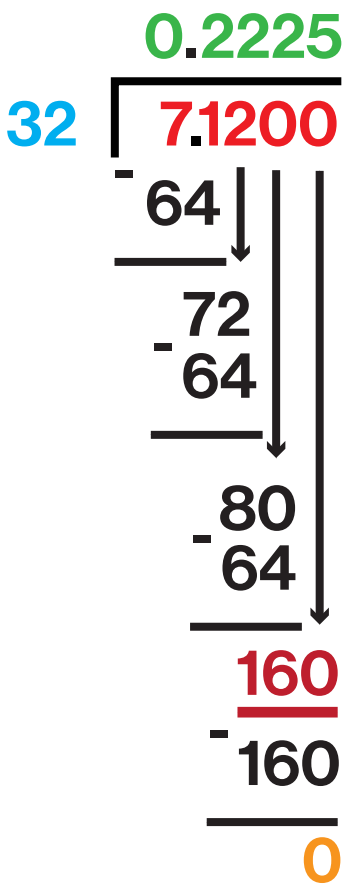
$80 - 64 = 16$ (Remainder)

VI. DROP:

Drop the next digit in the dividend

Long Division Scenarios

10. Finish the long division process



I. NEW UNDERSCORE:

The difference and the 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 | **Long Division Format** | **Fraction Format**

$707 \div 70 =$ → $70\overline{)707}$ ← $\frac{707}{70}$

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

$70\overline{)707.}$

3. Begin the long division process

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

I. UNDERSCORE:
Underscore the digit of interest
This starts with the leftmost digit of the dividend

7

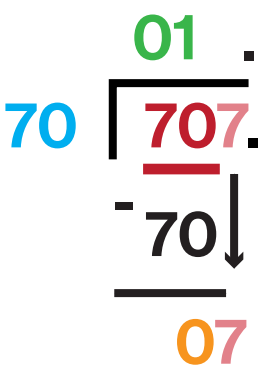
II. ASK:
Can 70 fit into 7?

III. RESPONSE:
No

IV. ZERO:
put 0 above the digit of interest

Long Division Scenarios

4. Continue the long division process



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:

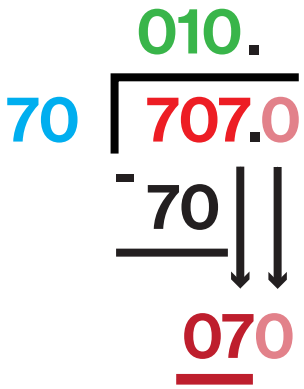
$70 - 70 = 0$ (Remainder)

VI. DROP:

Drop the next digit in the dividend

Long Division Scenarios

5. Continue the long division process



I. NEW UNDERSCORE:
The difference and the newly dropped digit are the new digits of interest
07

II. ASK:
Can 70 fit into 7?

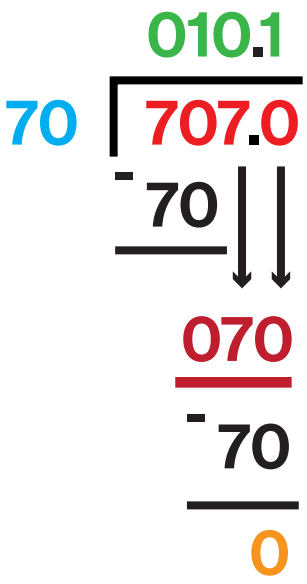
III. RESPONSE:
No

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



I. NEW UNDERSCORE:

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

070

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. FINISH:

The remainder is 0

There are no digits left to drop

The answer is 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 | **Long Division Format** | **Fraction Format**

$60 \div 96 =$ → $96\overline{)60}$ ← $\frac{60}{96}$

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

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

I. UNDERSCORE:
Underscore the digit of interest
This starts with the leftmost digit of the dividend
6

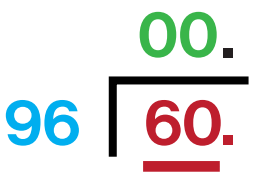
II. ASK:
Can 96 fit into 6?

III. RESPONSE:
No

IV. ZERO:
put 0 above the digit of interest

Long Division Scenarios

4. Continue the long division process



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:

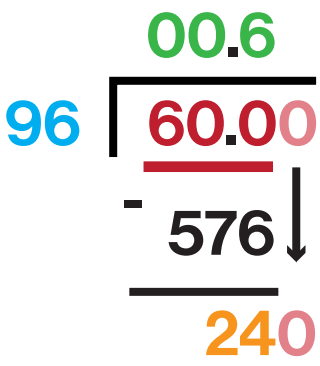
No

IV. ZERO:

put 0 above the digit of interest

Long Division Scenarios

5. Continue the long division process



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:

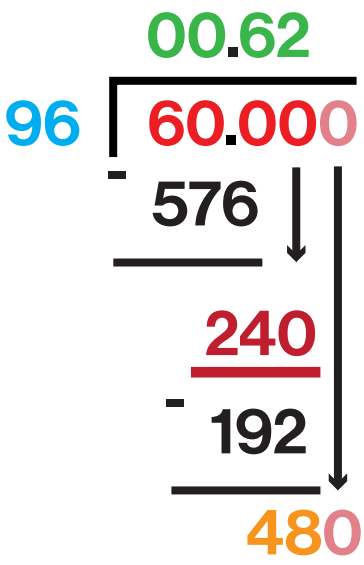
$600 - 576 = 24$ (Remainder)

VI. DROP:

Drop the next digit in the dividend

Long Division Scenarios

6. Continue the long division process



I. NEW UNDERSCORE:

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

240

II. ASK:

Can 96 fit into 240?

III. RESPONSE:

Yes

IV. HOW MANY TIMES? :

2

since $96 \cdot 2 = 192$

put 2 above the digit of interest

V. SUBTRACT:

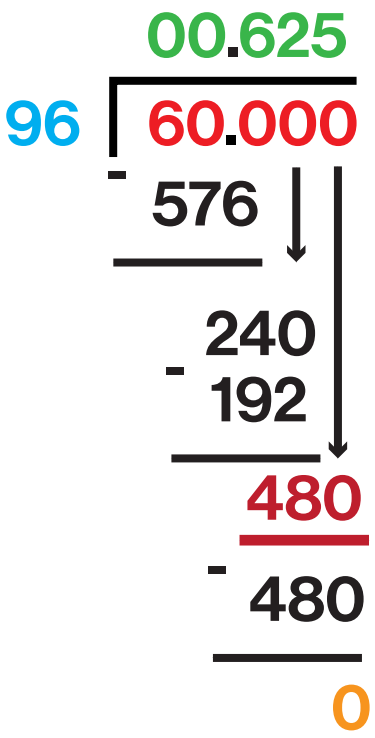
$240 - 192 = 48$ (Remainder)

VI. DROP:

Drop the next digit in the dividend

Long Division Scenarios

7. Finish the long division process



I. NEW UNDERSCORE:

The difference and the 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

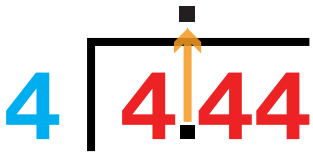
Divisor
whole number
smaller value

1. Convert to long division format

Standard Division Format | **Long Division Format** | **Fraction Format**

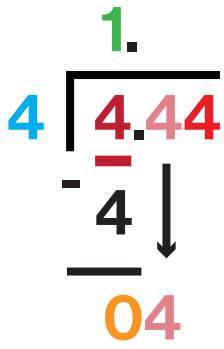
$4.44 \div 4 =$ → $4\overline{)4.44}$ ← $\frac{4.44}{4}$

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



Long Division Scenarios

3. Begin the long division process



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:

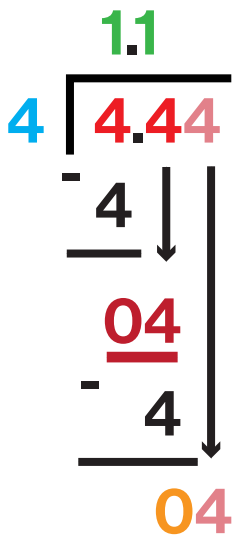
$4 - 4 = 0$ (Remainder)

VI. DROP:

Drop the next digit in the dividend

Long Division Scenarios

4. Continue the long division process



I. NEW UNDERSCORE:

The difference and the 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

I. NEW UNDERSCORE:

The difference and the 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**

$8 \div 0.32 =$ → $0.32\overline{)8}$ ← $\frac{8}{0.32}$

2. Multiply the divisor by a power of 10 (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

$$8 \cdot 100 = 800$$

4. Apply the new values to the long division equation

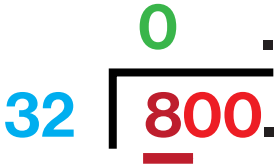
$$32\overline{)800.}$$

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



I. UNDERSCORE:
Underscore the digit of interest
This starts with the leftmost digit of the dividend

8

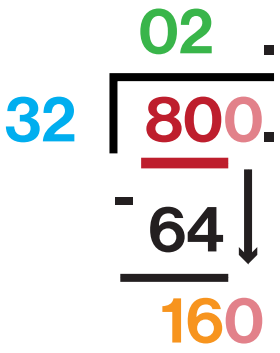
II. ASK:
Can 32 fit into 8?

III. RESPONSE:
No

IV. ZERO:
put 0 above the digit of interest

Long Division Scenarios

7. Continue the long division process



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:

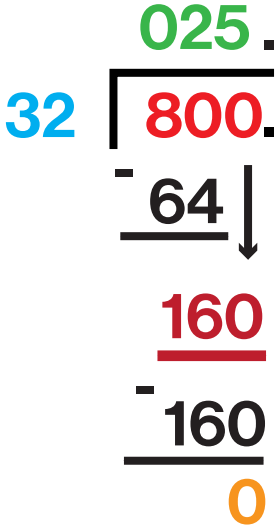
$80 - 64 = 16$ (Remainder)

VI. DROP:

Drop the next digit in the dividend

Long Division Scenarios

8. Finish the long division process



I. NEW UNDERSCORE:

The difference and the 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

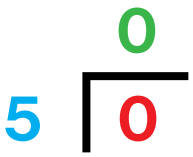
The answer is 25

Long Division Scenarios

Example:

Dividend
zero

Divisor
any value (except zero)



The quotient is always 0

Example:

Dividend
any value

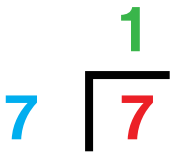
Divisor
zero

The quotient is undefined

Example:

Dividend
the same value (except zero)

Divisor
the same value (except zero)



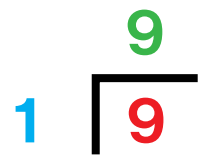
The quotient is always 1

Long Division Scenarios

Example:

Dividend
any value

Divisor
one



The quotient is always the same as the dividend