Decimal Fractions

A decimal fraction is a fraction whose denominator is 1, with as many ciphers annexed as there are places in the numerator, and is usually expressed by writing the numerator only, with a point prefixed to it: thus $\frac{5}{10}$, $\frac{75}{100}$, $\frac{625}{1000}$ are decimal fractions, and are expressed by .5, .75, .625. — A mixed number consisting of a whole number and a decimal, as $25\frac{5}{10}$ is written thus 25.5. — as in numeration of whole numbers the values of the figures increase in a tenfold proportion from the right hand to the left; so in decimals, their values decrease in the same proportion, from the left hand to the right: which is exemplified in the following Table.

Whole Numbers. Decimals.

Note. — Ciphers annexed to Decimals, neither increase nor decrease their value; thus .5, .50, .500, being $\frac{5}{10}$, $\frac{50}{100}$, $\frac{500}{1000}$, are of the same value: but ciphers prefixed to Decimals, decrease them in a tenfold proportion; thus .5, .05, .005, being $\frac{5}{10}$, $\frac{5}{100}$, $\frac{5}{1000}$, are of different values.

Addition of Decimals. Rule. place the given numbers according to their values; Viz units under units, tenths under tenths, &c. and add as in addition of whole numbers; observing to set the points in the sum exactly under those of the given numbers.

Examples.

.12	2.16	2.1
.134	3.45	4.12
.21	40.02	15.4
.743	36.4	76.26
.345	36.1	120.16
.002	125.32	425.04
1.554 A	242.45 A	643.58 Ans

Add .5, .125, .75, .496 and .750 together.

Subtraction of Decimals.

Rule.— place the numbers as in addition, with the less under the greater, and subtract as in whole numbers; setting the point in the remainder under those in the given numbers.

Examples.

.4562	56.12	.4314
.316	1.242	.312
1402	54.878	1.194

From 100.17 take 1.146

1.146

99.024 Answer

Multiplication of Decimals.

Rule.— Multiply as in whole numbers, and point off in the product as many Decimal places as there are in both factors.

If there are not as many places in the product as there are Decimals places in the factors, prefix

Ciphers to supply the deficiency

Examples.

1. Multiply .612 by 4.12

412

1224

612

2448

2.52144 Answer

2. Multiply 1.007 by .041

.041

1007

4028

.041287 Answer

3. Multiply 37.9 by 46.5

46.5

1895

2274

1516

1762.35 Answer

Division of Decimals.

Rule.— Divide as in whole numbers, and from the right hand of the quotient point off as many places for Decimals as the decimal places in the dividend exceed those in the Divisor.

If the places of the quotient are not so many as the rule requires, supply the defect by prefixing Ciphers. If at any time there be a remainder, or the Decimal places in the divisor be more than those in the dividend, Ciphers may be affixed to the Dividend, and the quotient carried on to any degree of exactness.

Examples.

Divide .863972 by 92.

```
92).863972(.009391  Answer
  828
  ---
  359
  276
  ---
  837
  828
  ---
   92
   92
   --
    0
```

Divide 4.13 by 572.4

```
572.4)4.130000(.00721. Ans
   40068
   -----
   12320
   11448
   -----
    8720
    5724
    ----
    2996
```

Divide 19.25 by 38.5

```
38.5)19.25(.5 Answer
   1925
   ....
```

Divide .1606 by .44

```
.44)1606(3.65 Answer
   132
   ---
   286
   264
   ---
   220
   220
   ---
     .
```

Divide .1606 By 4.4

```
4.4)1606(.0365 Answer
   132
   ---
   286
   264
   ---
   220
   220
   ---
     .
```

Divide .1606 By .44.

```
44.)1606(.00365  Answer
   132
   ---
   286
   264
   ---
   220
   220
   ---
     .
```

Divide 9. by .9 Result 10.

```
.9)9.(10. Answer
   9
   -
   .
```

Divide .9 by 9. Result .1

```
9).9(.1
   9
   -
   .
```

Divide 186.9 By 7.476 Ans. 25.

```
7.476)18690(25. Answer
   14952
   -----
   37380
   37380
   -----
     .
```

```
72.4103)2508.928065051(27.1498
   1848207
   -------
   660721060
   646872450
   ---------
   13848610
    9241035
    -------
   4607575000
   3609641400
   ----------
    997933600
    831693150
    ---------
    166240450
    144721701
    ---------
     21518749
     17392828
     --------
      4125921  Answer
```

Reduction of Decimals.

Case. 1. To reduce a vulgar fraction to a Decimal. Rule. annex as many ciphers to the numerator as may be necessary, and divide it by the denominator. Note. – There must be as many Decimal places in the quotient as there are ciphers annexed to the numerator. When compound fraction is given first reduce it to a single one, and then to a decimal.

Examples.

Reduce $\frac{1}{4}$ to a decimal fraction

4 ⟌ 1.00
.25 Answer

Reduce $\frac{1}{2}$ to a Decimal

2 ⟌ 1.0
.5 Answer

Reduce $\frac{3}{4}$ to a Decimal

$\frac{3}{4}$ ⟌ 3.00
.75

Reduce $\frac{3}{8}$ to a Decimal

8 ⟌ 3.000
.375 Answer

Case. 2, To reduce any sum or quantity, to the decimal of any given denomination.

Rule. – Divide the given sum or quantity reduced to the lowest denomination mentioned, by the proposed Integer, reduced to the same Denomination, and the quotient will be the decimal required.

Examples.

Reduce 17 d to the decimal of a Penn

s. d.
20 12
240

£ D
17 6
12

240 ⟌ 210.000 (.875
1920
1800
1680
1200
1200

Answer

Reduce £ D
7 6 to the Decimal of a £.
12

240 ⟌ 90.000 (.375 Ans.
720
1800
1680
1200
1200

Reduce 9 to the Decimal of a £.

240 ⟌ 90.000 (.375 Ans.
720
1800
1680
1200
1200 .. of a yard

Reduce 3 qrs 2 L. to the Decimal

4
16 ⟌ 14.000 (.875 Answer
128
120
112
80
80

Reduce 1 pint to the Decimal of a Gallon.

Pints 8 | 1.000
.125 Answer

Case 3. — To reduce a decimal fraction to its value.

Rule. Multiply it by the known parts of the Integer, and seperate to the right of the product as many places as there are places in the given number.

Examples.

What is the value of .875 of a £

.875
20
17.500
12
6,000
s d
17 6 Answer

What is the value of .87615 of a pound.? —

.87615
20
17.52300
12
6.27600
4
1.10400
s d
17 6 1/4 Answer

What is the value of .7854166 of a Pound? —

.7854166
20
15.7083320
12
8.4999840
4
1.9999360
L D
15 8 1/4 Answer

What is the value of .76 of a Pound

.76
20
15.20
12
2.40
4
1.60
s d q.
15 2 1/4 Answer

What is the value of .625 of a Shilling

.625
12
7.500
4
7.000
D q.
7 1/2 Answer

What is the value of .461 of a Dollar?

.461
100
46.100
10
1.000

Cent M
46 1 Answer

What is the value of .86 of a Rod?

.86
4
3.44
28
12.32
16
5.12
16
1.92

Yr | Rd | Yds | Ft
3 | 12 | 5 | 1.92 Answer

What is the value of .7 of a lb. Troy? Demand —

.7
12 ounces 1 pound Tr
8.4
20 Pwt one Ounce
8.0
Oz. Pwt.
8 8 Answer

What is the value of .71 of 4 Oz. Troy? Demand —

.71
4 Oz.
2.84
20
16.80
24
19.20

Oz | Pwt | Gr
2 | 16 | 19.20 Answer

What is the .761 of a Day Decimally Expressed

.761
24
3044
1522
18.264
60
15.840

.840
60
50.400

How Many Seconds
18 15 50 .400
Answer

What is the .67 of a League Decimally Expressed

.67
3 Miles
2.01
8 Furlongs
.08
40
3.20
10 half yards
2 | 32.0
1.10 yards
3
.30

11 Fur Poles yd
2 0 3 1 .30 Ans:

What is the value of .712 of a Furlong? Demand —

.712
40 Poles
28.480
11
2 | 5280
2.640 yards
3
1.920 feet
12
11.040 Inches

Poles yd Ft In
28 2 1 11 .040 Ans

What is the value of .6875 of a yard? Demand —

.6875
4
2.7500
4
3.0000

Qr | Nls
2 | 3 Answer

What is the value of .3375 of a Long Ton? Demand

.3375
4
1.3500
40
14.0000

Rods Perches
1 14 Answer

What is the value of .3 of an year? Demand

.3
365
109.5
24
12.0

Days Hr.
109 12 Answer

What is the value of .07 of a Barrel of 32 Gallons?

.07
32
2.24
8
1.92

Gal. Pint
2 1.92 Answer

What is the value of .48 of a Pound, and the .16 of a Shilling

.48
20
9.60
12
7.20
4
80

.16
12
1.92

D D
9 7 .92
1 20
9 9 12 Answ.

What is the Sum of .17 of a Pound Troy and .84 of an Ounce?

.17
12
2.04
20
.80
24
19.20

.84
20
16.80
24
19.20

Oz Pw Gr.
2 0 19.20
16 19 20
2 17 14 40 Answer

What is the Difference between .17 L and .7 S? Demand

.17
20
3.40
12
4.80
4
3.20

.7
12
8.4
4
1.6

D Qr
3 4 3/4 20
8 3/4 .6
2 8 1/2 .14 Answer

What is the Difference between .41 Day and .16 Hour?

.41
24
16.4
82
9.84
60
50.40
60
24.00

.16
60
9.60
60
36.00

D Hr Seconds
9 50 24
0 9 36
9 40 48 Answer