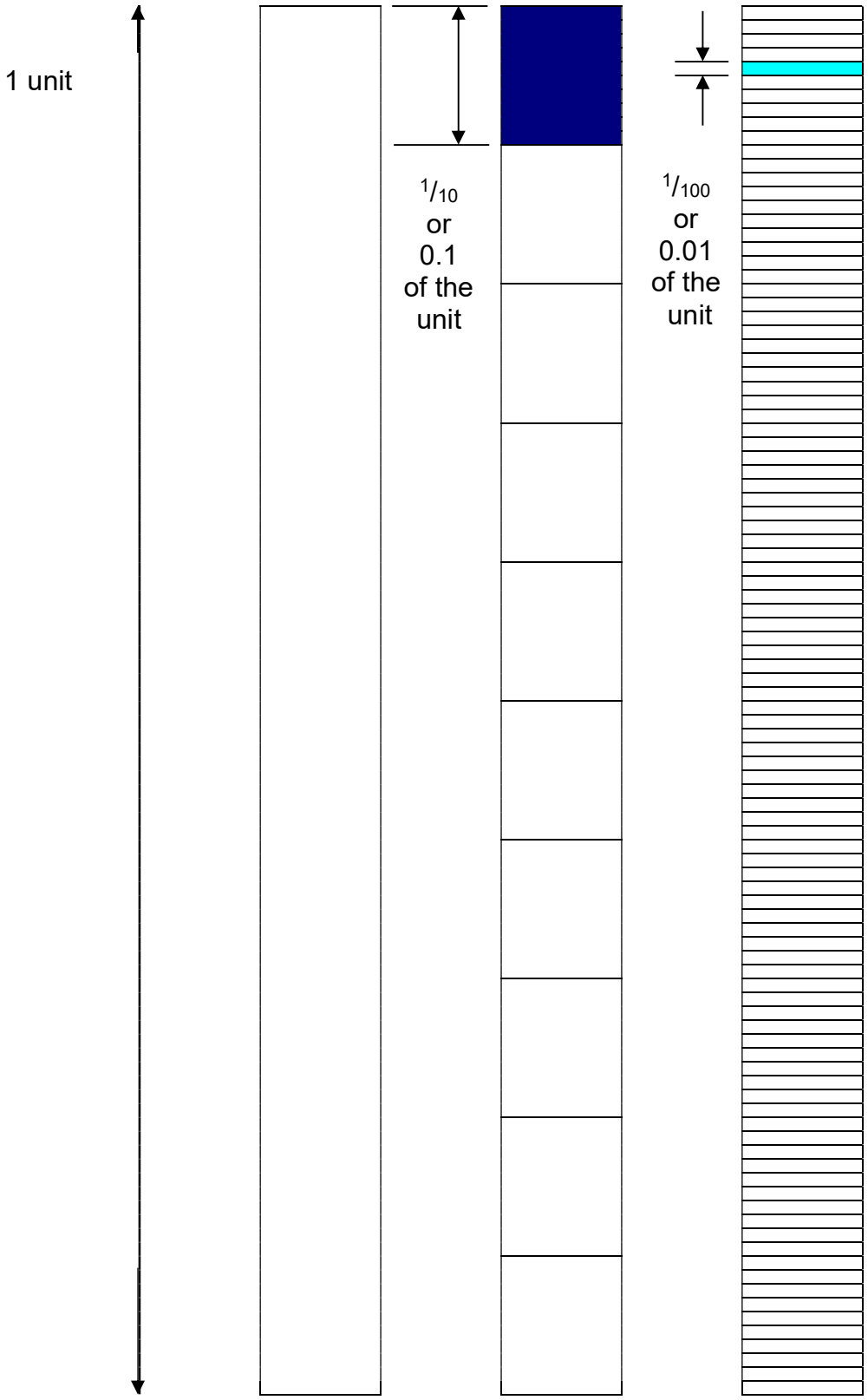
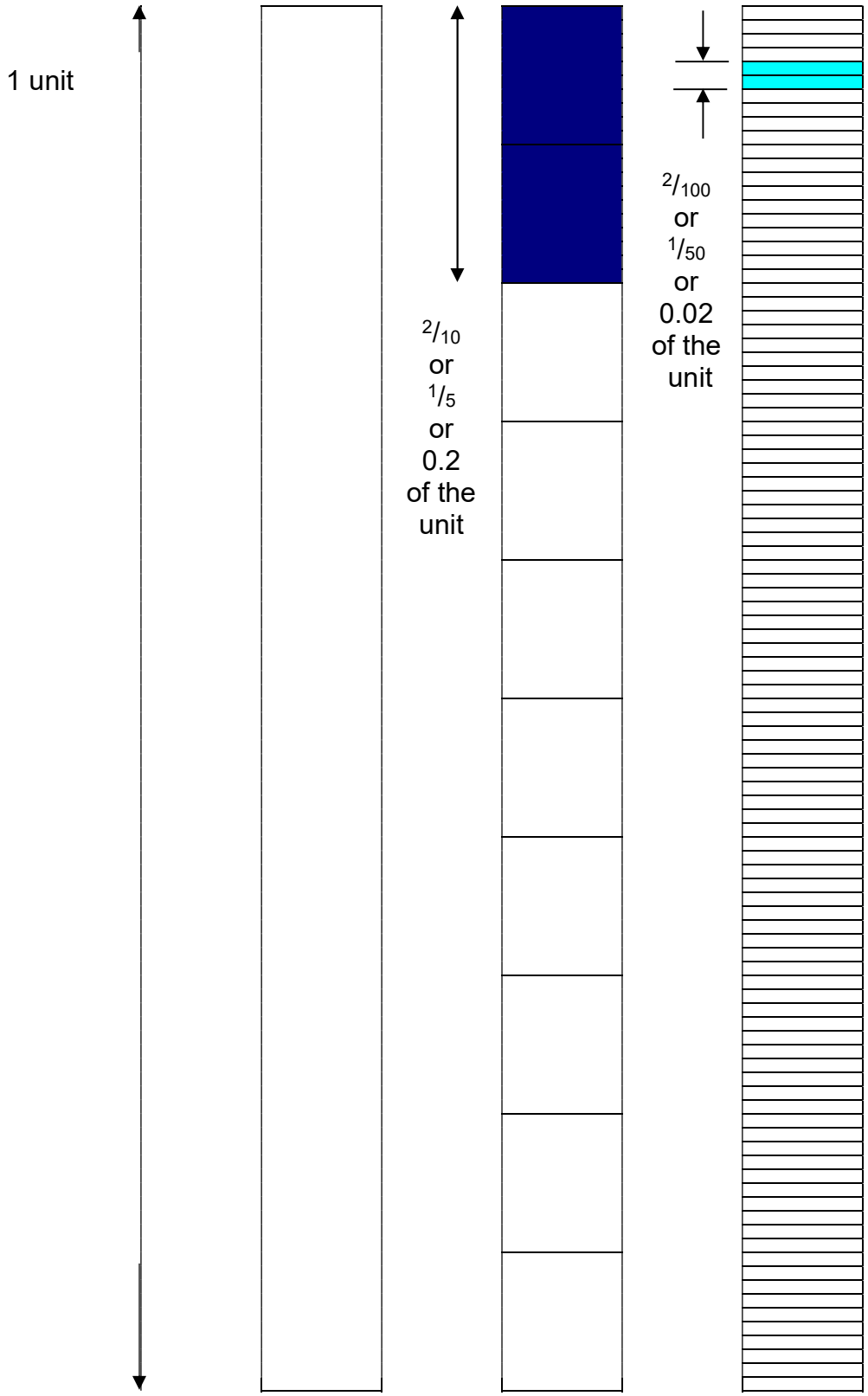
DECIMALS

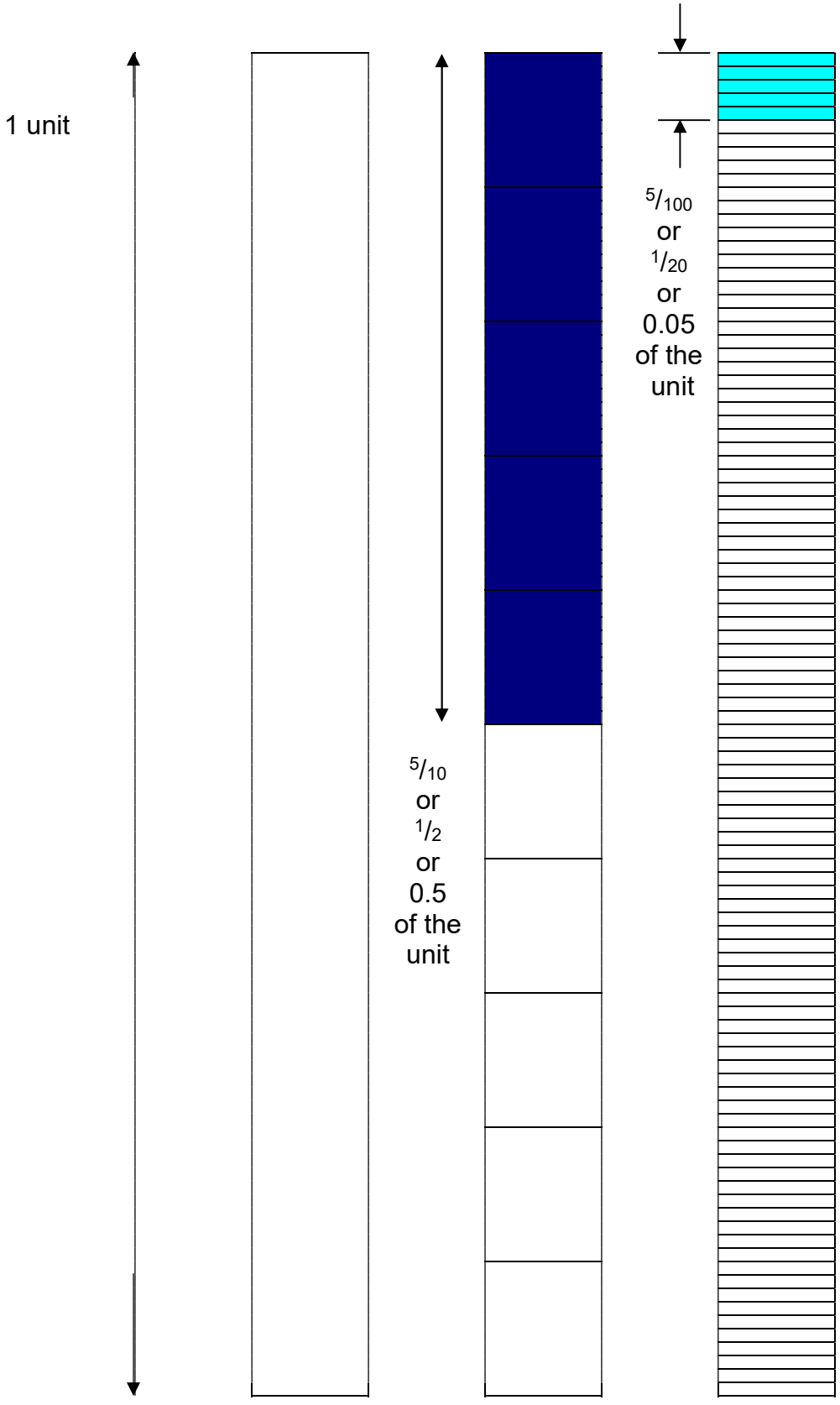
DECIMAL FRACTIONS - DEFINITION

Decimal fractions represent numbers that are less than one. One whole unit can be partitioned into 10 parts, each of these parts will be $^1/_{10}$ or 0.1 of the original unit, this smaller part can be further partitioned into 10 more parts, the resulting very small part will be $^1/_{100}$ or 0.01 of the original unit.

Have a look at the diagram below so you can see what is happening here (you may have to rotate the paper if it helps to view the diagrams).

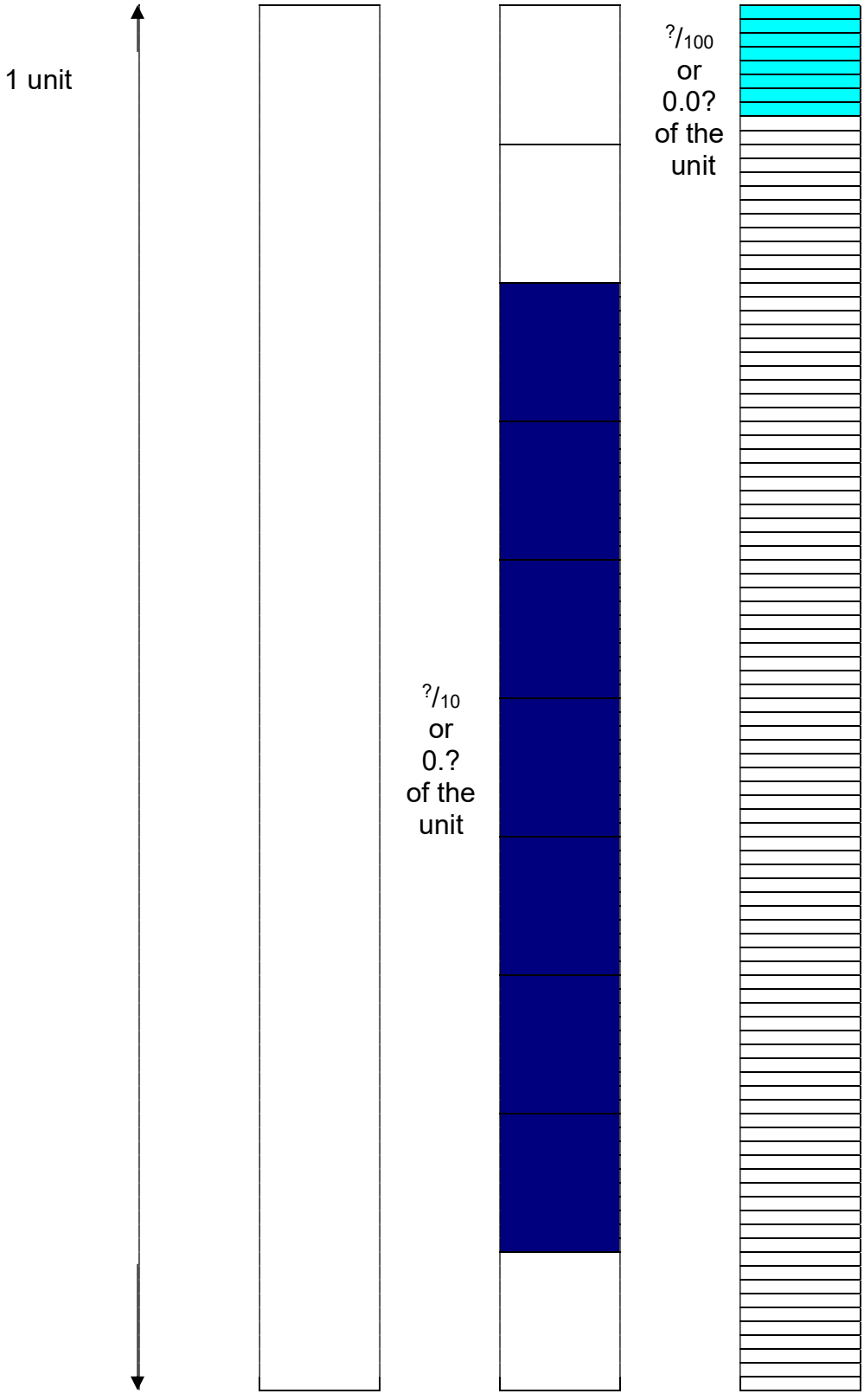



1 unit
2/10 or 1/5 or 0.2 of the unit
2/100 or 1/50 or 0.02 of the unit

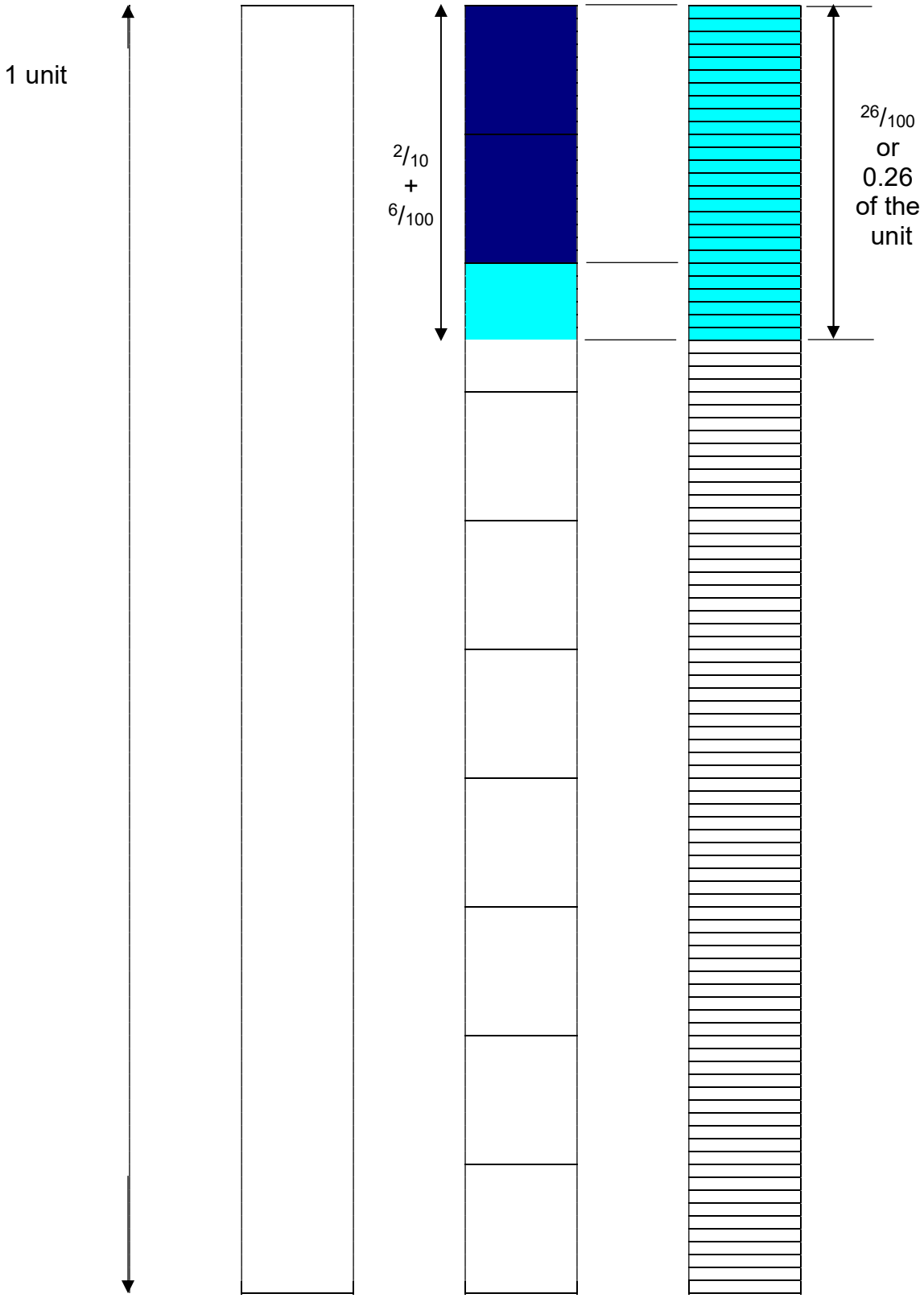

1 unit
5/10
or
1/2
or
0.5
of the
unit
5/100
or
1/20
or
0.05
of the
unit

Exercise 1

What is the value of each question mark.



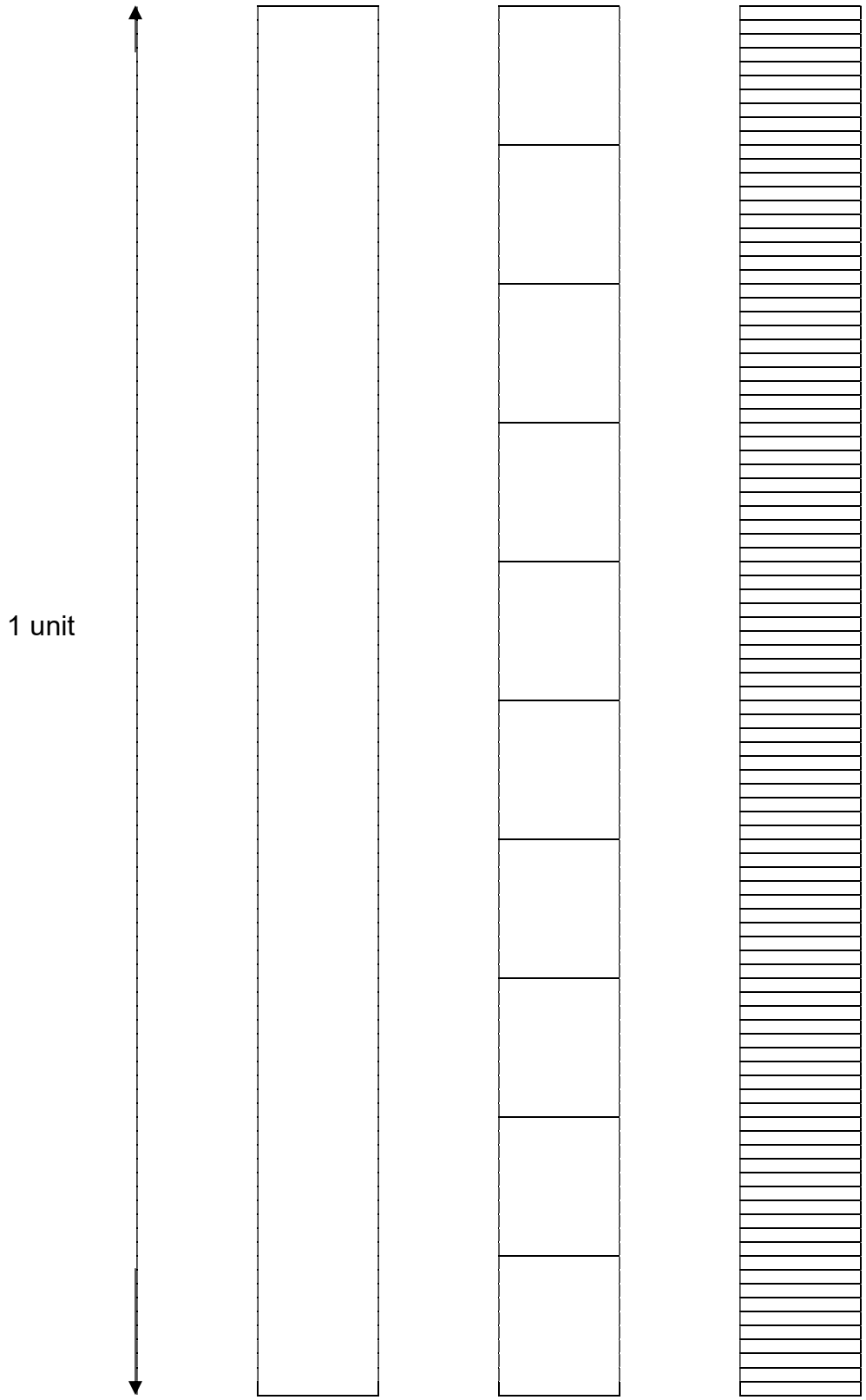
Note that $^{26}/_{100} = {}^{2}/_{10} + {}^{6}/_{100}$



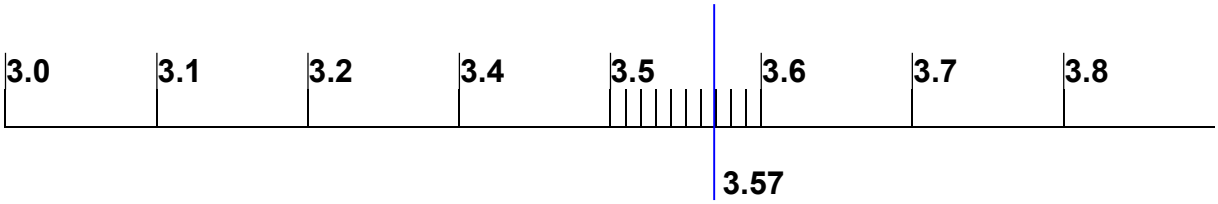
Exercise 2

Photocopy this page and shade in the appropriate area to match the following decimal values. Note for 1.2 you would have to shade in all of the first figure and some of the second.

0.9 0.13 0.28 0.71 1.52 1.68 0.04 2.06 2.5 2.98

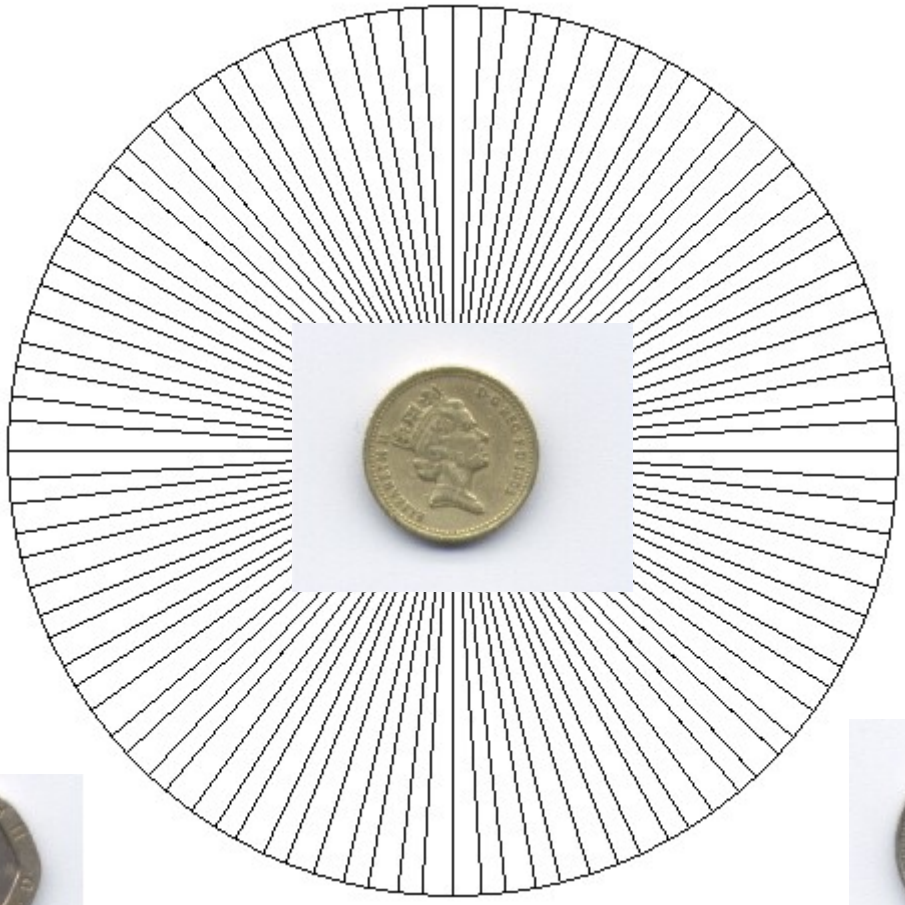


Decimals in measurement and money



Decimals in currency

1 whole pound = 100 pennies



£$^{20}/_{100}$ = £0.20

£$^{10}/_{100}$ = £0.10

£$^{1}/_{100}$ = £0.01

Place Values

Hundreds	Tens	Units	.	Tenths	Hundredths	Thousandths	
		1	.	2	0		= 1 + $^{2}/_{10}$
	1	2	.	3	4		= 12 + $^{3}/_{10}$ + $^{4}/_{100}$
1	2	3	.	4	5		= 123 + $^{4}/_{10}$ + $^{5}/_{100}$
	5	6	.	0	4		= 56 + $^{4}/_{100}$
		9	.	0	7	3	= 9 + $^{7}/_{100}$ + $^{3}/_{1000}$
	2	4	.	6	0	8	= 24 + $^{6}/_{10}$ + $^{8}/_{1000}$
3	6	7	.	9	2	5	= 367 + $^{9}/_{10}$ + $^{2}/_{100}$ + $^{5}/_{1000}$
		0	.	0	0	7	= 0 + $^{7}/_{1000}$
2	0	5	.	0	1	1	= 205 + $^{1}/_{100}$ + $^{1}/_{1000}$
		6	.	6	2	9	= 6 + $^{6}/_{10}$ + $^{2}/_{100}$ + $^{9}/_{1000}$

Exercise 3

Put each of the following decimals into the table below, and write the same number in units fractions of tenths, hundredths and thousands as above.

0.27 2.84 17.76 0.003 5.06 98.005 54.094 1.027 0.375 18.379

Hundreds	Tens	Units	.	Tenths	Hundredths	Thousandths	
							=
							=
							=
							=
							=
							=
							=
							=
							=
							=

Note

123 + $^{4}/_{10}$ + $^{5}/_{100}$ = **123** $^{45}/_{100}$

56 + $^{4}/_{100}$ = **56** $^{4}/_{100}$

9 + $^{7}/_{100}$ + $^{3}/_{1000}$ = **9** $^{73}/_{1000}$

ADDITION AND SUBTRACTION

This can be done just like adding and subtracting whole numbers, just make sure you line up the decimals points when laying out the your work.

Example

2.84 + 1.12

```
  2.84
+ 1.12
  3.96
```

12.05 + 1.007

```
  12.050
+  1.007
  13.057
```

14.86 – 9.23

```
  14.86
–  9.23
   5.63
```

10.06 – 1.2

```
  10.06
–  1.20
   8.86
```

MULTIPLICATION

First carry out the multiplication as if there were no decimal points.

2.48 x 3.12 (notice there are 2 decimal places in the first number and 2 in the second)

```
  248
x 312
  496
 2480
74400
77376
```

As there were 4 decimal places in the question their must be 4 in the answer.

So the correct answer is 7.7376

DIVISION

The division process is the same as with whole numbers, however if the number you are dividing by is not a whole number then multiply it by a factor of 10 until it becomes a whole number. You must also then multiply the number you will be dividing into by the same amount so that the overall division remains the same.

Example

```
1.565 ÷ 0.5
```

or

```
 1.565
  0.5
```

The 0.5 needs to be turned into a whole number, therefore it must be multiplied by 10. To keep the overall division the same the number you are dividing into (1.565), must also be multiplied by 10.

The division becomes

```
15.56 ÷ 5.0
```

or

```
 15.65
  5.0
```

```
    3.13
  5 |15.65
```