Decimal fractions

Ordering and comparing

1. Compare the following decimal fractions, filling in <, > or = in the spaces provided.

a) 5,45 ☐ 5,54 **b)** 505,05 ☐ 505,50

c) 17,76 ☐ 17,176 **d)** 17,76 ☐ 17,7600

e) 450,00 ☐ 45,000 **f)** 3,101 ☐ 0,3101

Tip

To compare decimals you must have the same number of digits after the decimal comma. You can do this by putting zeros after the last digit. The zeros at the end of a decimal fraction do not change the value of the decimal fraction.

2. Arrange the following decimal fractions in ascending order.

a) 8,01; 0,81; 0,801; 8,43; 8,34; 8,043

b) 20,65; 206,5; 2,065; 2,0; 2,06; 2,0651; 206,51

c) 1 000,25; 100,250; 10,205; 102,02

3. Complete the following patterns.

a) 45,101; 45,071; 45,041; ☐; ☐; 44,951

b) 37,37; 37,47; 37,57; ☐; ☐; 37,87

4. Write the decimal fraction which lies halfway between.

a) 0,341 and 0,381 ☐ **b)** 373,3 and 373,5 ☐ **c)** 1,0 and 1,1 ☐

5. Write the decimal fractions which lie three quarters of the way between.

a) 0,341 and 0,381 ☐ **b)** 373,3 and 373,5 ☐ **c)** 1,0 and 1,1 ☐

6. Write the decimal fractions which lie one quarter of the way between.

a) 0,341 and 0,381 ☐ **b)** 373,3 and 373,5 ☐ **c)** 1,0 and 1,1 ☐

Reminder

Decimal fractions can be written in expanded notation as we do with whole numbers, e.g. $345{,}876 = 300 + 40 + 5 + \frac{8}{10} + \frac{7}{100} + \frac{6}{1\,000}$. We can identify the place value and the value of each digit.

100 000	10 000	1 000	100	10	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1\,000}$	$\frac{1}{10\,000}$
0	0	0	3	4	5	8	7	6	0

The place value of 8 is the tenths column ($\frac{1}{10}$). The value of 8 is therefore $\frac{8}{10}$.

7. Use the number 9 078,405 in expanded notation to answer the questions which follow.

a) What is the value of the 5?

b) What is the place value of the 4?

c) Write 9 078,405 in expanded notation.

d) Which digit occupies the thousandths place value?

Decimal fractions

Adding and subtracting

Remember

When you add 45,63 and 15,27 you notice that the digits 4 and 1 have the same place value.
The two 5s also have the same place value and so on.
The estimate of 45,63 + 15,27 is 46 + 15 = 61 if we round off to a whole number.
Now 45,63 + 15,27 can be written as (40 + 10) + (5 + 5) + (0,6 + 0,2) + (0,03 + 0,07)
= 50 + 10 + 0,8 + 0,10
= 60 + 0,8 + 0,01
= 60,81
Note that the answer is close to our estimated answer which is 61.

1. Use expanded notation to work out the following sums. Start by estimating the answer first.

a) 4,6 + 5,4

b) 5 056,98 + 43,98

2. Use the vertical addition method to work out the following sums.

a) 45,6 + 53,7

b) 5 056,98 + 43,98

3. Use expanded notation to work out the following. Estimate the answer first.

a) 56,6 – 53,2

b) 432,7 – 429,88

4. Calculate the following using the vertical subtraction method.

a) 56,6 – 53,2

b) 432,7 – 429,88