Ordering Decimals

Prior Knowledge:

- Place value.

- Using a place value chart.

- Converting money between pence and pounds.

Vocabulary Check

Ascending: increasing in size (arrange from smallest to largest).

Descending: decreasing in size (arrange from largest to smallest).

Example

Arrange the following decimals in order, starting with the smallest:

0.8, 0.85, 0.58, 0.5, 0.508, 0.805

Step 1:

- Start by placing the decimals in a place value grid.

- Make sure you line up the numbers accurately.

Units	Tenths	Hundredths	Thousandths
0	8		
0	8	5	
0	5	8	
0	5		
0	5	0	8
0	8	0	5

Step 2:

- Fill in any blank spaces with a 0.

Units	Tenths	Hundredths	Thousandths
0	8	**0**	**0**
0	8	5	**0**
0	5	8	**0**
0	5	**0**	**0**
0	5	0	8
0	8	0	5

Step 3:

- You must start at the highest place value column (the left-hand column) in the grid.

- Find the smallest number.

- Yikes - They're all the same! Go to step 4 to find out what to do next.

Units	Tenths	Hundredths	Thousandths
0	8	**0**	**0**
0	8	5	**0**
0	5	8	**0**
0	5	**0**	**0**
0	5	0	8
0	8	0	5

Step 4:

- The smallest digit in the tenths column is 5.

- However, there are 3 decimals with the digit 5 in the tenths column so we must go to the hundredths column.

Units	Tenths	Hundredths	Thousandths
0	8	**0**	**0**
0	8	5	**0**
0	⑤	8	**0**
0	⑤	**0**	**0**
0	⑤	0	8
0	8	0	5

Step 5:

- Of these decimals, two of them have the smallest digit, 0, in their hundredths column.

- We must move along to the thousandths column to find our smallest number.

Units	Tenths	Hundredths	Thousandths
0	8	**0**	**0**
0	8	5	**0**
0	5	8	**0**
0	5	⓪	**0**
0	5	⓪	8
0	8	0	5

Step 6:

- The smallest decimal is 0.5.

- (Remember not to use the zeros you included in step 2).

Units	Tenths	Hundredths	Thousandths
0	8	**0**	**0**
0	8	5	**0**
0	5	8	**0**
0	5	**0**	⓪
0	5	0	8
0	8	0	5

Step 7:

- You now need to repeat the process from step 3 to find the next number.

- Repeat the process until you find the full order.

Units	Tenths	Hundredths	Thousandths
0	8	**0**	**0**
0	8	5	**0**
0	5	8	**0**
~~0~~	5	~~0~~	~~0~~
0	5	0	8
0	8	0	5

The numbers in ascending order: **0.5, 0.508, 0.58, 0.8, 0.805, 0.85**

Your Turn

1. Order each set of decimals in ascending order:

   a. 2.5, 2.7, 2.1, 2.9, 2.6

   _____

   b. 3.9, 4.4, 3.7, 3.5, 4.1

   _____

   c. 1.23, 1.45, 1.3, 1.33, 1.32

   _____

   d. 2.91, 2.2, 2.9, 2.09. 2.009

   _____

   e. 0.65, 0.5, 0.6, 0.505, 0.606

   _____

   f. 5.55, 5.5, 5.005, 5.505, 0.05

   _____

   g. 71.808, 71.8, 71.88, 71.008, 71.088

   _____

   h. 0.29, 0.0029, 0.209, 2.9, 0.92

   _____

2. Order each set of decimals in descending order:

   a. 0.75, 0.706, 0.7885, 0.7001, 0.7

   _____

   b. 1401.2, 1402.1, 1402.001, 1402.54, 1402.02

   _____

   c. 6.514, 6.15, 6.141, 6.541, 6.41

   _____

   d. 0.234, 0.43, 0.204, 0.34, 3.043

   _____

   e. 99.99, 99.9, 99.09, 0.999, 99.9901

   _____

   f. 10.1, 1.01, 1.001, 101.1, 1.1

   _____

   g. 81.02, 81.2, 81.21, 8.12, 81.001

   _____

   h. 7.71, 7.7, 7.07, 7.17, 7.77

   _____

3. Order the sets of money, starting with the smallest:

   a. 28p, £0.30, £0.25, 15p

   _____

   b. 65p, 89p, £0.54, £0.60

   _____

c. £0.44, 39p, £0.36, 45p

d. 110p, £1.09, 130p, £1.20

_____

_____

4. Order the following numbers, starting with the largest:

0.488 _____

zero point four eight _____

0.48 multiplied by 100 _____

ten lots of 0.48 _____

_____

_____

5. Sam thinks they have placed the decimals in ascending order:
0.08, 0.801, 0.8, 0.81, 0.88

Identify the mistake that Sam has made.

_____

_____

Challenge

Your task is to get from the start to the finish. You can only go through a larger number and you may not travel diagonally. Good luck!

Start 0.03	0.301	0.03	0.13
0.003	0.310	0.33	0.333
0.3003	0.313	0.13	3.303
3.33	0.03	33.3 **Finish**	3.33