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What are tenths and hundredths?

0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.1
0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.2
0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.3
0.31	0.32	0.33	0.34	0.35	0.36	0.37	0.38	0.39	0.4
0.41	0.42	0.43	0.44	0.45	0.46	0.47	0.48	0.49	0.5
0.51	0.52	0.53	0.54	0.55	0.56	0.57	0.58	0.59	0.6
0.61	0.62	0.63	0.64	0.65	0.66	0.67	0.68	0.69	0.7
0.71	0.72	0.73	0.74	0.75	0.76	0.77	0.78	0.79	0.8
0.81	0.82	0.83	0.84	0.85	0.86	0.87	0.88	0.89	0.9
0.91	0.92	0.93	0.94	0.95	0.96	0.97	0.98	0.99	1

- Count in hundredths. What do you notice when you get to the end of each row?
- Choose a number and say how many hundredths it is made from.

- 'Fill in the missing symbols (< > or =).'

$0.7 \bigcirc 0.4$

$1.0 \bigcirc 1$

$1.7 \bigcirc 1.4$

$0.6 \bigcirc 1.6$

$0.2 \bigcirc 2.0$

$1.6 \bigcirc 0.9$

$0.4 \bigcirc 4.0$

$0.2 \bigcirc 2$

$9 \bigcirc 9.0$

$14 \bigcirc 1.4$

'Put these numbers in order from the smallest to the largest.'

131 0 1.3 3 13 0.3 13.1

'Fill in the missing numbers.'

$1.8 = 1 + \square$

$3.6 = \square + 0.6$

$1.8 = \square + 0.8$

$3.6 = 3 + \square$

'Fill in the missing numbers and words.'

$3 \times 0.1 = 0.3$ three 0.1s

$4 \times 0.1 = 0.4$ _____ 0.1s

$5 \times 0.1 = \square$ five 0.1s

$10 \times 0.1 = \square$ ten 0.1s

$11 \times 0.1 = \square$ _____ 0.1s

$12 \times 0.1 = \square$ twelve 0.1s

$22 \times 0.1 = \square$ _____ 0.1s

$23 \times 0.1 = \square$ twenty-three 0.1s

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How are they related?

1,000,000	2,000,000	3,000,000	4,000,000	5,000,000	6,000,000	7,000,000	8,000,000	9,000,000
100,000	200,000	300,000	400,000	500,000	600,000	700,000	800,000	900,000
10,000	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000
1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09

Use the Gattengo chart above choose numbers that a 2 rows apart and write them as multiplication and division sentences to show how the value changes.

Eg $2 \times 100 = 200$

$200 \div 100 = 2$

1. Complete the sentences.
 - a. 500 made 1,000 times the size is _____.
 - b. 0.7 made 100 times the size is _____.
 - c. 800,000 made 10 times the size is _____.
 - d. 4,000,000 made one-thousandth times the size is _____.
 - e. 9,000 made one-hundredth times the size is _____.
 - f. 3 made one-tenth times the size is _____.
2. The distance from London to Bristol is about 170km. The distance from London to Sydney, Australia is about 100 times as far. Approximately how far is it from London to Sydney?
3. A newborn elephant weighs about 150kg. A newborn kitten weighs about 150g. How many times the mass of a newborn kitten is a newborn elephant?
4. Walid has a place-value chart and three counters. He has represented the number 1,110,000.

Millions			Thousands			Ones		
100s	10s	1s	100s	10s	1s	100s	10s	1s
		●	●	●				

- a. Find 2 different numbers that Walid could make so that 1 number is one-hundredth times the size of the other number.
- b. Find 2 different numbers that Walid could make so that 1 number is 1,000 times the size of the other number.

5. Fill in the missing numbers.

$$\begin{array}{ccc} & \times 10 & \\ & \rightarrow & \\ \boxed{4.3} & & \boxed{} \\ & \leftarrow & \\ & \div 10 & \end{array}$$

$$\begin{array}{ccc} & \times 10 & \\ & \rightarrow & \\ \boxed{} & & \boxed{27,158} \\ & \leftarrow & \\ & \div 10 & \end{array}$$

$$\begin{array}{ccc} & \times 100 & \\ & \rightarrow & \\ \boxed{729} & & \boxed{} \\ & \leftarrow & \\ & \div 100 & \end{array}$$

$$\begin{array}{ccc} & \times 100 & \\ & \rightarrow & \\ \boxed{} & & \boxed{5,806} \\ & \leftarrow & \\ & \div 100 & \end{array}$$

$$\begin{array}{ccc} & \times 1,000 & \\ & \rightarrow & \\ \boxed{14.3} & & \boxed{} \\ & \leftarrow & \\ & \div 1,000 & \end{array}$$

$$\begin{array}{ccc} & \times 1,000 & \\ & \rightarrow & \\ \boxed{} & & \boxed{2,670,000} \\ & \leftarrow & \\ & \div 1,000 & \end{array}$$

6. Use the following to complete the equations:

$\times 10$ $\times 100$ $\times 1,000$ $\div 10$ $\div 100$ $\div 1,000$

Use each term only once.

$543 \boxed{} = 5.43$

$3,169 \boxed{} = 3,169,000$

$515 \boxed{} = 5,150$

$276,104 \boxed{} = 27,610.4$

$35,000 \boxed{} = 35$

$427 \boxed{} = 42,700$

Look at the following sentences and make sure that you know them.

10 hundredths are equivalent to 0.1 or one tenth.

10 tenths are equivalent to 1.

10 ones are equivalent to 10.

10 tens are equivalent to 100.

10 hundreds are equivalent to 1000.

10 thousands are equivalent to 10,000.

10 ten thousands are equivalent to 100,000.

10 hundred thousands are equivalent to 1,000,000 or 1 million.

10 millions are equivalent to 10,000,000 or 10 million.

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What is the value?

Who can make the largest number?

With a partner roll a die 6 times writing the digits in order starting from the ones.

If you don't have a die use this interactive

<https://nrich.maths.org/6717>

Millions			Thousands			Ones			Millions			Thousands			Ones		
100s	10s	1s	100s	10s	1s	100s	10s	1s	100s	10s	1s	100s	10s	1s	100s	10s	1s

Look at the numbers you have rolled.

Put them in order from smallest to largest.

Choose a number.

Write the number in words.

Represent the value of each digit.

What is the difference between your number and your partner's number?

Can you swap a digit to make it larger?

Can you swap a digit to make it smaller?

What is the smallest number you can make using the digits you have rolled?

What is the largest number you can make using the digits you have rolled?

Challenge

Millions			Thousands			Ones		
100s	10s	1s	100s	10s	1s	100s	10s	1s
		●	●	●				

- 1) Find two different numbers that Harry could represent that add up to 2,002,002.
- 2) Now find another pair and another... How many can you find?
- 3) Find two different numbers that Harry could make that:
 - Have a difference of nine thousand
 - Have a difference of ninety thousand
 - Have a difference of nine thousand
- 4) Find two different numbers that Harry could make so that:
 - One number is one thousandth of the other number
 - One number is one hundred times larger than the other number
 - One number is one hundred times larger than the other number

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Can you solve problems?

$$761,902 = 700,000 + \boxed{} + 1,000 + 900 + 2$$

$$2,124,003 = \boxed{} + 3$$

$$4,800,672 = 4,000,000 + 800,000 + \boxed{} + 70 + \boxed{}$$

$$923,516 = \boxed{} + 3,000 + 500 + 10 + 6$$

$$5,062,100 = 5,000,000 + \boxed{} + 100$$

$$\boxed{} + 6,453,128 = 9,453,128$$

$$124,362 - 20,000 = \boxed{} \quad \boxed{} + 6,453,128 = 6,953,128$$

$$124,362 - 2,000 = \boxed{} \quad \boxed{} + 6,453,128 = 6,463,128$$

$$124,362 - 200 = \boxed{} \quad \boxed{} + 6,453,128 = 6,459,128$$

$$124,362 - 2 = \boxed{} \quad \boxed{} + 6,453,128 = 6,453,158$$

$$1,234,567 - \boxed{} = 1,134,567 \quad \boxed{} - 300,000 = 4,543,654$$

$$1,234,567 - \boxed{} = 1,234,267 \quad \boxed{} - 2,000 = 4,543,654$$

$$1,234,567 - \boxed{} = 1,234,562 \quad \boxed{} - 40 = 4,543,654$$

$$630,421 + 130,000 = \boxed{} \quad 7,125,364 - 24,000 = \boxed{}$$

$$630,421 + 136,000 = \boxed{} \quad 7,125,364 - 24,100 = \boxed{}$$

$$630,421 + 136,200 = \boxed{} \quad 7,125,364 - 24,130 = \boxed{}$$

$$630,421 + 136,205 = \boxed{} \quad 7,125,364 - 24,013 = \boxed{}$$

$$3,514,203 + 900,000 - 800,000 = \boxed{}$$

$$3,514,203 - 700,000 + 400,000 = \boxed{}$$

$$3,514,203 + 8,000 - \boxed{} = 3,517,203$$

$$3,514,203 - 6,000 + \boxed{} = 3,516,203$$

Extension

Look at the following number

7,348,562

Say the number

Using subtraction zap the 4 digit so it becomes 0.

What equation would you use?

Continue until each digit is 0.

Challenge

'How many ways can you arrange these digit cards so that the inequality is true?'

$\boxed{1} \boxed{3} \boxed{4} \boxed{7}$

$\boxed{4} \boxed{} \boxed{3} \boxed{} \boxed{2} \boxed{0} \boxed{0} < \boxed{} \boxed{6} \boxed{} \boxed{2} \boxed{1} \boxed{0} \boxed{0}$