

Year 6

Monday 18th May 2020

Maths

LO: multiplying and dividing by 10, 100 and 1000

Please note: this link only works on either pdf or the link above this powerpoint.
The video lesson is available here – Summer Term - Week 5 - lesson 1

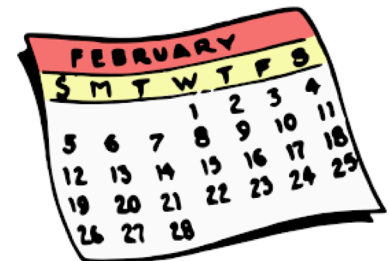


Brain Melter!

If I said yesterday was two days before Monday. What day is it today? You'd say it's Sunday. And you would be correct.

Now let's tackle a similar question from The National Mathematics Contest (1991) Paper:

Three days ago, yesterday was the day before Sunday. What day will it be tomorrow?



This is a Gattegno Chart.

It helps to understand and solve problems involving place value.

a)

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

b)

c)

d)

e)

1:

Lets try to spot patterns created on this chart. I can see that one step up is $\times 10$ and one step down $\div 10$.

Follow the arrows. What do you notice?

This is a Gattegno Chart.

It helps to understand and solve problems involving place value.

	100	200	300	400	500	600	700	800	900
a)	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

Answers:

a) $100 \div 10 \div 10 = 1$ or $100 \div 100 = 1$

b) $30 \div 10 \div 10 = 0.3$ or $30 \div 100 = 0.3$

c) $0.3 \times 10 \times 10 \times 10 = 300$ or $0.3 \times 1000 = 300$

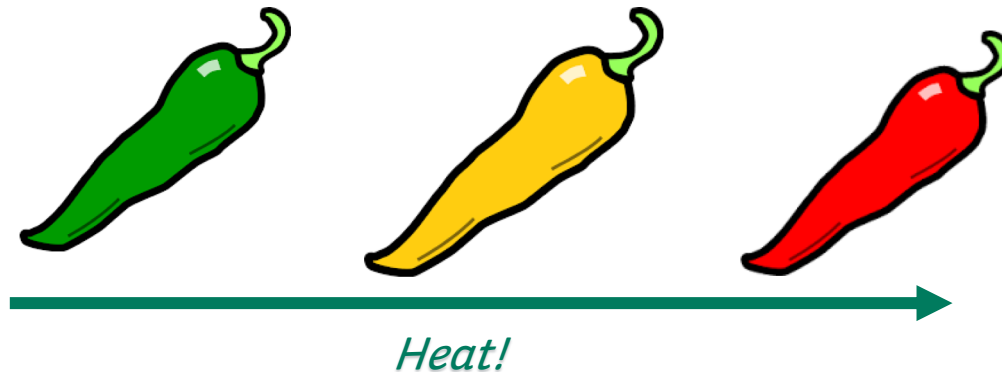
d) $600 \div 10 \div 10 \div 10 \div 10 = 0.06$ or $600 \div 10,000 = 0.06$

e) $0.08 \times 10 \times 10 \times 10 = 80$ or $0.08 \times 1000 = 80$



The independent work continues on the next two slides. There are 6 questions and 1 extension

(Español - siete preguntas y una extensión de división, y también siete preguntas y una extensión de multiplicación.)





4 Complete the calculations.

a) $13.44 \times 10 = \square$

d) $4.4 \times \square = 4,400$

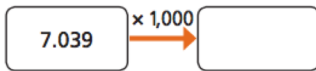
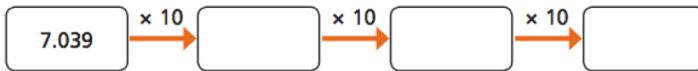
b) $41.4 \times 100 = \square$

e) $\square = 1.03 \times 100$

c) $0.415 \times 1,000 = \square$

f) $30.44 = \square \times 10$

5 Complete the diagrams.



What do you notice? Why does this happen?

6 Write $>$, $<$ or $=$ to compare the number sentences.

$1.4 \times 10 \times 10 \times 10$ $1.4 \times 1,000$

$1.4 \times 10 \times 100$ $1.4 \times 1,000$

$1.4 \times 10 \times 10$ $1.4 \times 1,000$

$1.4 \times 10 \times 2$ 1.4×100

7 Kim is calculating 14.3×200

She writes this as her answer.

$$14.3 \times 200 = 28.600$$

Explain Kim's mistake.

Ext: Use the cards to complete the calculation.
You can use each card more than once.

$0.002 \square \square \square = 2,000$

How many ways is it possible to complete this calculation?

Talk about it with a partner.




Divide by 10, 100 and 1,000

3

1 Complete the calculations and sentences.

Use place value counters to help you.



Th	H	T	O	Tth	Hth
	●	●●●		●	

a) $140 \div 10 = \square$

When the number is divided by 10 the counters move place to the right.

b) $140 \div 100 = \square$

When the number is divided by 100 the counters move places to the right.

c) $140 \div 1,000 = \square$

When the number is divided by 1,000 the counters move places to the right.

2 Complete the diagram.



a) Draw counters to represent the calculations.

$123 \div 1$

H	T	O	Tth	Hth	Thth
			●		

$123 \div 10$

H	T	O	Tth	Hth	Thth
			●		

$123 \div 100$

H	T	O	Tth	Hth	Thth
			●		

$123 \div 1,000$

H	T	O	Tth	Hth	Thth
			●		

b) Complete the calculations.

$123 \div 1 = \square$

$123 \div 10 = \square$

$123 \div 100 = \square$

$123 \div 1,000 = \square$

What do you notice?



4 Complete the calculations.

a) $16 \div 10 = \square$

d) $332 \div \square = 0.332$

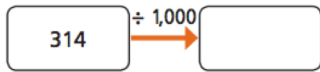
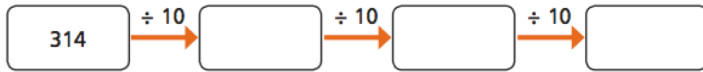
b) $43.4 \div 100 = \square$

e) $2.4 \div 200 = \square$

c) $614 \div 1,000 = \square$

f) $5.09 = \square \div 20$

5 Complete the diagrams.



What do you notice? Why does this happen?

6 Write $>$, $<$ or $=$ to compare the number sentences.

$5,400 \div 10 \div 10 \div 10$ $5,400 \div 1,000$

$60 \div 100 \div 10$ $600 \div 100$

$5.7 \div 10$ $57 \div 100$

$5,601 \div 1,000$ $5.601 \div 10$

7 Dexter is solving the calculation $5,400 \div 100$

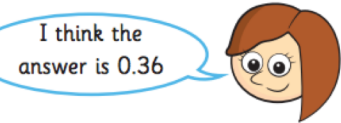


I think the answer is 54.00

Is Dexter correct? _____

Explain your reasoning.

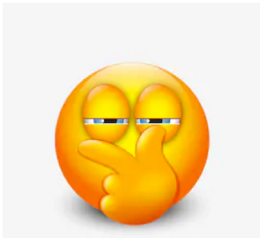
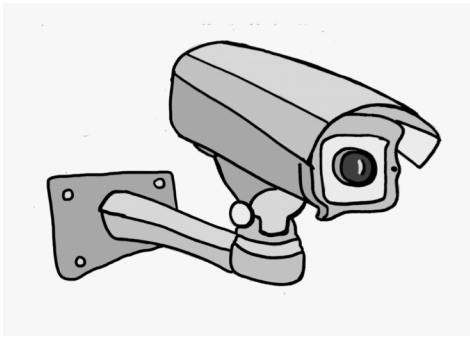
Ext: Rosie is solving the calculation $3,600 \div 200$



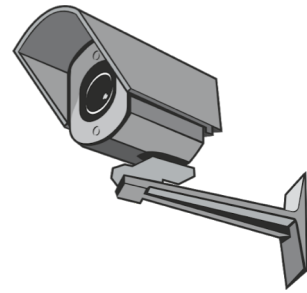
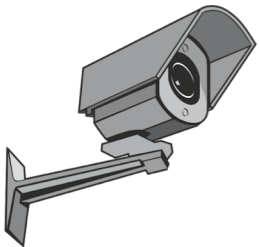
Is Rosie correct? _____

Explain your reasoning.





The next four slides contain the answers should you wish to check you work and reflect on what you understand.





4 Complete the calculations.

a) $13.44 \times 10 =$ 134.4

d) $4.4 \times$ 1,000 $= 4,400$

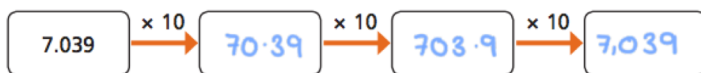
b) $41.4 \times 100 =$ 4,140

e) 103 $= 1.03 \times 100$

c) $0.415 \times 1,000 =$ 415

f) $30.44 =$ 3.044 $\times 10$

5 Complete the diagrams.



What do you notice? Why does this happen?

They all give the same final answer because
 $10 \times 10 \times 10 = 100 \times 10 = 1,000$

6 Write $>$, $<$ or $=$ to compare the number sentences.

$1.4 \times 10 \times 10 \times 10$ = $1.4 \times 1,000$

$1.4 \times 10 \times 100$ = $1.4 \times 1,000$

$1.4 \times 10 \times 10$ < $1.4 \times 1,000$

$1.4 \times 10 \times 2$ < 1.4×100

7 Kim is calculating 14.3×200
 She writes this as her answer.

$14.3 \times 200 = 28.600$

Explain Kim's mistake.

She has multiplied by 2 and added two
zeros. She hasn't considered the place value
of each digit. $14.3 \times 200 = 2860$

Ext:

Use the cards to complete the calculation.

You can use each card more than once.



E.g. 0.002 × 10 × 100 × 1,000 $= 2,000$

How many ways is it possible to complete this calculation?


Talk about it with a partner.



Divide by 10, 100 and 1,000

1 Complete the calculations and sentences.

Use place value counters to help you.



Th	H	T	O	Tth	Hth
	●	●●●●			

a) $140 \div 10 =$

When the number is divided by 10 the counters move place to the right.

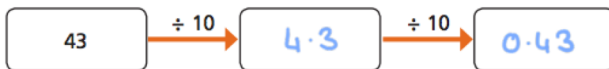
b) $140 \div 100 =$

When the number is divided by 100 the counters move places to the right.

c) $140 \div 1,000 =$


When the number is divided by 1,000 the counters move places to the right.

2 Complete the diagram.



3 a) Draw counters to represent the calculations.

$123 \div 1$



H	T	O	Tth	Hth	Thth
○	○○	○○○			

$123 \div 10$

H	T	O	Tth	Hth	Thth
○	○○	○○○			

(Handwritten blue boxes group the H, T, and O columns, with an arrow pointing to the Tth column.)

$123 \div 100$

H	T	O	Tth	Hth	Thth
○	○○	○○○			

(Handwritten blue boxes group the H, T, and O columns, with an arrow pointing to the Hth column.)

$123 \div 1,000$

H	T	O	Tth	Hth	Thth
○	○○	○○○			

(Handwritten blue boxes group the H, T, and O columns, with an arrow pointing to the Thth column.)

b) Complete the calculations.

$123 \div 1 =$

$123 \div 10 =$

$123 \div 100 =$

$123 \div 1,000 =$

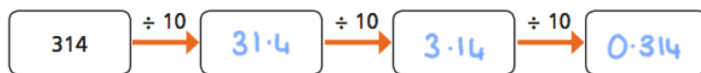
What do you notice?



4 Complete the calculations.

- a) $16 \div 10 = 1.6$ d) $332 \div 1,000 = 0.332$
- b) $43.4 \div 100 = 0.434$ e) $2.4 \div 200 = 0.012$
- c) $614 \div 1,000 = 0.614$ f) $5.09 = 101.8 \div 20$

5 Complete the diagrams.



What do you notice? Why does this happen?

They all give the same final answer because
 $10 \times 10 \times 10 = 100 \times 10 = 1,000$

6 Write $>$, $<$ or $=$ to compare the number sentences.

$5,400 \div 10 \div 10 \div 10 = 5,400 \div 1,000$

$60 \div 100 \div 10 < 600 \div 100$

$5.7 \div 10 = 57 \div 100$

$5,601 \div 1,000 > 5.601 \div 10$

7 Dexter is solving the calculation $5,400 \div 100$



I think the answer is 54.00

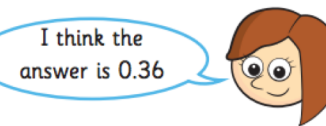
Is Dexter correct? Yes

Explain your reasoning.

54.00 is the same as 54

Ext:

Rosie is solving the calculation $3,600 \div 200$



I think the answer is 0.36

Is Rosie correct? No

Explain your reasoning.

She has divide by 100 twice (10,000) she should have divided by 100 then 2 to give an answer of 18

