Maths

Number and Place Value

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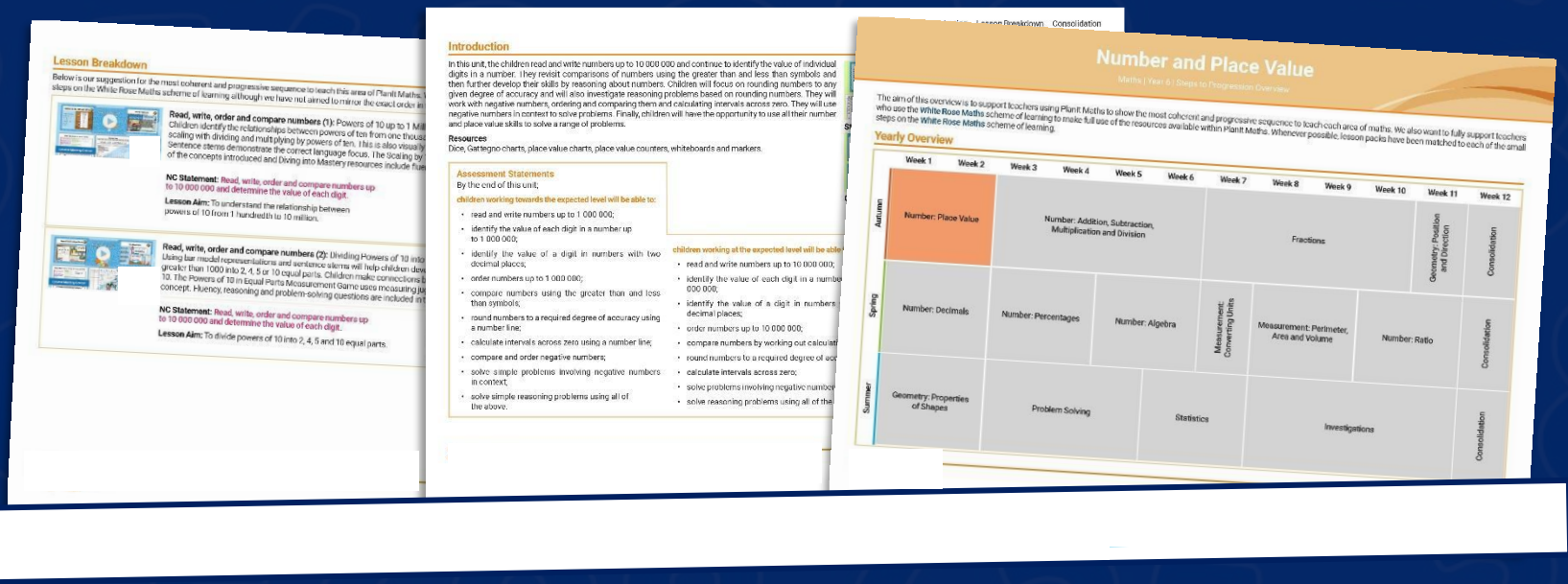

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Powers of 10 up to 10 Million

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Aim

- To understand the relationship between powers of 10 from 1 hundredth to 10 million.

Success Criteria

- I know that each power of 10 is equal to 1 group of 10 of the next smallest power of 10.
- I can identify the number that is 10, 100 and 1000 times the size of a given number and associate this with multiplying or dividing by 10, 100 and 1000.
- I can multiply and divide numbers up to 10 million by 10, 100 and 1000, including calculations that involve numbers with more than one significant digit.
- I can use my understanding of powers of 10 scaling in the context of measures.

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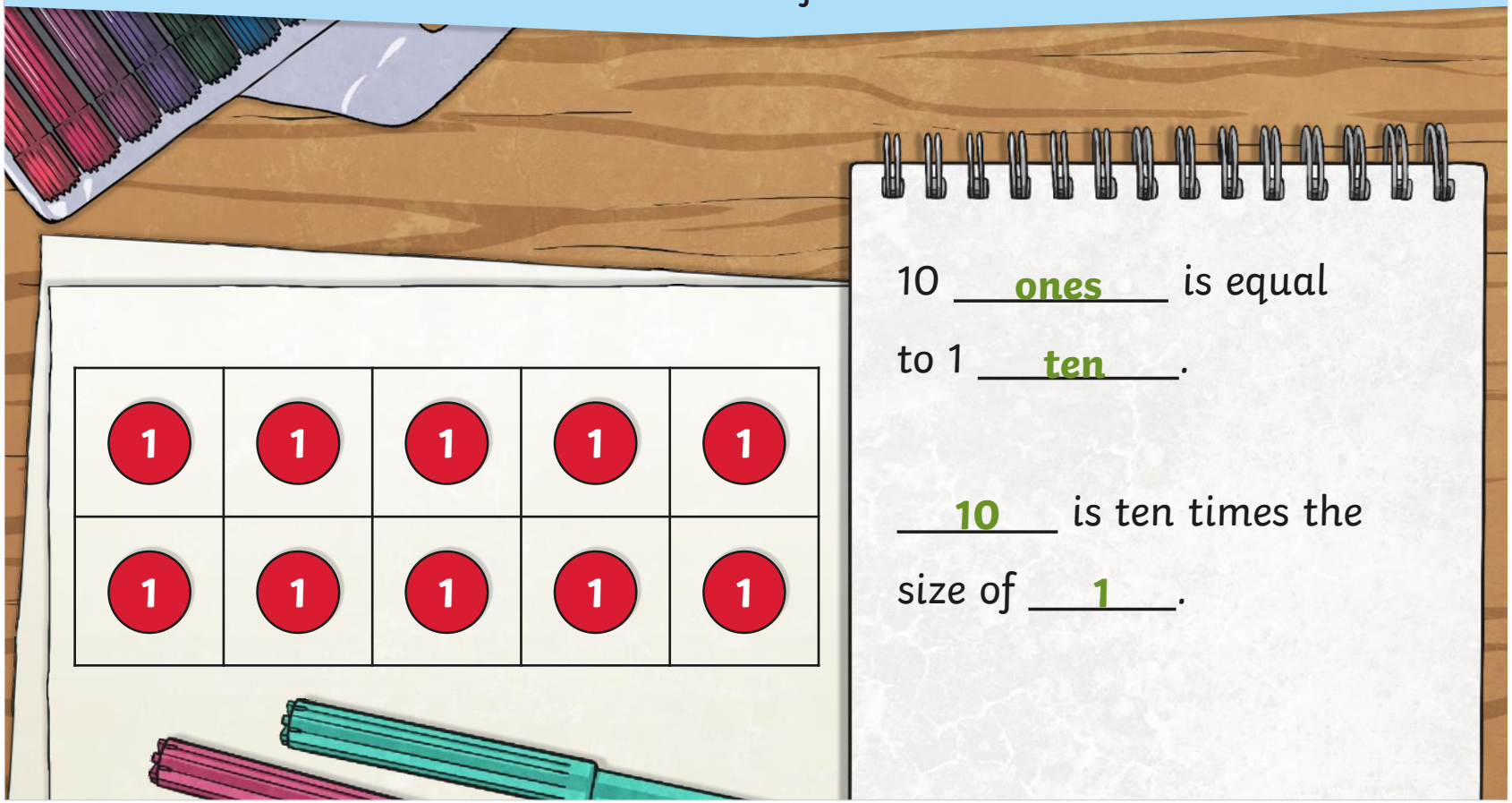
Remember It

Complete the sentence stems for the numbers represented on the ten-frame.



10 ___ones___ is equal to 1 ___ten___.

___10___ is ten times the size of ___1___.

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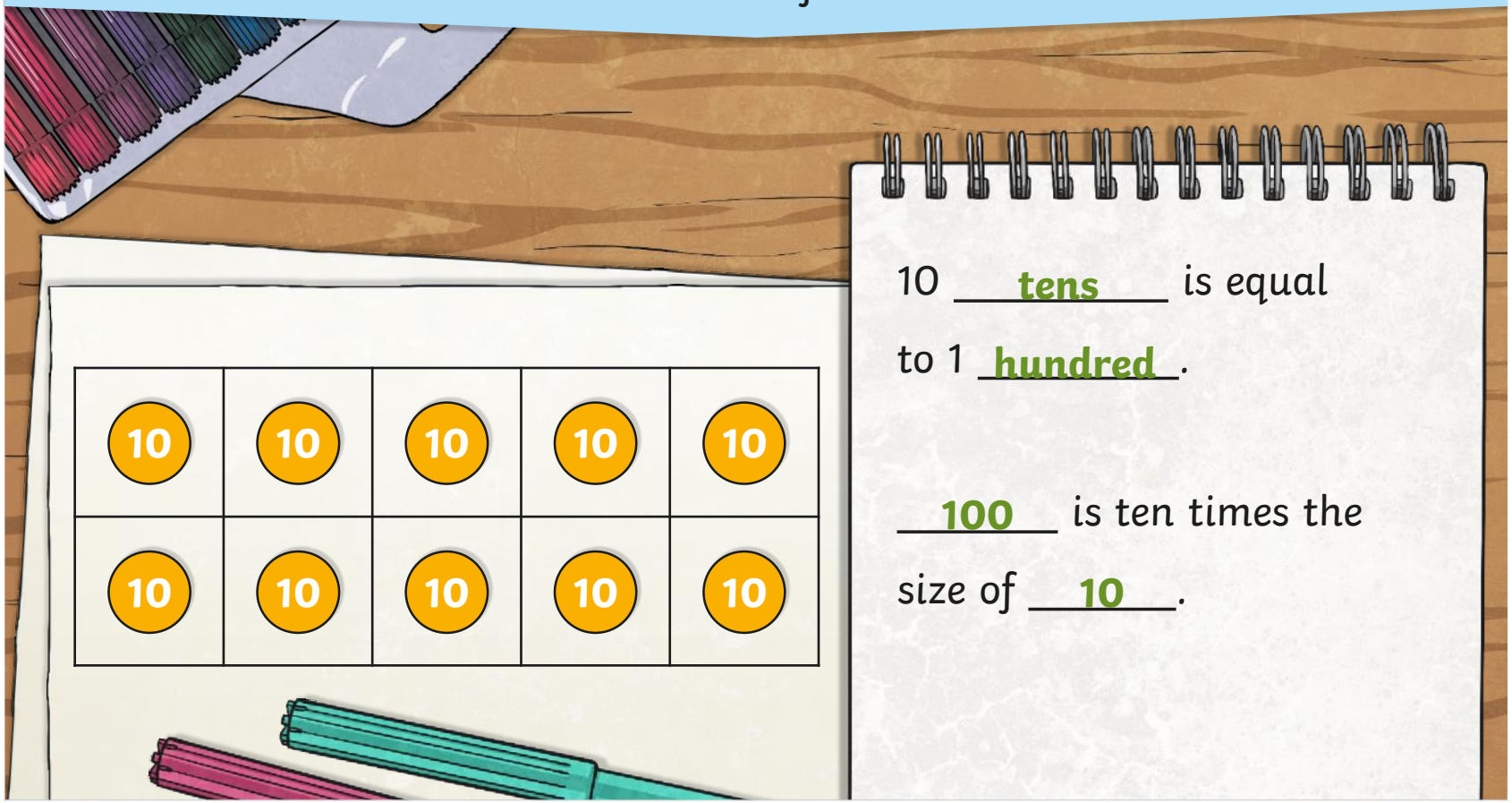
Remember It

Complete the sentence stems for the numbers represented on the ten-frame.



10 ___tens___ is equal to 1 ___hundred___.

___100___ is ten times the size of ___10___.

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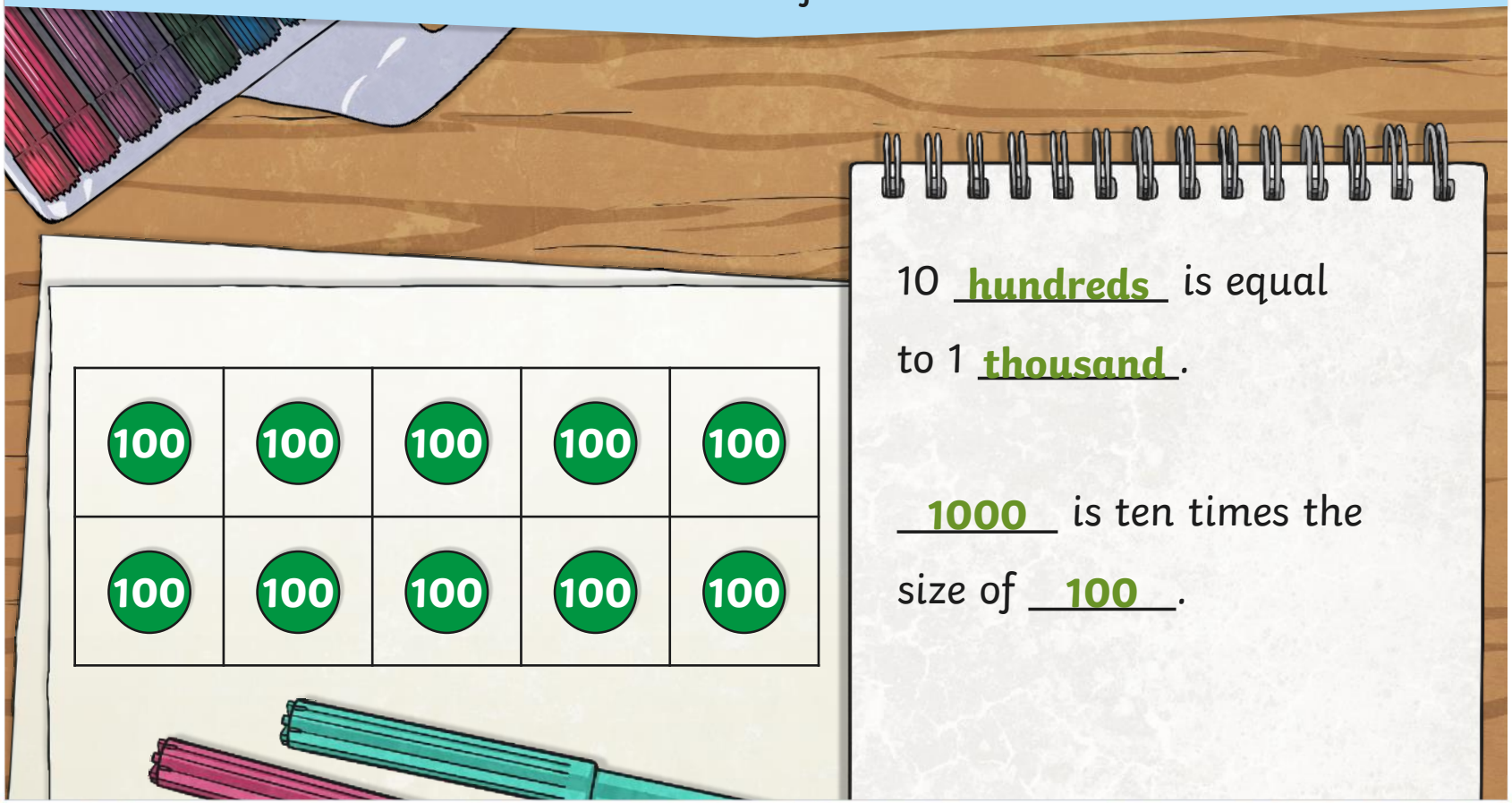
Remember It

Complete the sentence stems for the numbers represented on the ten-frame.



10 hundreds is equal to 1 thousand.

1000 is ten times the size of 100.

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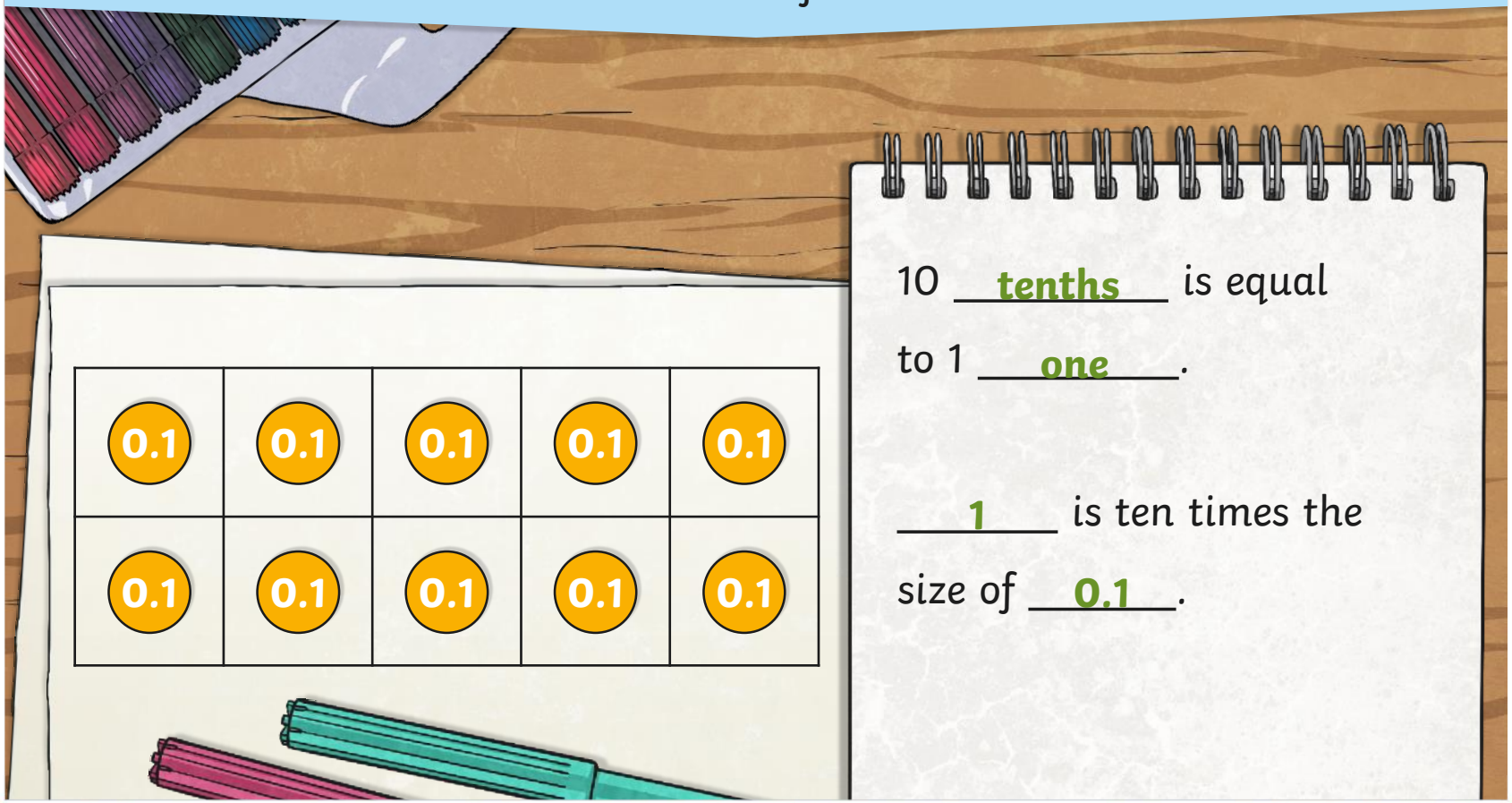
Remember It

Complete the sentence stems for the numbers represented on the ten-frame.



10 ___tenths___ is equal to 1 ___one___.

___1___ is ten times the size of ___0.1___.

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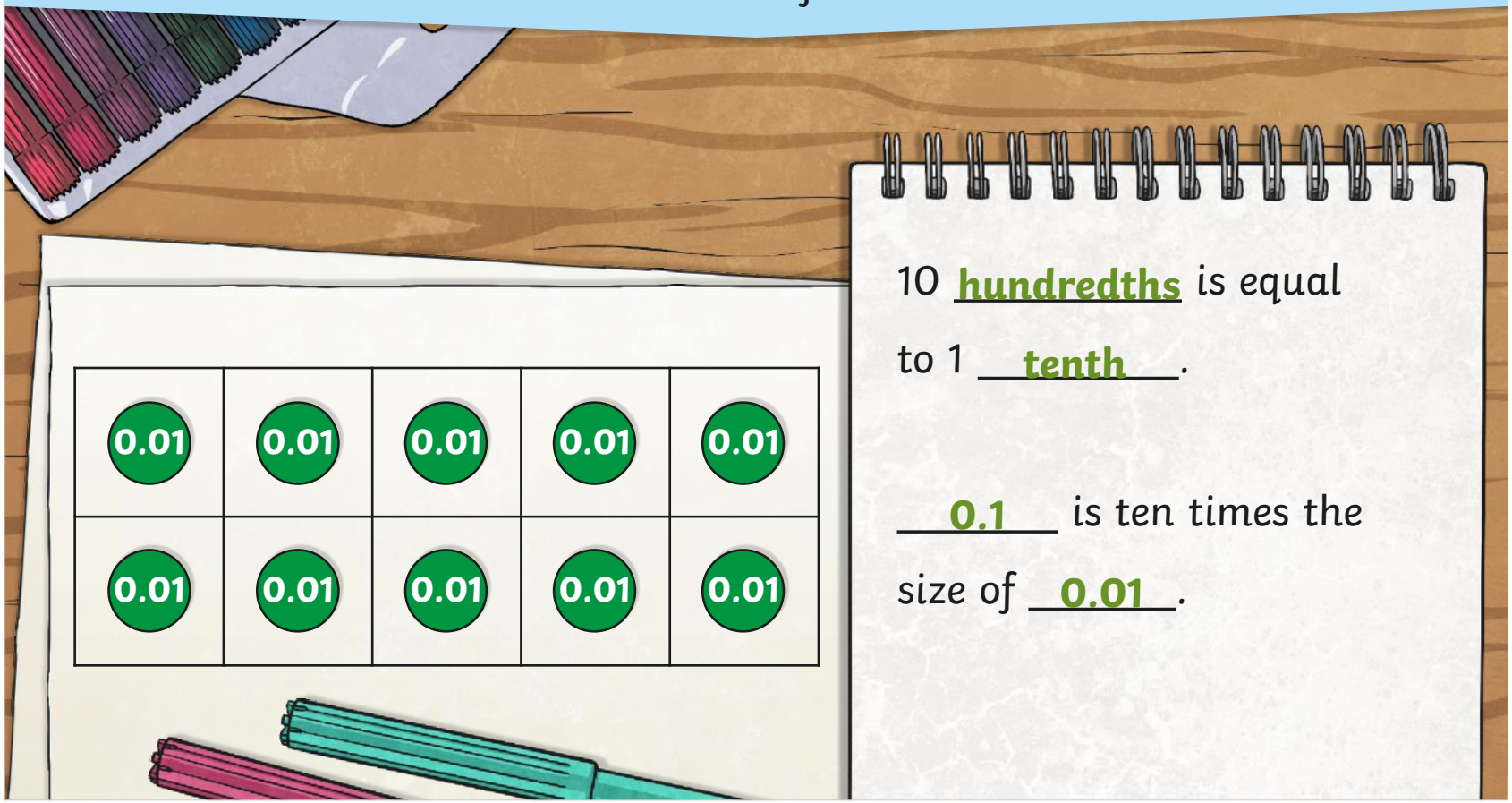
Remember It

Complete the sentence stems for the numbers represented on the ten-frame.



10 hundredths is equal to 1 tenth.

0.1 is ten times the size of 0.01.

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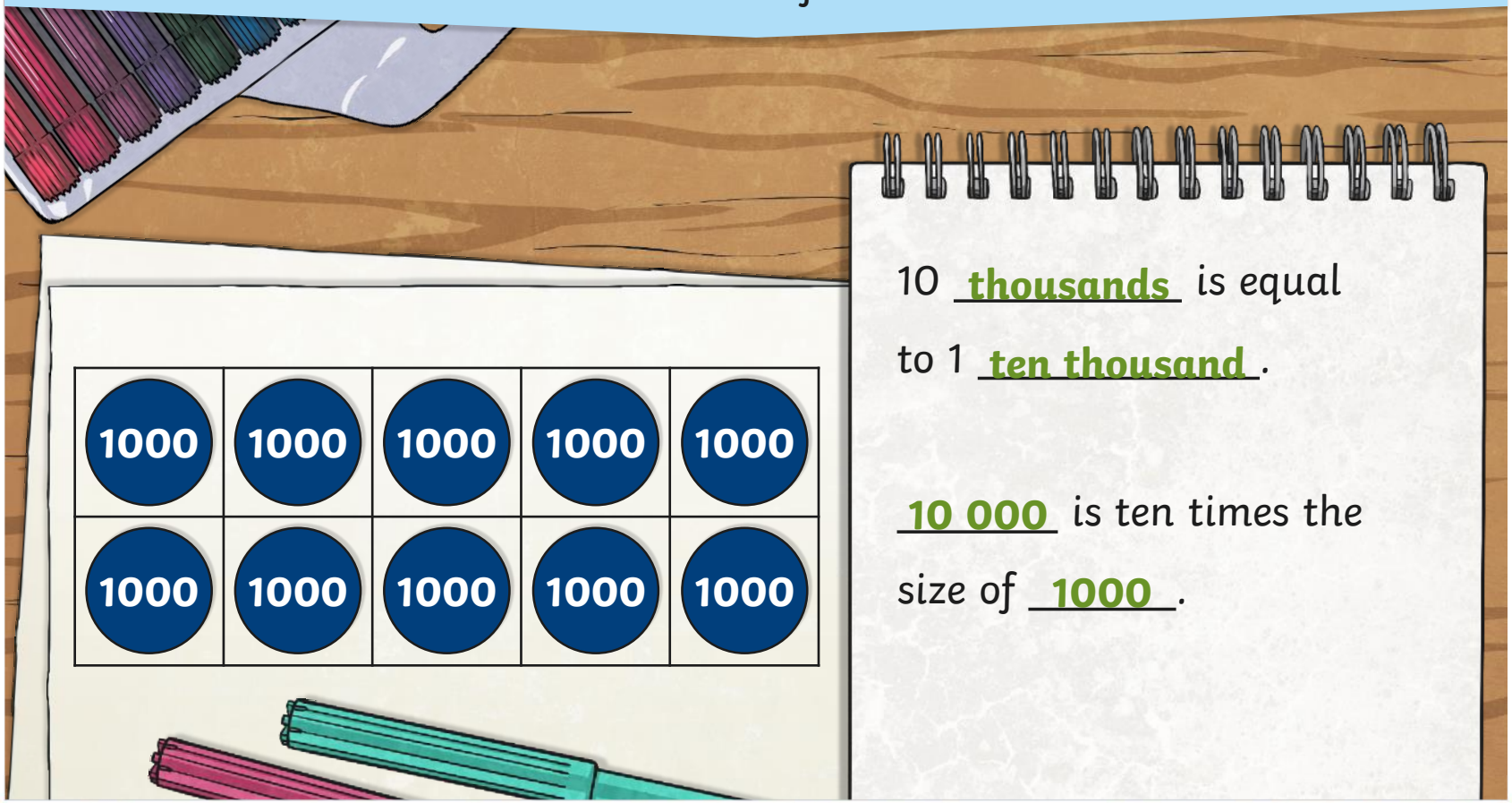
Beyond 1000

Whole Class

Complete the sentence stems for the numbers represented on the ten-frame.



10 thousands is equal to 1 ten thousand.

10 000 is ten times the size of 1000.

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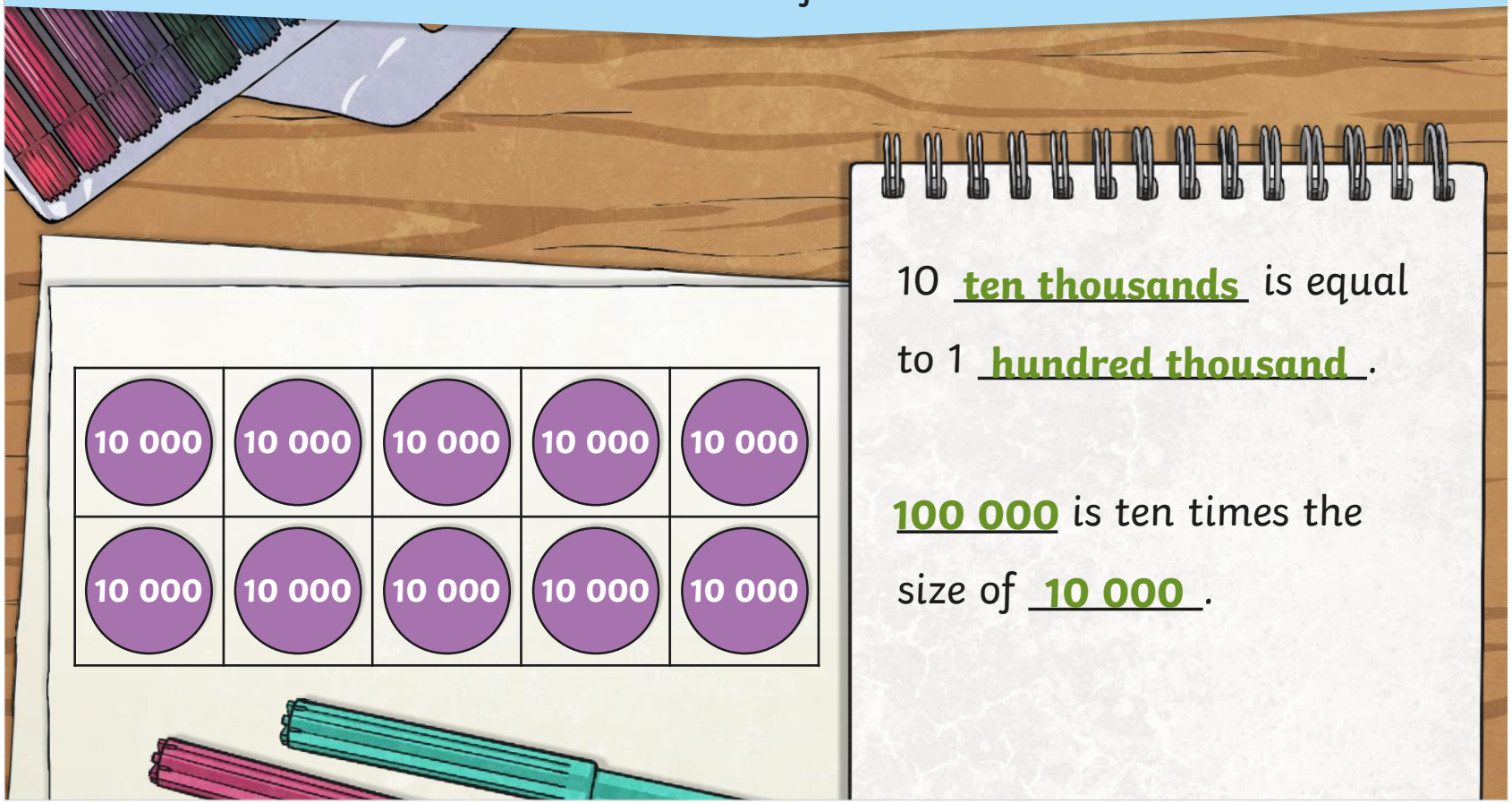
Beyond 1000

Whole Class

Complete the sentence stems for the numbers represented on the ten-frame.



10 ten thousands is equal to 1 hundred thousand.

100 000 is ten times the size of 10 000.

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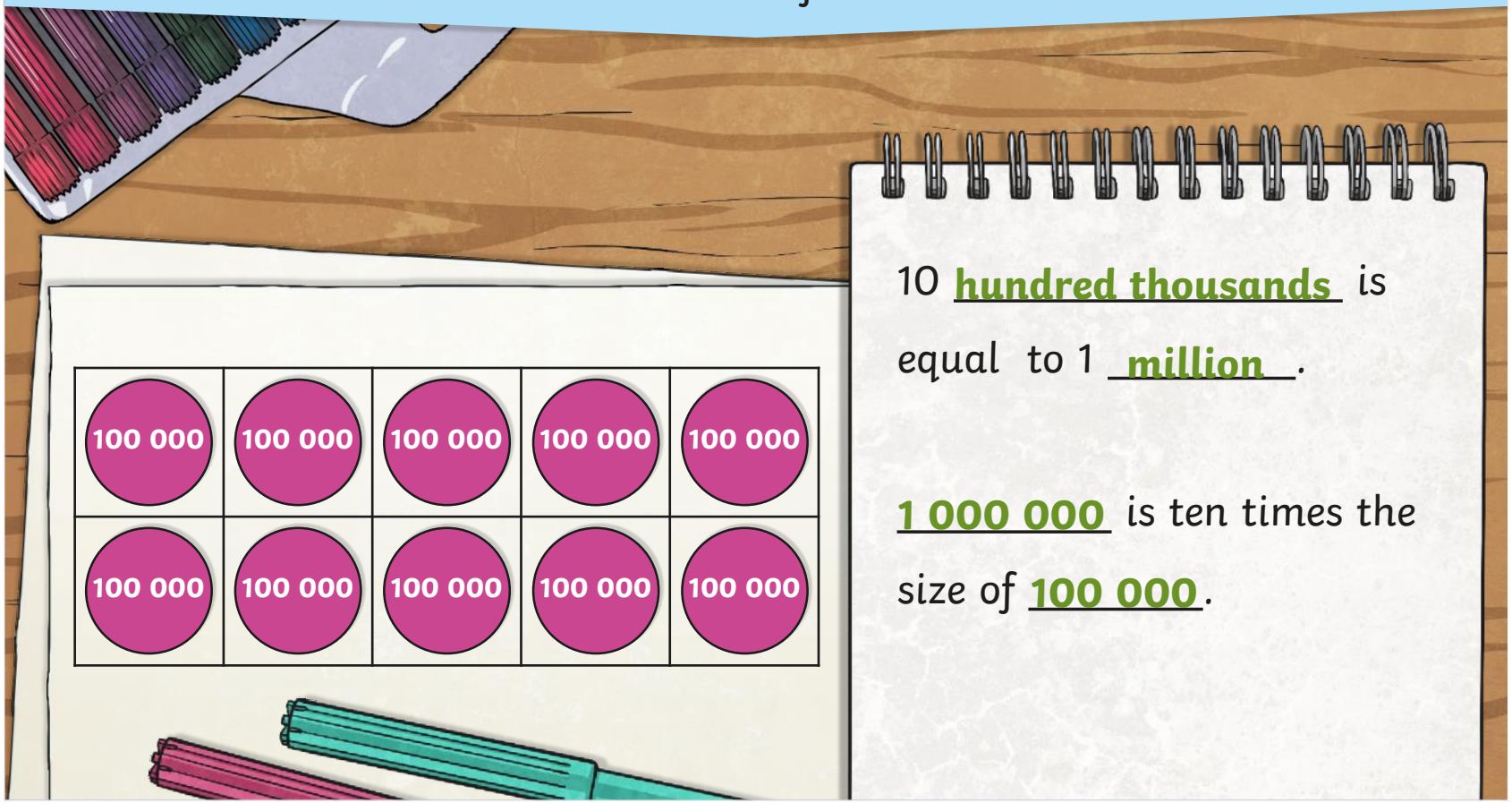
Beyond 1000

Whole Class

Complete the sentence stems for the numbers represented on the ten-frame.



10 **hundred thousands** is equal to 1 **million**.

1 000 000 is ten times the size of **100 000**.

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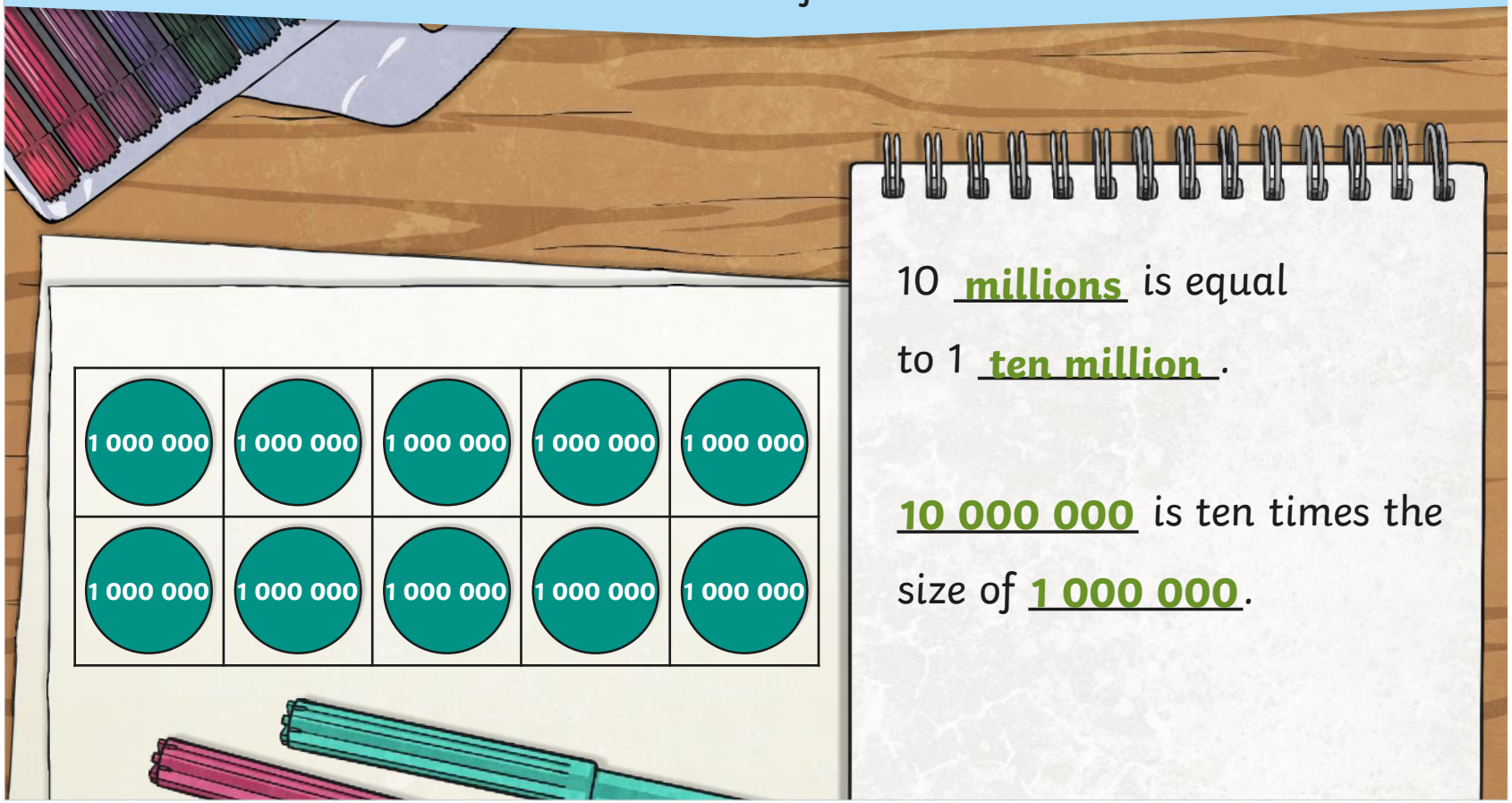
Beyond 1000

Whole Class

Complete the sentence stems for the numbers represented on the ten-frame.



10 **millions** is equal to 1 **ten million**.

10 000 000 is ten times the size of **1 000 000**.

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Scaling by 10, 100 and 1000

This place value chart is called the Gattegno Chart.
It visually represents the relationships between powers of 10 from one tenth to ten million.

10 000 000	20 000 000	30 000 000	40 000 000	50 000 000	60 000 000	70 000 000	80 000 000	90 000 000
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

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Scaling by 10, 100 and 1000

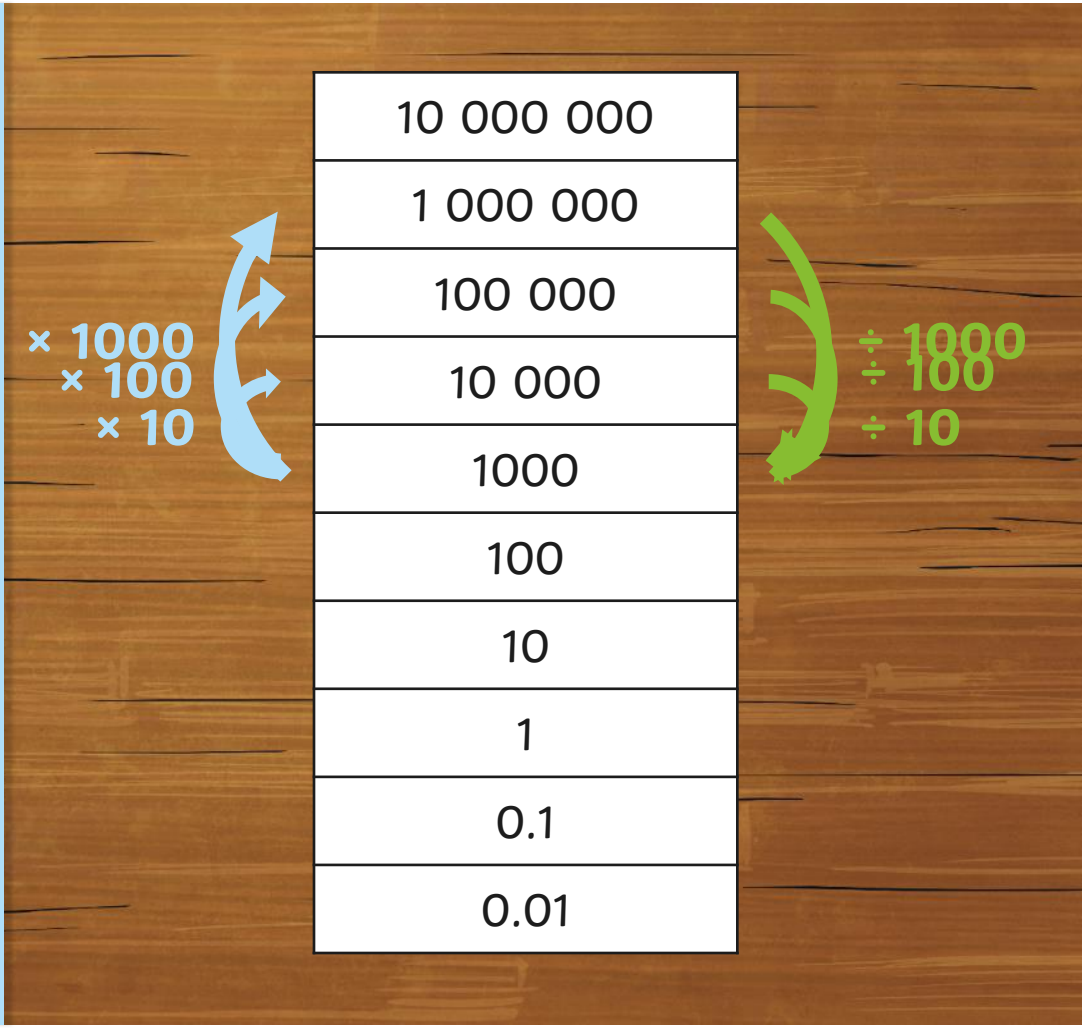
Whole Class

When we look at each column of the Gattegno chart, we can identify numbers that are 1000 times the size and relate this to multiplying and dividing by 10, 100, 1000.

10 000 000
1 000 000
100 000
10 000
1000
100
10
1
0.1
0.01

× 1000
× 100
× 10

÷ 1000
÷ 100
÷ 10



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Scaling by 10, 100 and 1000

Complete the calculations.

100 000 × 10 = **1 000 000**

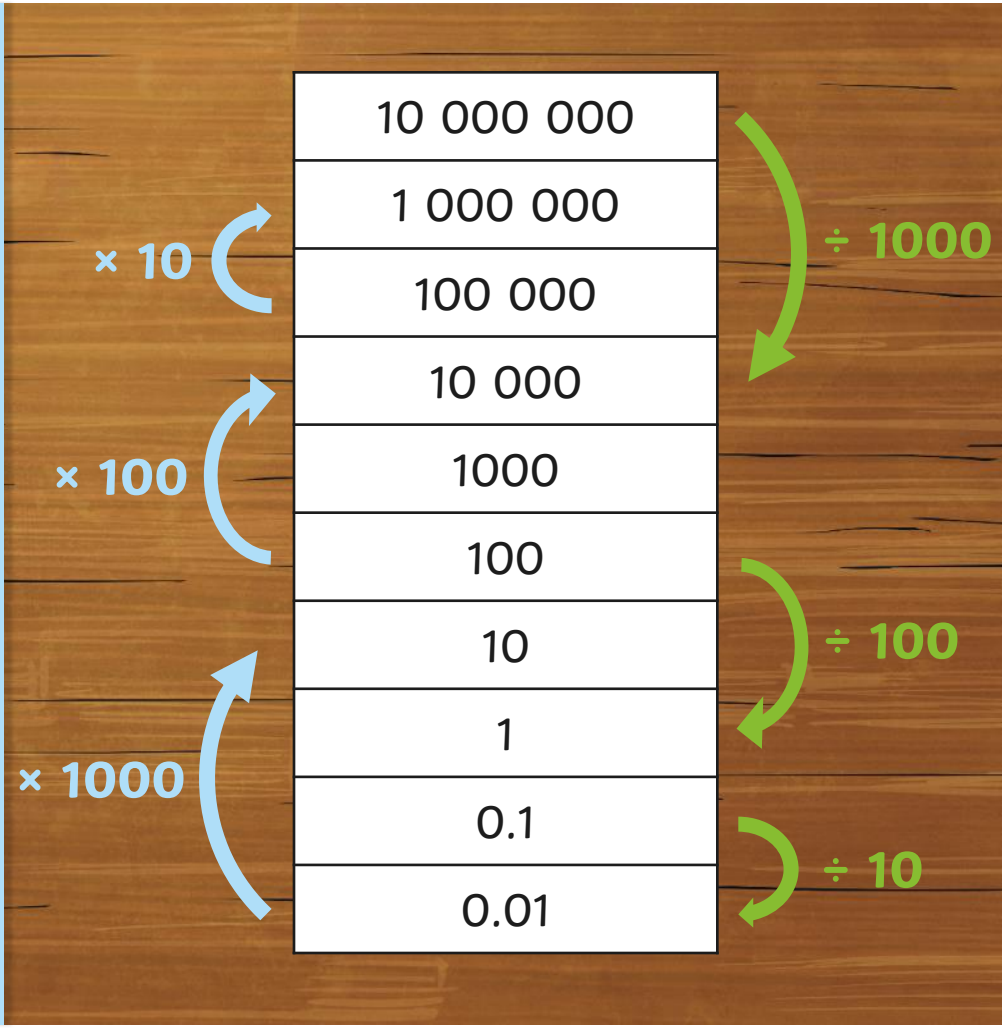
100 × 100 = **10 000**

0.01 × 1000 = **10**

10 000 000 ÷ 1000 = **10 000**

100 ÷ 100 = **1**

0.1 ÷ 10 = **0.01**



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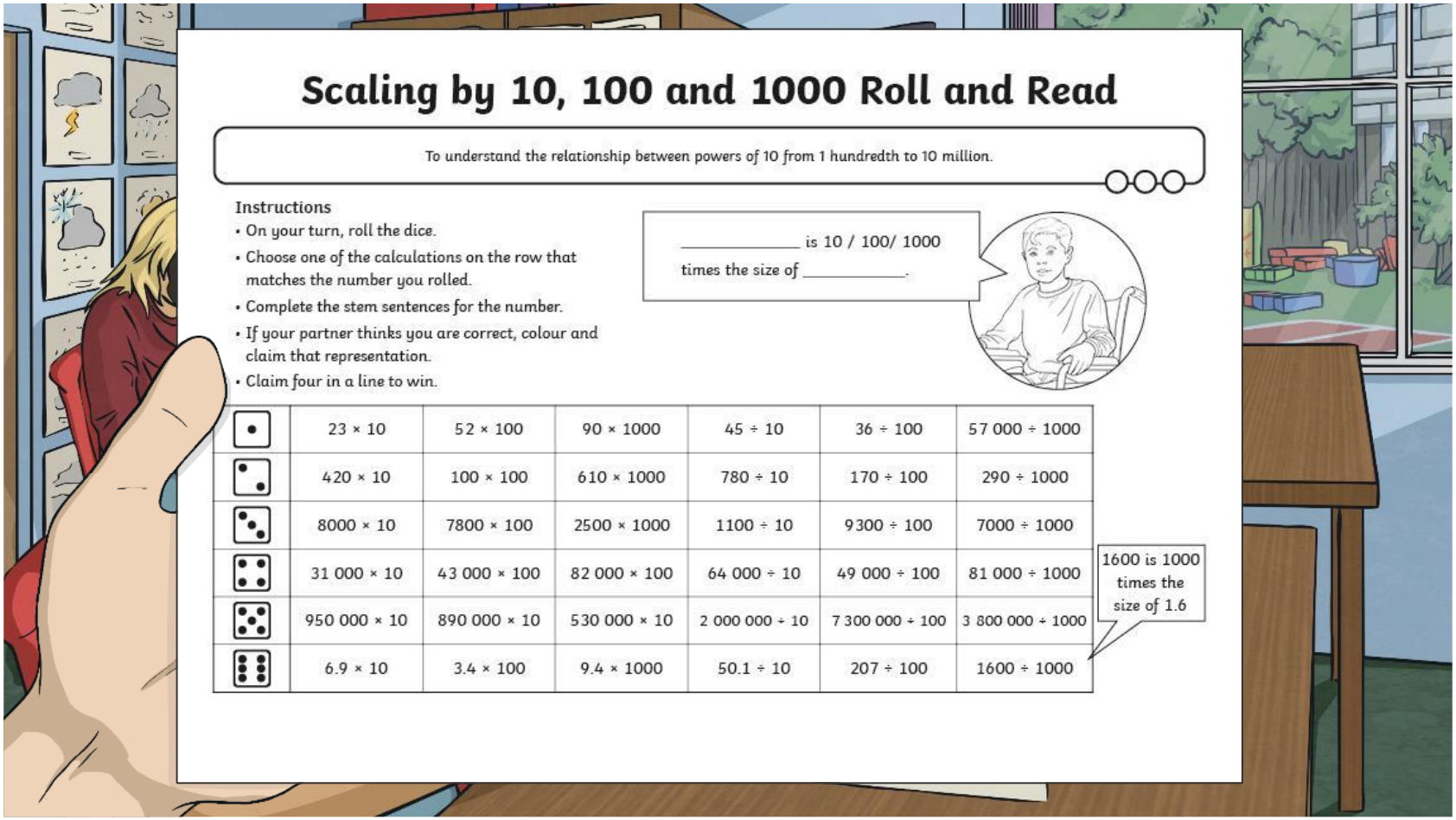
Scaling by 10, 100 and 1000 Roll and Read



Scaling by 10, 100 and 1000 Roll and Read

To understand the relationship between powers of 10 from 1 hundredth to 10 million.

Instructions

- On your turn, roll the dice.
- Choose one of the calculations on the row that matches the number you rolled.
- Complete the stem sentences for the number.
- If your partner thinks you are correct, colour and claim that representation.
- Claim four in a line to win.

_____ is 10 / 100/ 1000 times the size of _____.

⚀	23 × 10	52 × 100	90 × 1000	45 ÷ 10	36 ÷ 100	57 000 ÷ 1000
⚁	420 × 10	100 × 100	610 × 1000	780 ÷ 10	170 ÷ 100	290 ÷ 1000
⚂	8000 × 10	7800 × 100	2500 × 1000	1100 ÷ 10	9300 ÷ 100	7000 ÷ 1000
⚃	31 000 × 10	43 000 × 100	82 000 × 100	64 000 ÷ 10	49 000 ÷ 100	81 000 ÷ 1000
⚄	950 000 × 10	890 000 × 10	530 000 × 10	2 000 000 ÷ 10	7 300 000 ÷ 100	3 800 000 ÷ 1000
⚅	6.9 × 10	3.4 × 100	9.4 × 1000	50.1 ÷ 10	207 ÷ 100	1600 ÷ 1000

1600 is 1000 times the size of 1.6

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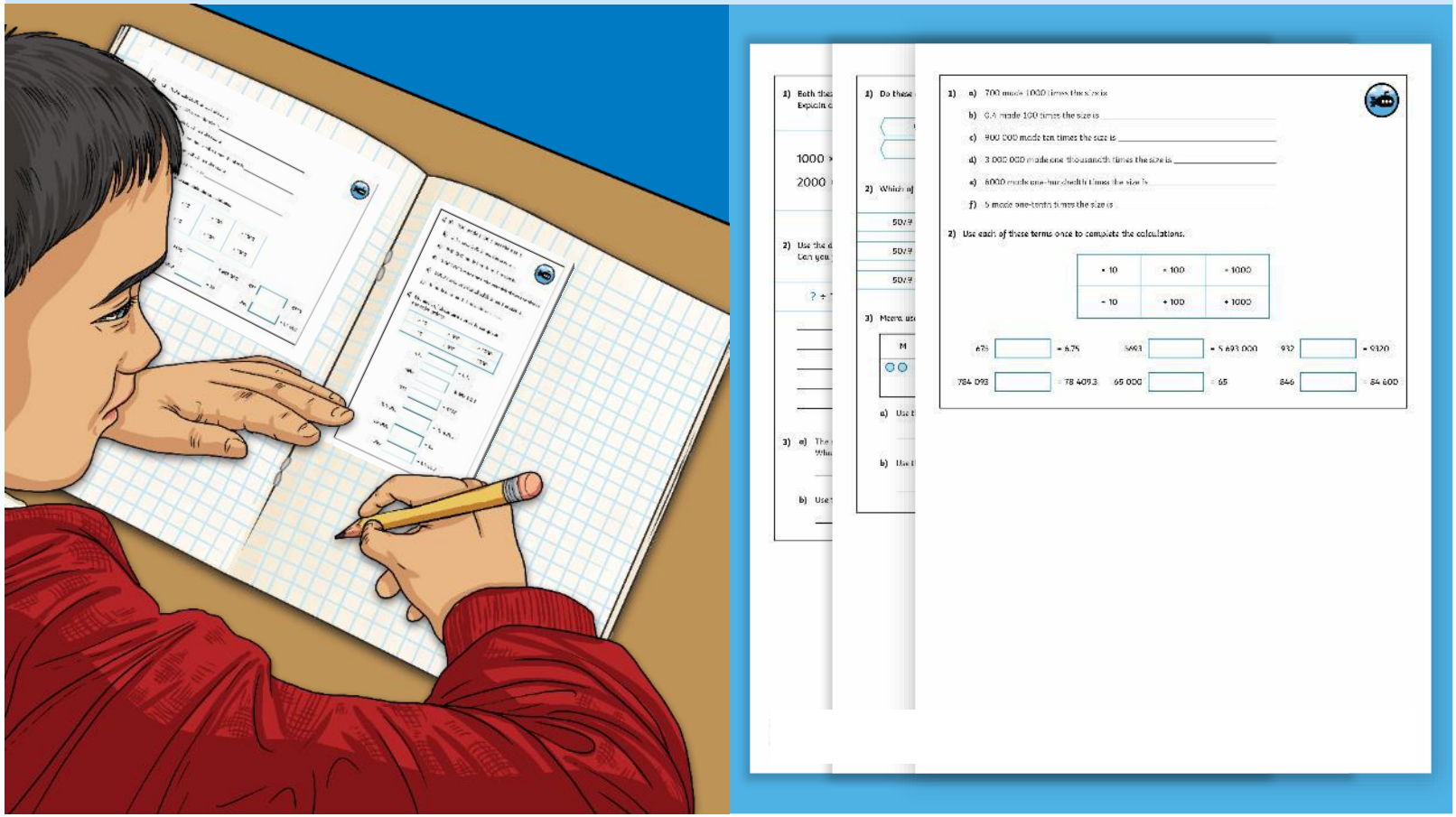
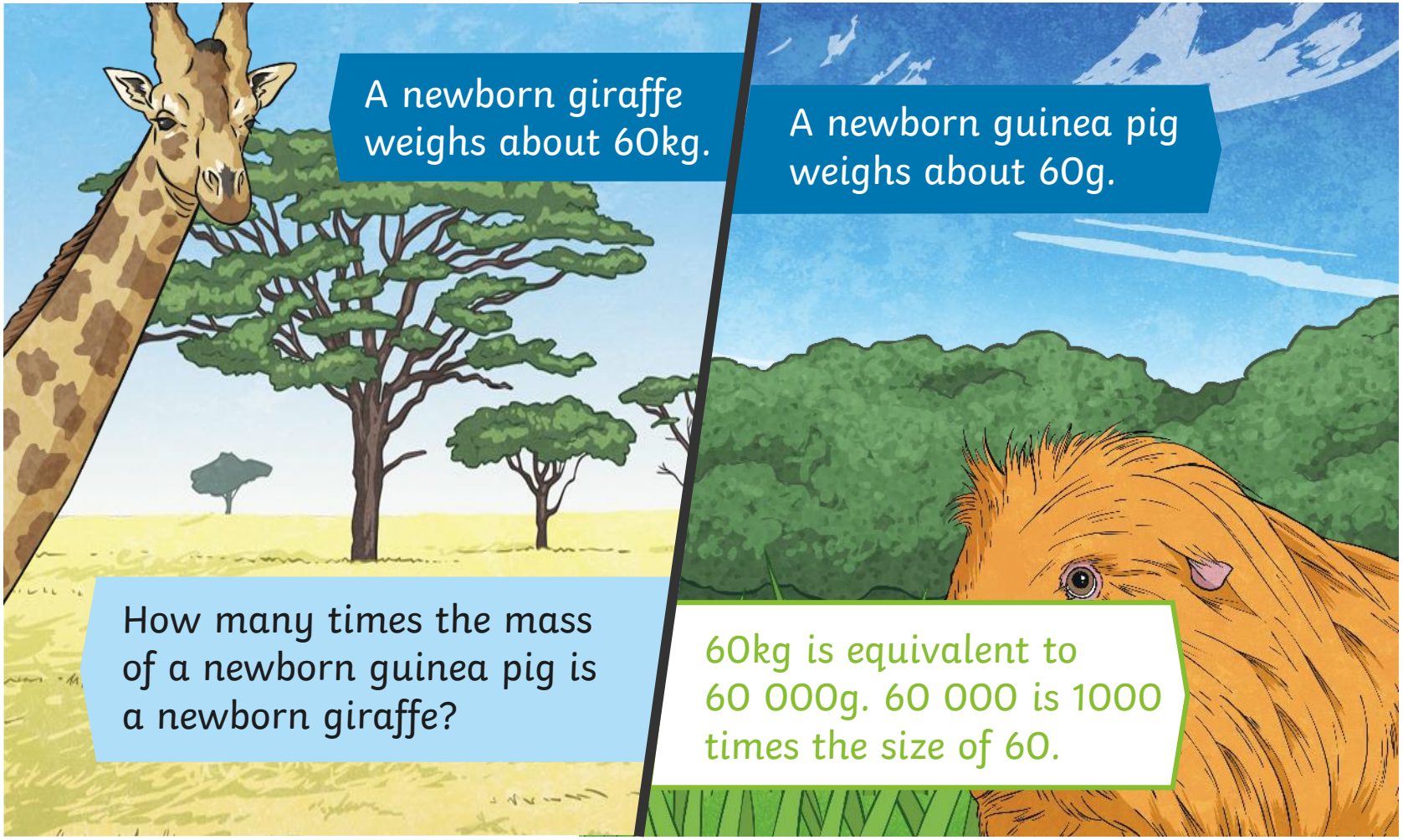
Diving into Mastery

Dive in by completing your own activity!



Word Problems

Whole Class



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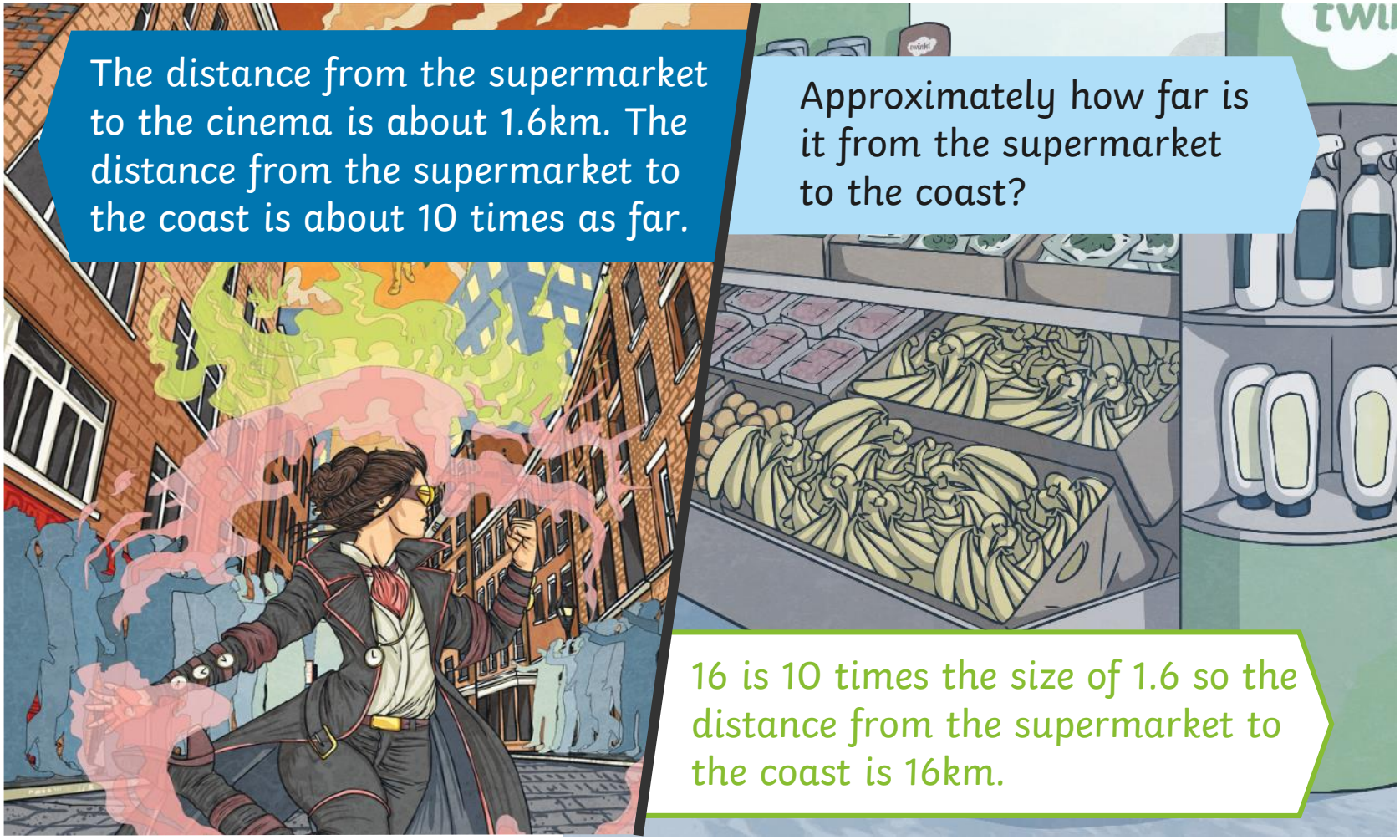

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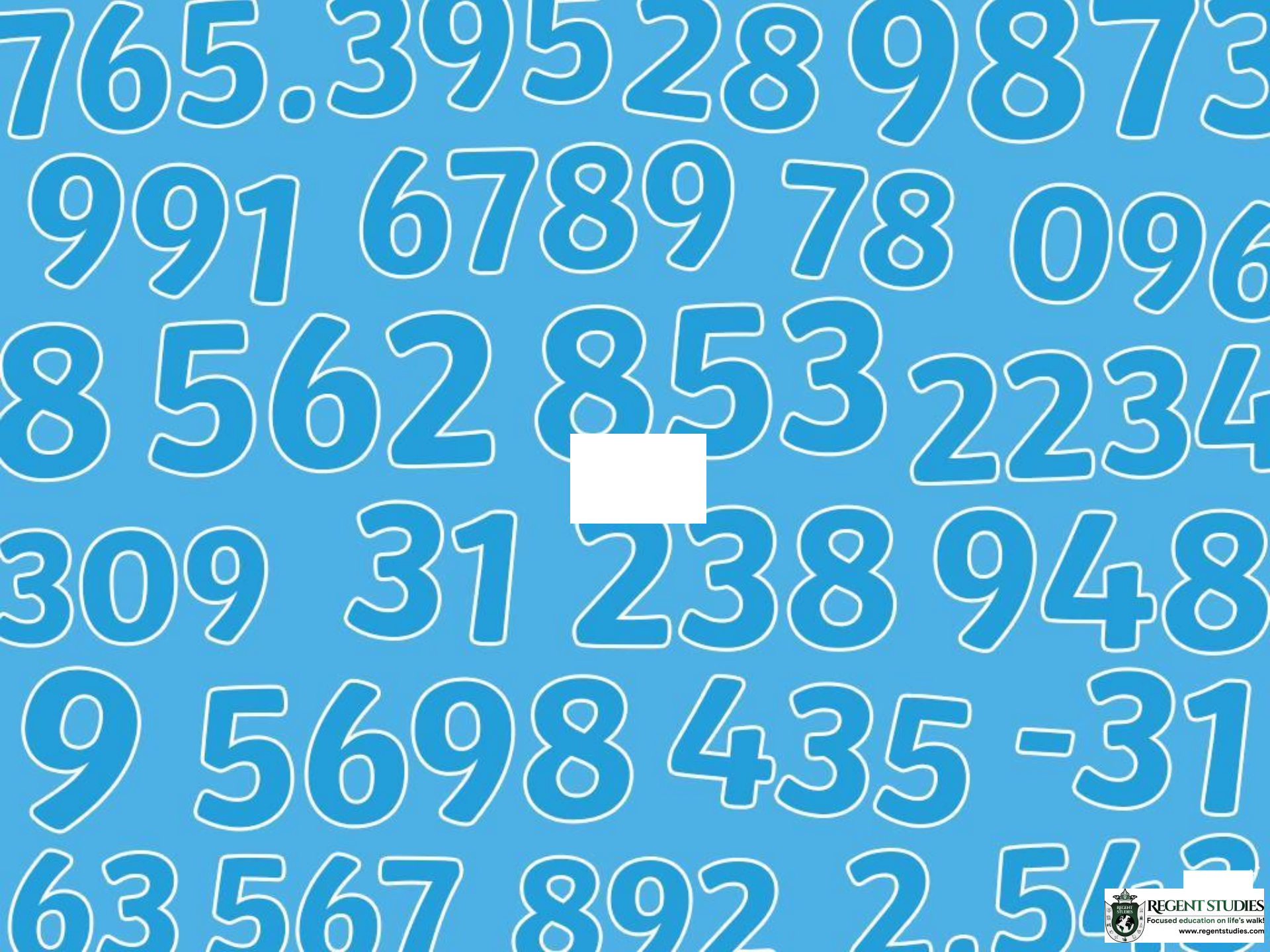

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