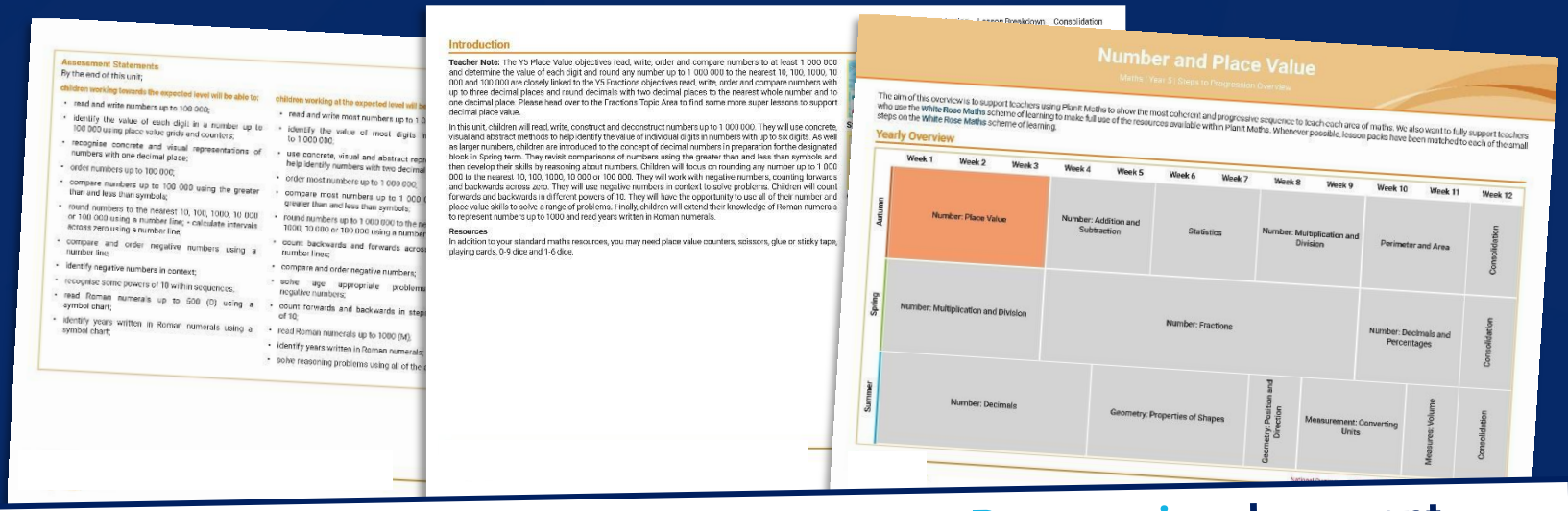
# Maths

## Number and Place Value

# Need a coherently planned sequence of lessons to complement this resource?




See our Number and Place Value Steps to Progression document.

# Representing Whole Numbers

# Aim

- To understand powers of ten up to 1 million.

# Success Criteria

- I can recognise powers of ten.
- I can reason about powers of ten.
- I can count forwards in powers of ten.

# Remember It

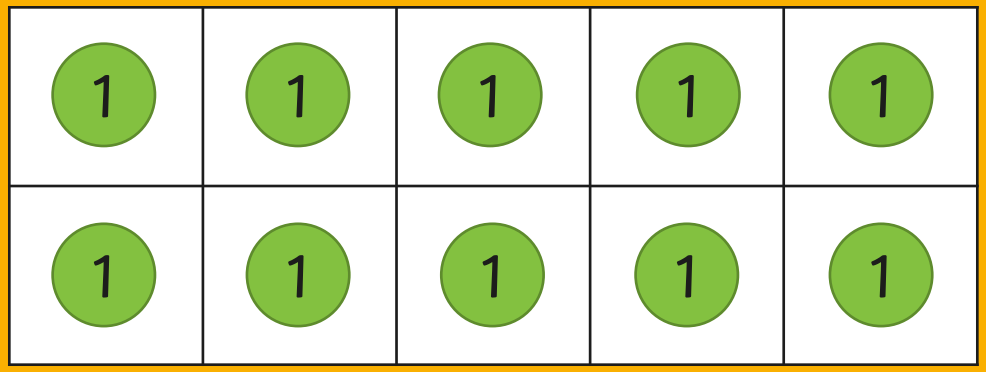

10 is very important in our number system. Can you match these groups of 10 with the number they make? Click on the calculations to reveal the answers.

| | | | | |
|---|---|---|---|---|
| 10 × 10 | 100 × 10 | 100 000 × 10 | 1000 × 10 | 10 000 × 10 |
| **100** | **1000** | **1 000 000** | **10 000** | **100 000** |

| | | | | |
|---|---|---|---|---|
| **1 000 000** | **10 000** | **1000** | **100** | **100 000** |

# Representing Numbers


If each square in this ten-frame equals one, we can represent different numbers up to 10 in different ways using the ten-frame.




10 ones is the same as 1 ten.

# Representing Numbers


If this ten-frame represents 100, what does each square represent?

| | | | | |
|---|---|---|---|---|
| 10 | 10 | 10 | 10 | 10 |
| 10 | 10 | 10 | 10 | 10 |

100

10 tens is the same as 1 hundred.

# Representing Numbers

This ten-frame is used to represent 1000. Therefore, each square will represent 1000.

10 hundreds is equivalent to 1 thousand.

Do you agree with Daniel? Explain how you know.

| | | | | |
|---|---|---|---|---|
| 100 | 100 | 100 | 100 | 100 |
| 100 | 100 | 100 | 100 | 100 |

# Representing Numbers


The ten-frame below can be used to represent numbers up to 10 000.
True or false? Explain how you know.

| | | | | |
|---|---|---|---|---|
| 1000 | 1000 | 1000 | 1000 | 1000 |
| 1000 | 1000 | 1000 | 1000 | 1000 |

10 thousands is equal to 1 ten thousand.

# Representing Numbers


10 ten thousands is the same as 1 hundred thousand.

When a ten-frame represents numbers up to 100 000, the counters in each square will be worth 1000.

In a ten-frame that represents 100 000, numbers represented will be larger than 50 000.

**Never true** - the counters in each square represent 10 000.

**Sometimes true** - if there are six or more counters in the ten-frame then a number larger than 50 000 will be shown.

| | | | | |
|---|---|---|---|---|
| 10 000 | 10 000 | 10 000 | 10 000 | 10 000 |
| 10 000 | 10 000 | 10 000 | 10 000 | 10 000 |

# Representing Numbers


We are going to explore ways that we can represent and break down one million, or 1 000 000. If we use the 10-frame, what would each square represent?

Each square represents 100 000.

| | | | | |
|---|---|---|---|---|
| 100 000 | 100 000 | 100 000 | 100 000 | 100 000 |
| 100 000 | 100 000 | 100 000 | 100 000 | 100 000 |

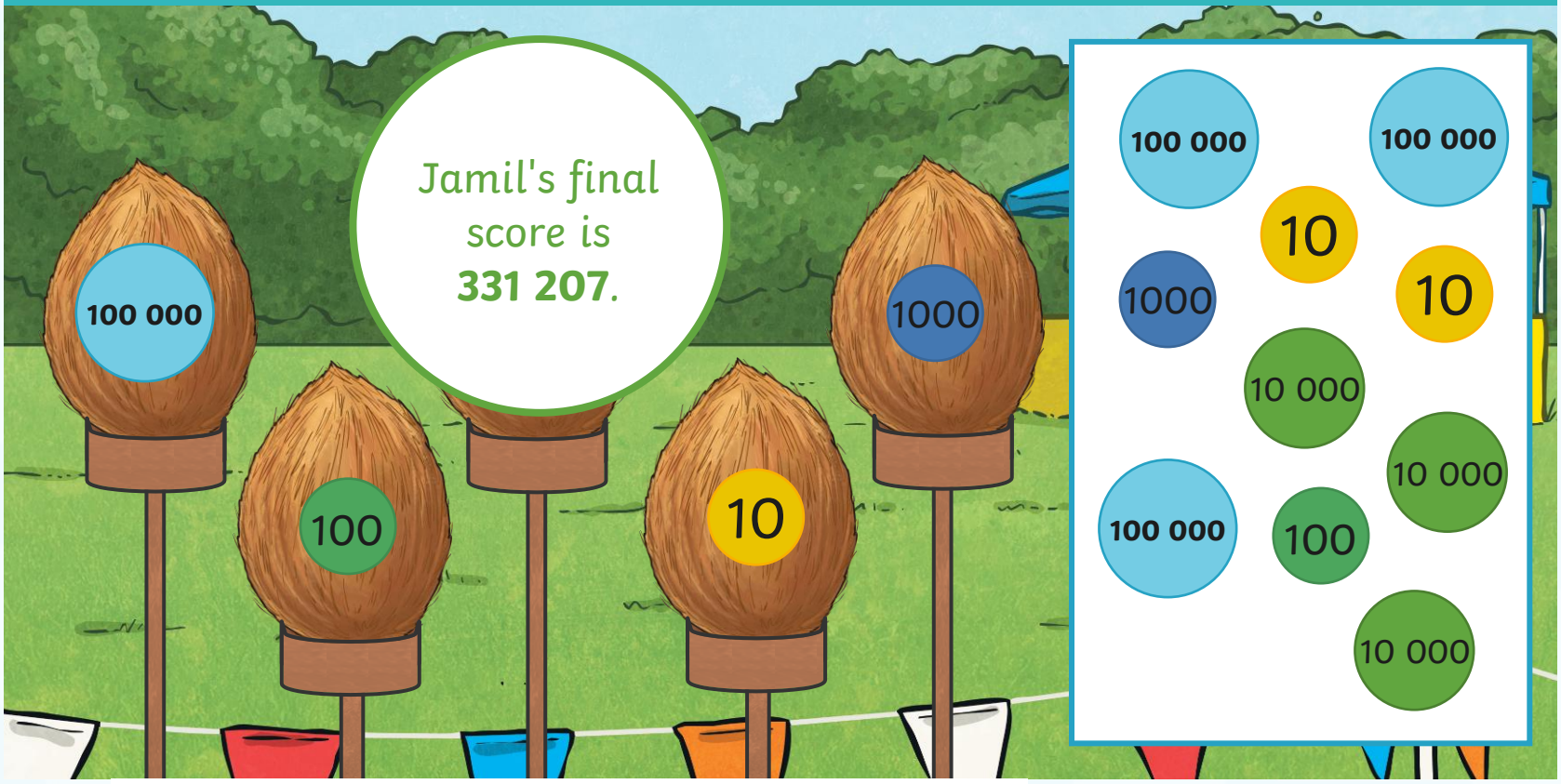
**1 000 000**

10 hundred thousands is the same as 1 million.

# At the Fair

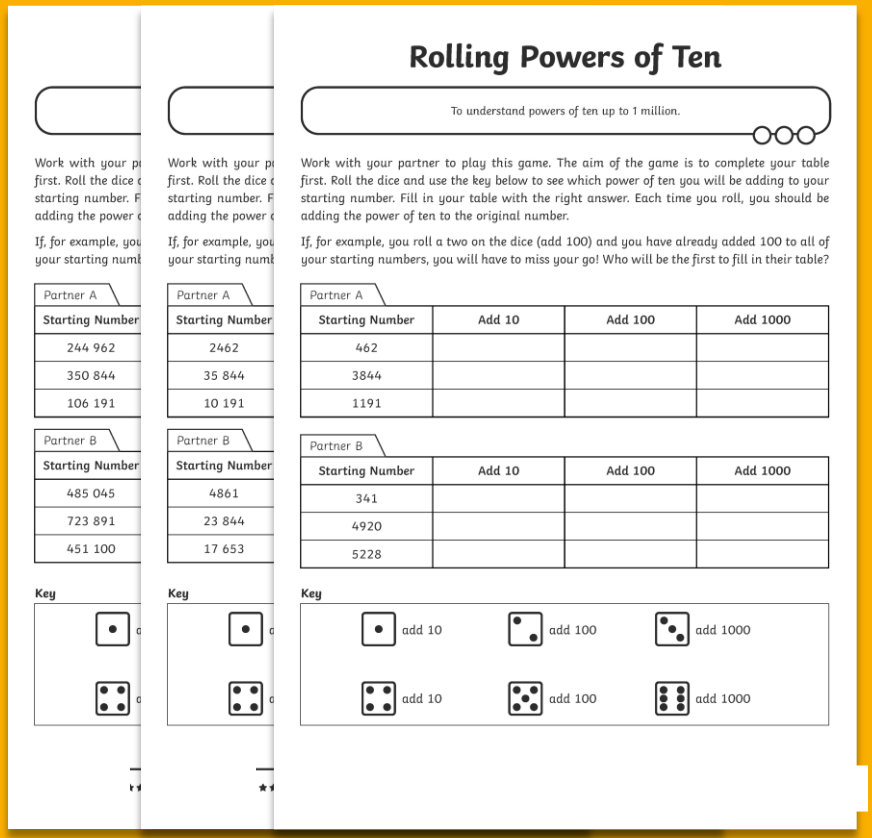
Whole Class

Jamil is at the Twinkl Summer Fair. He has already scored 87 points on the hoopla. Add his points from the coconut shy to his score.



# Rolling Powers of Ten

Roll the dice and use the key to see which power of ten you will be adding to your starting number. Fill in your table with the right answer. Each time you roll, you should be adding the power of ten to the original number.



## Rolling Powers of Ten

To understand powers of ten up to 1 million.

Work with your partner to play this game. The aim of the game is to complete your table first. Roll the dice and use the key below to see which power of ten you will be adding to your starting number. Fill in your table with the right answer. Each time you roll, you should be adding the power of ten to the original number.

If, for example, you roll a two on the dice (add 100) and you have already added 100 to all of your starting numbers, you will have to miss your go! Who will be the first to fill in their table?

Partner A

| Starting Number | Add 10 | Add 100 | Add 1000 |
|---|---|---|---|
| 462 | | | |
| 3844 | | | |
| 1191 | | | |

Partner B

| Starting Number | Add 10 | Add 100 | Add 1000 |
|---|---|---|---|
| 341 | | | |
| 4920 | | | |
| 5228 | | | |

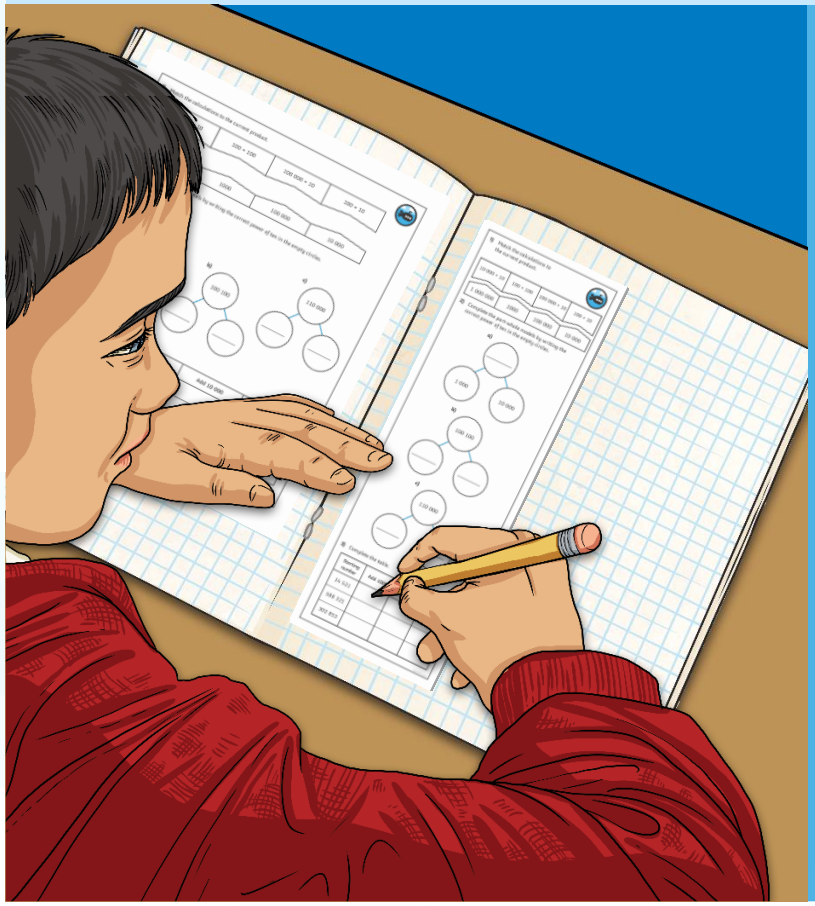
Key

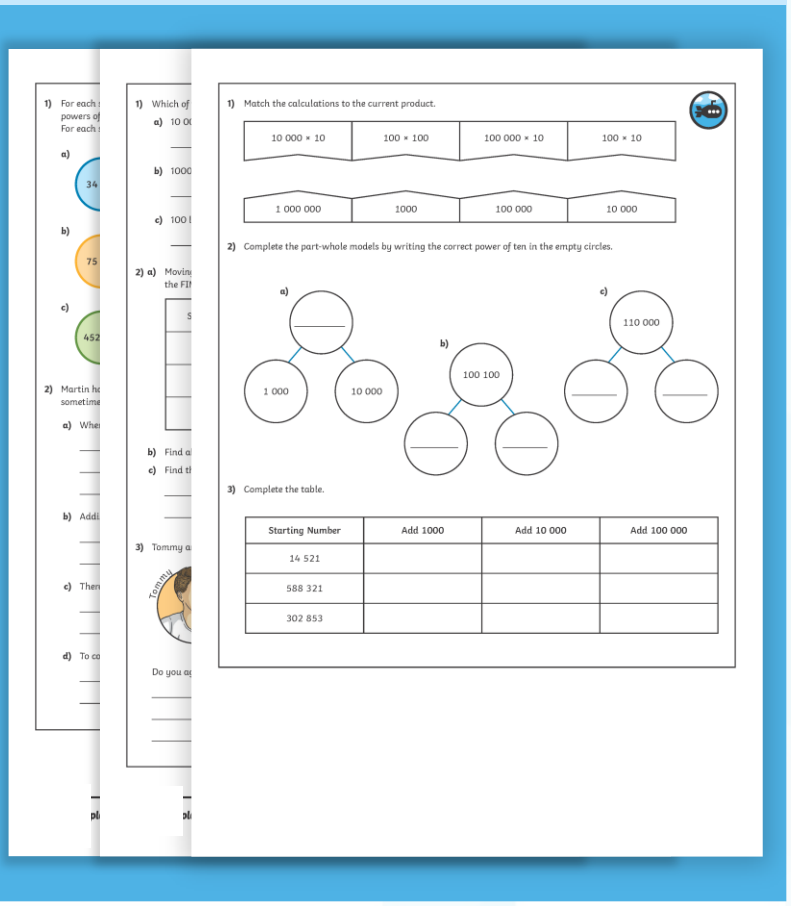
add 10 add 100 add 1000

add 10 add 100 add 1000

# Diving into Mastery

## Dive in by completing your own activity!





1) Match the calculations to the current product.

| | | | |
|---|---|---|---|
| 10 000 × 10 | 100 × 100 | 100 000 × 10 | 100 × 10 |
| 1 000 000 | 1000 | 100 000 | 10 000 |

2) Complete the part-whole models by writing the correct power of ten in the empty circles.

a) 1 000 10 000

b) 100 100

c) 110 000

3) Complete the table.

| Starting Number | Add 1000 | Add 10 000 | Add 100 000 |
|---|---|---|---|
| 14 521 | | | |
| 588 321 | | | |
| 302 853 | | | |

# Power of Ten Pathways


Sonia adds 3 powers of ten to the number on the left to get to the number on the right.
How many possible pathways can you find?

| | | | | |
|---|---|---|---|---|
| 14 092 | **14 102** | **14 202** | **24 202** | 124 202 |
| 204 910 | **205 010** | **305 010** | **306 010** | 306 020 |

Because addition is commutative, the powers of ten added to get from the number on the left to the number on the right can be done in any order. This is why you might have a different answer to your partner.

# Aim

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# Success Criteria

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