### **Diving into Mastery**

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twinkl



# Multiplying by 10, 100 and 1000



### **Diving into Mastery Guidance for Educators**

Each activity sheet is split into three sections, diving, deeper and deepest, which are represented by the following icons:



These carefully designed activities take your children through a learning journey, initially ensuring they are fluent with the key concept being taught; then applying this to a range of reasoning and problem-solving activities.

These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.

# Aim

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• Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.



#### Multiplying by 10, 100 and 1000 Diving

#### What number is shown on the place value chart?

HTh	TTh	Th	Н	Т	Ο
468					
Complete the sentences:					
If I multiply this number by 10, it becomes <u>4680</u> .					
The digits move					
I need to put a <u>zero</u> in the empty column to act as a place holder.					
If I multiply this number by 100, it becomes <u>46 800</u> .					
The digits move <u>two</u> places to the <u>left</u> .					
If I multiply this number by 1000, it becomes <u>468 000</u> .					
The digits move <u>three</u> places to the <u>left</u> .					

#### Multiplying by 10, 100 and 1000 Diving

#### Match each planet to its moon to complete the calculation.



Jim says, "To multiply by 100, I just add two zeros."

Kiera says, "I times by 10 and then times by 10 again."

Do you agree with Jim and Kiera's methods for multiplying by 100? Explain your thinking.

Jim should have said that the digits move two places to the left. If you are multiplying a decimal number by 100, for example 3.5 × 100, adding two zeros results in 3.500 and not 350. If any columns on the right of the digits have become empty, they will need a place holder.

Kiera's method is correct as  $10 \times 10 = 100$ . It is the same as multiplying by 100.

#### Multiplying by 10, 100 and 1000 Deeper



Using the clues below, can you work out the diameter of these new planets?

Vesta is 100 times bigger than Athena.

Athena has half the diameter of Vulcan.

Juno is 10 times bigger than Athena.

Ceres is 100 times bigger than Vulcan.

Vulcan is 3624km in diameter.

Apollo is 1000 times bigger than Athena.

Vulcan – 3624km Athena – 1812km Juno – 18 120km Ceres – 362 400km Vesta – 181 200km Apollo – 1 812 000km

#### Multiplying by 10, 100 and 1000 Deeper



Alan and Astrid, the astronauts, are exploring the new planet, Vulcan.

Alan has travelled 605 steps. Astrid has travelled 100 times more steps and then walked another 550 steps. How many steps has she travelled?

605 × 100 = 60 500 60 500 + 550 = 61 050 She has travelled 61 050 steps.

#### Multiplying by 10, 100 and 1000 Deepest



Astrid has discovered a crater a certain number of steps away from the shuttle. The number has 3 digits. She says that when this number is multiplied by 1000, the hundred thousands and ten thousands digits are the same. Also, the product of the number's digits is 8.

How many steps from the shuttle is the crater? Find both possibilities.

The crater is either 118 steps or 222 steps away from the shuttle.





#### Multiplying by 10, 100 and 1000 Deepest



What could the values of A and B be? Find 3 possible solutions.

#### $A \times 1000 = B + 800$

Possible solutions include the following:

A = 65 B = 64 200

(B should be 100 times greater than A.)

#### Multiplying by 10, 100 and 1000

#### Dive in by completing your own activity!



## **Need Planning to Complement this Resource?**

#### **National Curriculum Aim**

# Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.

#### For more planning resources to support this aim, <u>click here</u>.



Twinkl PlanIt is our award-winning scheme of work with over 4000 resources.



