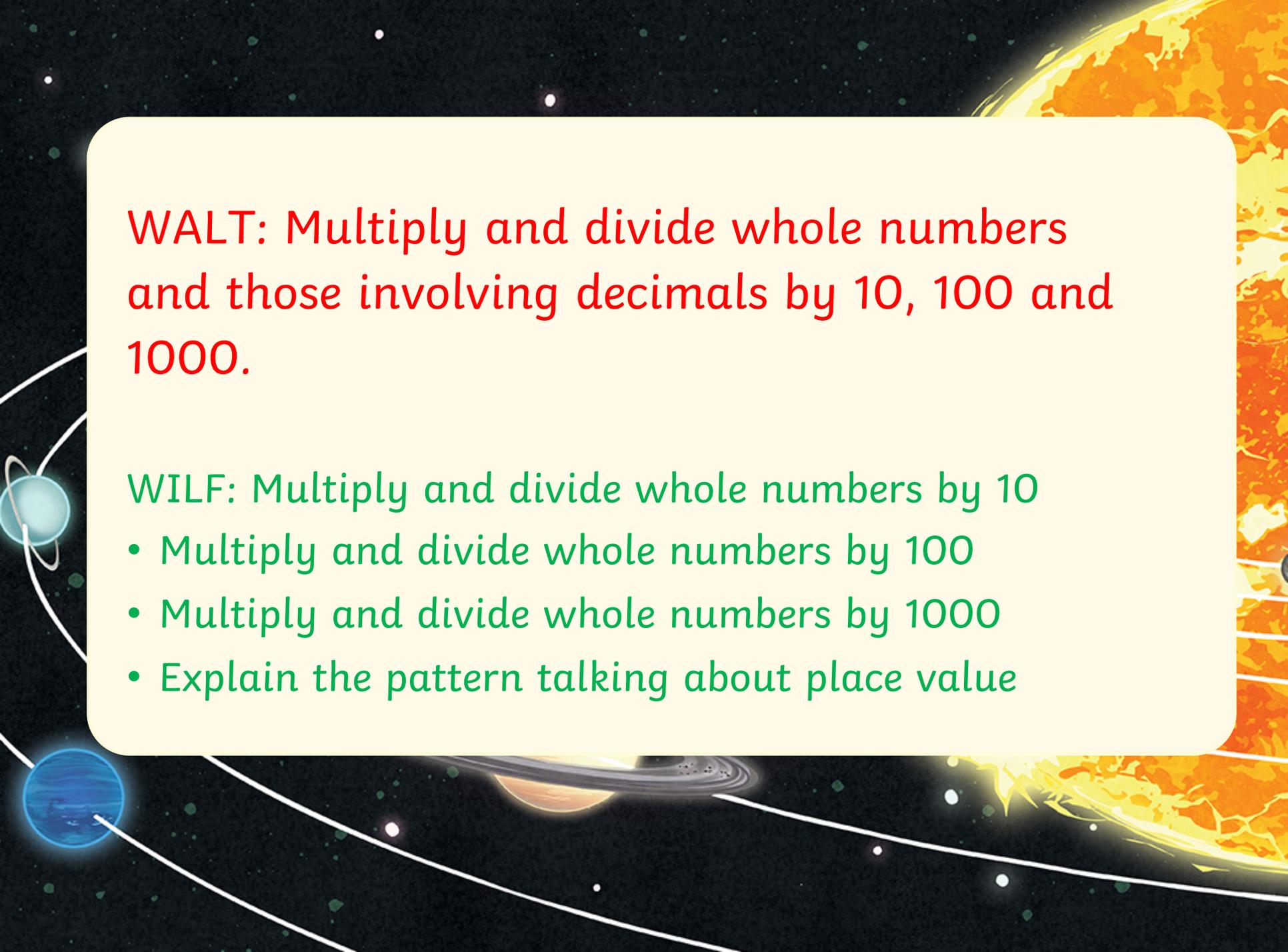




# Multiplying by 10, 100 and 1000



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

WILF: Multiply and divide whole numbers by 10

- Multiply and divide whole numbers by 100
- Multiply and divide whole numbers by 1000
- Explain the pattern talking about place value



What number is shown on the place value chart?

| HTh | TTh | Th | H          | T              | O                  |
|-----|-----|----|------------|----------------|--------------------|
|     |     |    | ● ●<br>● ● | ● ● ●<br>● ● ● | ● ● ● ●<br>● ● ● ● |
| 468 |     |    |            |                |                    |

Complete the sentences:

If I multiply this number by 10, it becomes 4680 .

The digits move one place to the left .

I need to put a zero in the empty column to act as a place holder .

If I multiply this number by 100, it becomes 46 800 .

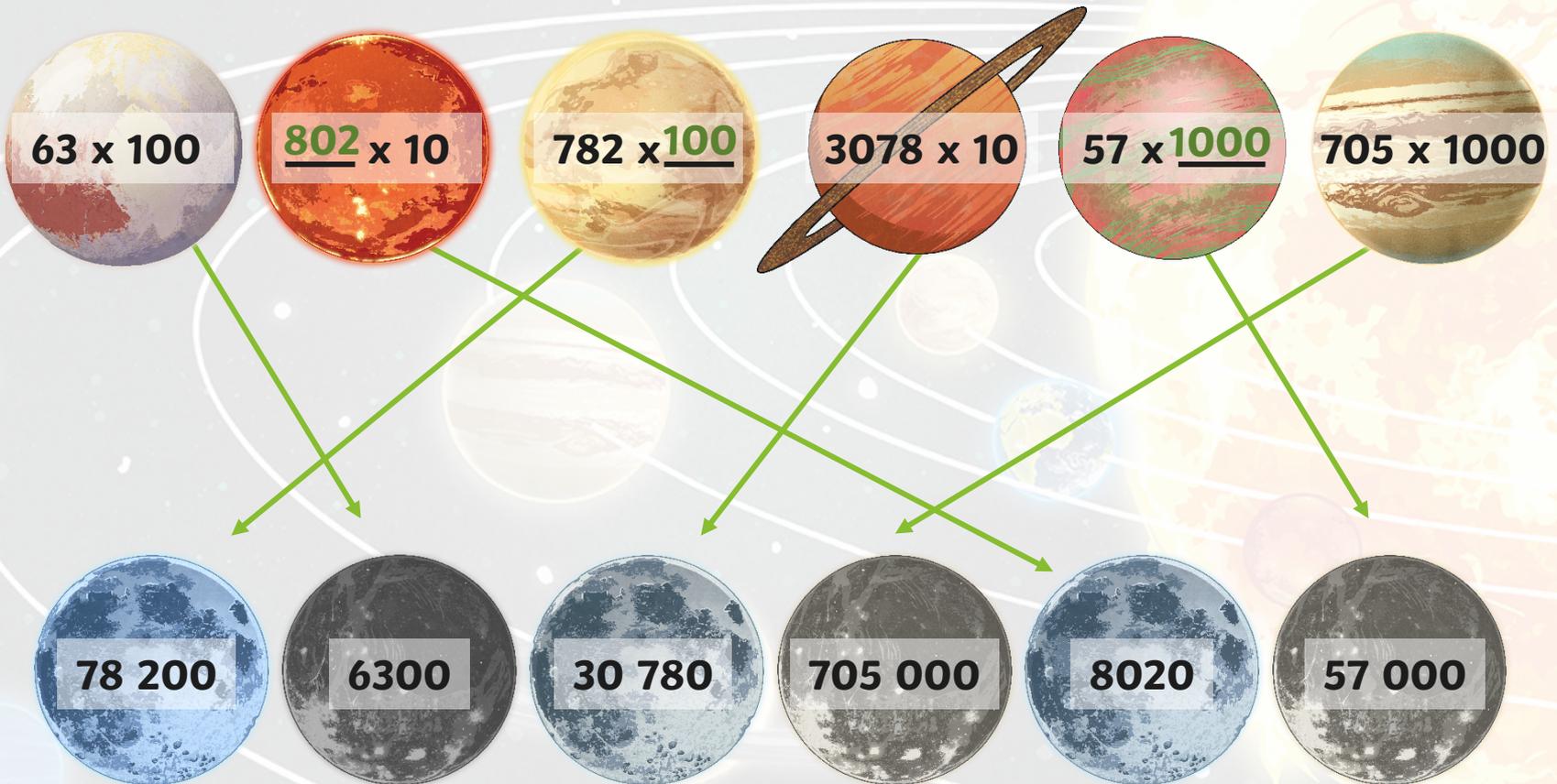
The digits move two places to the left .

If I multiply this number by 1000, it becomes 468 000 .

The digits move three places to the left .



Match each planet to its moon to complete the calculation.



$63 \times 100$

$802 \times 10$

$782 \times 100$

$3078 \times 10$

$57 \times 1000$

$705 \times 1000$

78 200

6300

30 780

705 000

8020

57 000



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  $3.5 \times 100$ , 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.

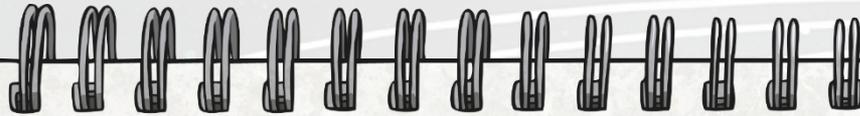


## Multiplying by 10, 100 and 1000

### Deeper



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



*Vesta is 100 times bigger than Athena.*

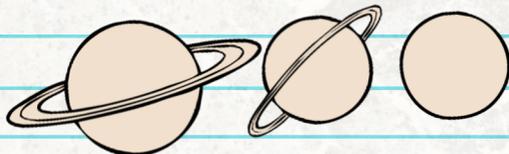
*Athena has half the diameter of Vulcan.*

*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?

$$605 \times 100 = 60\,500$$

$$60\,500 + 550 = 61\,050$$

She has travelled 61 050 steps.





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

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

Possible solutions include the following:

$$A = 4 \quad B = 3200$$

$$A = 65 \quad B = 64\,200$$

$$A = 82 \quad B = 81\,200$$

(B should be 100 times greater than A.)