Welcome, Maths Crew!

Today's mission is to master the powers of multiplying and dividing by 10, 100, and 1000. You'll need your sharpest thinking skills and a solid understanding of the place value chart to solve these challenges. Are you ready to shift those digits into place?

Task 1: Quick Shifts!

Use the place value chart to help you multiply or divide the following numbers:

1. 34 × 10 = __________
2. 562 ÷ 10 = __________
3. 8.9 × 100 = __________
4. 1,245 ÷ 100 = __________
5. 0.76 × 1000 = __________
6. 9,430 ÷ 1000 = __________

Super Tip! When multiplying by 10, 100, or 1000, move each digit to the left. When dividing, shift digits to the right.

Task 2: Fill in the Place Value Chart

Complete the chart by writing where each digit moves when multiplied or divided.

Original Number	Operation	Result
3.56	× 10	______
78.2	÷ 10	______
4,320	× 100	______
965	÷ 100	______
0.153	× 1000	______
7,890	÷ 1000	______

Task 3: True or False?

Decide whether the following statements are true or false:

1. 45 × 10 = 450 → _____
2. 6,000 ÷ 100 = 600 → _____
3. 0.25 × 1000 = 250 → _____
4. 123.4 ÷ 10 = 1,234 → _____
5. 89 × 100 = 8,900 → _____

MEGA INQUIRY CHALENGE

Space Cargo Calculation

Scenario:
You're in charge of loading a spaceship with supplies for a mission to Mars. Each supply crate has different weights that must be adjusted by multiplying or dividing by 10, 100, or 1000 to ensure they fit in the storage compartments correctly. Use your place value chart to work out the correct adjustments.

Here are the initial crate weights:
- Food Supplies: 4.6 kg (needs to be multiplied by 1000 for bulk storage)
- Water Tank: 850 kg (needs to be divided by 10 to fit into smaller containers)
- Oxygen Cylinders: 12.5 kg (needs to be multiplied by 100)
- Medical Kit: 315 kg (needs to be divided by 100)
- Fuel Cells: 0.095 kg (needs to be multiplied by 1000)

Your Task:
1. Adjust the weights by multiplying or dividing as required.
2. Record the new weight for each item.
3. Which supply had the largest increase in weight after the adjustment? Explain how you worked this out.
4. If the spaceship can only carry 5,000 kg in total, will all the supplies fit after adjustment? Justify your answer.

Discussion Prompt:
Why is understanding place value important for solving real-life problems like this? How could a mistake in multiplying or dividing by 10, 100, or 1000 affect the mission?

ANSWERS

Answers
Task 1: Quick Shifts!

1. **34 × 10 = 340**
2. **562 ÷ 10 = 56.2**
3. **8.9 × 100 = 890**
4. **1,245 ÷ 100 = 12.45**
5. **0.76 × 1000 = 760**
6. **9,430 ÷ 1000 = 9.43**

Task 2: Fill in the Place Value Chart

Original Number	Operation	Result
3.56	× 10	35.6
78.2	÷ 10	7.82
4,320	× 100	432,000
965	÷ 100	9.65
0.153	× 1000	153
7,890	÷ 1000	7.89

Task 3: True or False?

1. 45 × 10 = 450 → **True**
2. 6,000 ÷ 100 = 600 → **True**
3. 0.25 × 1000 = 250 → **True**
4. 123.4 ÷ 10 = 1,234 → **False** (It should be 12.34)
5. 89 × 100 = 8,900 → **True**

Problem-Solving Challenge: Space Cargo Calculation
Adjusted weights:
Food Supplies: 4.6 × 1000 = 4,600 kg
Water Tank: 850 ÷ 10 = 85 kg
Oxygen Cylinders: 12.5 × 100 = 1,250 kg
Medical Kit: 315 ÷ 100 = 3.15 kg
Fuel Cells: 0.095 × 1000 = 95 kg
Largest increase in weight: Food Supplies increased from 4.6 kg to 4,600 kg.
Total weight: 4,600 + 85 + 1,250 + 3.15 + 95 = 6,033.15 kg
The supplies exceed the 5,000 kg limit, so the spaceship cannot carry all the supplies without adjustments.
Discussion Answer: Using place value is crucial for handling large calculations accurately, especially in real-life situations like space missions. A small mistake in multiplying or dividing by 10, 100, or 1000 could lead to disastrous miscalculations in weight distribution.