Multiplying Dividing By 10 100 1000

Mana Maths

Te reo Māori terms

tau whakarea
multiplication
Open in Te Aka

tau whakawehe
division
Open in Te Aka

tau ā-ira
decimal
Open in Te Aka

mati whaiira
decimal place
Open in Te Aka

Notes & Steps

Key idea

When you multiply or divide by 10, 100, or 1000, the digits move left or right in their place-value columns. Multiply shifts left; divide shifts right.

Steps for multiplying

1. Count the zeros in 10, 100, or 1000.
2. Move the digits that many places to the left.
3. Fill any empty columns with zeros.

Steps for dividing

1. Count the zeros.
2. Move the digits that many places to the right.
3. For decimals past the point, keep the decimal point fixed.

Pattern examples

- $6 \times 10 = 60$ (6 moves left one place)
- $4 \times 100 = 400$ (4 moves left two places)
- $80 \div 10 = 8$ (8 moves right one place)
- $500 \div 100 = 5$ (5 moves right two places)
- $3.4 \times 10 = 34$ (decimal moves right)
- $5.8 \div 10 = 0.58$ (decimal moves left)

Common mistake

"Just add a zero" only works for whole numbers. For example, $3.4 \times 10 \neq 3.40$. The answer is 34, not 3.40. The digits shift, zeros are not just tacked on.

Try these

1. 9×1000
2. $7000 \div 1000$
3. 0.7×100

Notes & Steps

Example 1: multiplying decimals

Calculate 1.25×10.

$$1.25$$

Move the digits one place left: 12.5. Answer: 12.5.

Example 2: dividing decimals

Calculate $4.2 \div 100$.

$$4.2$$

Move the digits two places right: 0.042. Answer: 0.042.

Try these

1. 3.6×100
2. 0.48×1000
3. $72 \div 100$

Notes & Steps

Example 3: dividing a small decimal

Calculate 0.09×1000.

$$0.09$$

Move three places left. 9 needs zeros: $09.0 \to 90$. Answer: 90.

Example 4: applying to real units

Convert 0.047 km to metres.

$$0.047 \times 1000 = 47$$

So 0.047 km = 47 m.

Common mistake

When dividing, digits move right — the number gets smaller. Many students think $4.2 \div 100 = 420$ because they add zeros. Actually $4.2 \div 100 = 0.042$.

Start Tasks

1. 6×10

2. 4×100

3. 9×1000

4. $80 \div 10$

5. $500 \div 100$

6. $7000 \div 1000$

7. 23×10

8. 45×100

9. $67 \div 10$

Start Tasks — Answers

1. 90

2. 600

3. 50

4. 2300

5. 7000

6. 300

7. 12

8. 0.5

9. 80

Start Tasks

10. $900 \div 100$

11. 3.4×10

12. $5.8 \div 10$

13. 0.7×100

14. $4.2 \div 100$

15. 1.25×10

16. 3.6×100

17. 0.48×1000

18. $72 \div 100$

Start Tasks — Answers

10. 0.06

11. 0.002

12. 0.0007

13. 4.7

14. 0.85

15. 0.006

16. 3200

17. 0.009

18. 70

Start Tasks

19. $840 \div 10$

20. $9.3 \div 100$

21. 0.56×10

22. 2.04×100

23. $64 \div 1000$

24. 305×10

25. 0.09×1000

26. $760 \div 10$

27. 8.05×100

Start Tasks — Answers

19. 84

20. 0.093

21. 5.6

22. 204

23. 0.064

24. 3050

25. 90

26. 76

27. 805

Build Tasks

1. 56×10

2. 8.4×100

3. $3700 \div 10$

4. $42.6 \div 100$

5. 0.93×1000

6. $5.08 \div 10$

7. 67×100

8. $9.2 \div 10$

9. 0.406×100

Build Tasks — Answers

1. 2500

2. 17

3. 70

4. 0.005

5. 190

6. 0.64

7. 8200

8. 1.05

9. 0.007

Build Tasks

10. $8200 \div 1000$

11. 14.7×100

12. $3.06 \div 100$

13. 0.048×1000

14. $640 \div 100$

15. 2.75×10

16. 91×1000

17. $4.5 \div 1000$

18. 0.609×100

Build Tasks — Answers

10. 26 000

11. 0.00063

12. 300

13. 4350

14. 0.00904

15. 4800

16. 91 000

17. 0.0045

18. 60.9

Build Tasks

19. $750 \div 10$

20. $38.4 \div 100$

21. $\square \times 100 = 6300$

22. $\square \div 10 = 4.8$

23. $7.25 \times \square = 725$

24. $930 \div \square = 0.93$

25. 0.375×1000

26. $4800 \div 100$

27. 12.08×10

Build Tasks — Answers

19. **75**

20. **0.384**

21. **63**

22. **48**

23. **100**

24. **1000**

25. **375**

26. **48**

27. **120.8**

Push Tasks

1. Is $3.6 \times 100 = 36$ correct?

2. Is $420 \div 10 = 42$ correct?

3. Is $0.84 \times 1000 = 84$ correct?

4. Is $5.7 \div 100 = 0.057$ correct?

5. $\square \div 100 = 6.25$

6. $\square \times 1000 = 4.8$

7. $3.09 \times \square = 309$

8. $6400 \div \square = 6.4$

9. 0.047 km to m: multiply by 1000.

Push Tasks — Answers

1. **3700**

2. $3.6 \div 10 = 0.36$,
$0.4 \div 10 = 0.04$,
$0.2 \div 10 = 0.02$

3. 0.004 **km** $= 4$ **m**

4. 360 **mm** $= 0.36$ **m**

5. 5000 **g** $= 5$ **kg**

6. 0.034 **L** $= 34$ **mL**

7. $0.0015 \times 1000 = 1.5$ **mL**

8.
$0.6 \times 0.04 \times 200 = 4.8$

9. $3 \times 1000 + 4 \times 100 + 5 \times 10 + 6 = 3456$

Push Tasks

10. 3.6 kg to t: divide by 1000.

11. 5.2 MB $\rightarrow$ 5200 KB: what multiplier?

12. 1.25 L to mL: multiply by 1000.

13. By 100: digits move _____ places _____.

14. By 1000 divide: digits move _____ places _____.

15. Greater: 4.08×10 or $408 \div 10$?

16. Smaller: 0.72×100 or $720 \div 10$?

17. “Multiply by 10, just add a zero.” Always true?

18. “Divide by 100” means what? Give an example.

Push Tasks — Answers

10. 0.0036 **t**

11. $\times 1000$ **(1 KB = 1000 bytes)**

12. 1250 **mL**

13. **2 places left**

14. **3 places right**

15. **Both equal 40.8 (equal)**

16. **Both equal 72 (equal)**

17. **No; e.g.,** $3.4 \times 10 = 34$**, not 3.40**

18. **Move digits 2 places right. E.g.,** $500 \div 100 = 5$

Push Tasks

19. 0.608×1000

20. $52.4 \div 1000$

21. 7.005×100

22. $84000 \div 100$

23. Which is larger: 0.39×1000 or $3900 \div 10$?

24. Which is smaller: $5.6 \div 100$ or $0.56 \div 10$?

25. Multiply by 1000 moves digits _____ places _____.

26. Divide by 10 moves digits _____ place _____.

27. Explain why $4.5 \times 100 = 450$ but $4.5 \times 10 = 45$.

Push Tasks — Answers

19. 608

20. 0.0524

21. 700.5

22. 840

23. Both equal 390 (equal)

24. Both equal 0.056 (equal)

25. 3 places left

26. 1 place right

27. Different number of zeros: 100 has 2, 10 has 1