

Reasoning and Problem Solving

Step 2: Multiplying by 10, 100 and 1,000

National Curriculum Objectives:

Mathematics Year 6: (6F9a) [Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to three decimal places](#)

Differentiation:

Questions 1, 4 and 7 (Reasoning)

Developing Identify and continue a sequence when multiplying up to a 2-digit number with up to 2 decimal places by 10, 100 or 1,000.

Expected Identify and continue a sequence when multiplying up to a 3-digit number with up to 3 decimal places by 10, 100 or 1,000, or multiples of 10.

Greater Depth Identify, continue and replicate a sequence when multiplying up to a 3-digit number with up to 3 decimal places by 10, 100 or 1,000. Some questions include multiples of 10, 100 or 1,000.

Questions 2, 5 and 8 (Reasoning)

Developing Identify incorrect calculations and explain when multiplying up to a 2-digit numbers with up to 2 decimal places by 10, 100 and 1,000.

Expected Identify incorrect calculations and explain when multiplying up to a 3-digit number with up to 3 decimal places by 10, 100 and 1,000. Some questions include multiplying by multiples of 10.

Greater Depth Identify incorrect calculations and explain when multiplying up to a 3-digit numbers with up to 3 decimal places by 10, 100 and 1,000. Some questions include multiplying by multiples of 10, 100 or 1,000.

Questions 3, 6 and 9 (Problem Solving)

Developing Create a calculation using three given number cards and operations cards when multiplying up to a 2-digit number with up to 2 decimal places by 10, 100 and 1,000.

Expected Create a calculation using four given number cards and operations cards when multiplying up to a 3-digit number with up to 3 decimal places by 10, 100 and 1,000.

Greater Depth Create a calculation using four given number cards and operations cards when multiplying up to a 3-digit numbers with up to 3 decimal places by 10, 100 and 1,000. Question involves multiplying by multiples of 10, 100 and 1,000.

More [Year 6 Decimals](#) resources.

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Multiplying by 10, 100 and 1,000

Multiplying by 10, 100 and 1,000

1a. Look at the following number sequences.

A. 1, 10, 100

B. 7.6, 76, 760

C. 1.54, 15.4, 154

Explain the pattern.
Write the next 2 numbers in each sequence.



R

1b. Look at the following number sequences.

A. 2, 20, 200

B. 9.3, 93, 930

C. 7.24, 72.4, 724

Explain the pattern.
Write the next 2 numbers in each sequence.



R

2a. Cian and Sinead are multiplying numbers by 100.



Cian

If I multiply the number 2.15 by 100 I get 2.1500

You are incorrect. The answer would be 215



Sinead

Who is correct?
Explain your answer.



R

2b. Hafsa and Chuan are multiplying numbers by 10.



Hafsa

If I multiply the number 8.32 by 10 I get 8.320

If I multiply the number 8.32 by 10 I get 83.2



Chuan

Who is correct?
Explain your answer.



R

3a. Create a calculation using the operation and number cards below.

1.3

13

130

x 100

x 10

x 1,000

How many combinations can you make using only one operation per calculation.



PS

3b. Create a calculation using the operation and number cards below.

0.45

45

450

x 10

x 1,000

x 100

How many combinations can you make using only one operation per calculation.



PS

Multiplying by 10, 100 and 1,000

Multiplying by 10, 100 and 1,000

4a. Look at the following number sequences.

A. 0.075, 1.5, 30

B. 0.05, 1, 20

C. 0.25, 5, 100

Explain the pattern.
Write the next 2 numbers in each sequence.



R

4b. Look at the following number sequences.

A. 0.13, 3.9, 117

B. 0.87, 26.1, 783

C. 0.041, 1.23, 36.9

Explain the pattern.
Write the next 2 numbers in each sequence.



R

5a. Sean and Steph are multiplying numbers by 100.



Sean

If I multiply the number 129.5 by 20 I get 259

If I multiply the number 129.5 by 20 the answer would be 2,590



Steph

Who is correct?
Explain your answer.



R

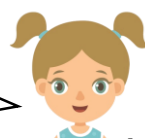
5b. Gabriel and Hannah are multiplying numbers by 1,000.



Gabriel

If I multiply the number 73.03 by 1,000 I get 73,030

If I multiply the number 73.03 by 1,000 the answer would be 73.03000



Hannah

Who is correct?
Explain your answer.



R

6a. Create a calculation using the operation and number cards below.

2.5

0.25

250

2,500

x 100

x 10

x 1,000

How many combinations can you make using only one operation per calculation.



PS

6b. Create a calculation using the operation and number cards below.

24.75

2.475

247.5

2,475

x 10

x 1,000

x 100

How many combinations can you make using only one operation per calculation.



PS

Multiplying by 10, 100 and 1,000

Multiplying by 10, 100 and 1,000

7a. Look at the following number sequences.

A. 0.023, 2.3, 230

B. 0.012, 1.2, 120

C. 0.004, 0.4, 40

Explain the pattern. Write the next 2 numbers in each sequence. Create another sequence following this pattern.



R

7b. Look at the following number sequences.

A. 0.01, 0.2, 4

B. 0.007, 0.14, 2.8

C. 0.024, 0.48, 9.6

Explain the pattern. Write the next 2 numbers in each sequence. Create another sequence following this pattern.



R

8a. Josh and Lucy are multiplying numbers by multiples of 10.



Josh

If I multiply the number 432.78 by 10 and then by 10 again I get 8,655.6

If I multiply the number 432.78 by 10 and then by 10 again I get 432,780



Lucy

Who is correct?
Explain your answer.



R

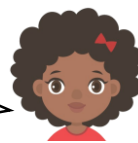
8b. Ben and Isabel are multiplying numbers by multiples of 10.



Ben

If I multiply the number 73.03 by 50 I get 3,651.5

If I multiply the number 73.03 by 50 the answer would be 365.15



Isabel

Who is correct?
Explain your answer.



R

9a. Create a calculation using the operation and number cards below.

0.125

1,250

125

12.5

x 100

x 10

x 1,000

How many combinations can you make using two operations per calculation?
Cards can be used more than once.



PS

9b. Create a calculation using the operation and number cards below.

0.375

37.5

375

3,750

x 10

x 1,000

x 100

How many combinations can you make using two operations per calculation?
Cards can be used more than once.



PS

Reasoning and Problem Solving Multiplying by 10, 100 and 1,000

Developing

1a. The pattern is multiply by 10. A. 1,000 and 10,000, B. 7,600 and 76,000, C. 1,540 and 15,400.

2a. Sinead is correct. Cian has only added 2 zeros to his number and not multiplied by 100.

3a. Possible combinations include $1.3 \times 10 = 13$, $1.3 \times 100 = 130$, $13 \times 10 = 130$

Expected

4a. The pattern is multiply by 20. A. 600 and 12,000, B. 400 and 8,000, C. 2,000 and 40,000.

5a. Steph is correct. Sean has only multiplied his number by 2 not 20.

6a. Possible combinations include $0.25 \times 10 = 2.5$, $0.25 \times 1,000 = 250$, $2.5 \times 100 = 250$, $2.5 \times 1,000 = 2,500$, $250 \times 10 = 2,500$

Greater Depth

7a. The pattern is multiply by 100. A. 23,000 and 2,300,000, B. 12,000 and 1,200,000, C. 4,000 and 400,000. Various possible answers for own sequence which follow the pattern $\times 100$.

8a. Lucy is correct. Josh has multiplied his number by 20 instead of by 10 and then 10 again ($\times 100$).

9a. Possible combinations include $0.125 \times 10 \times 10 = 12.5$, $0.125 \times 10 \times 100 = 125$, $12.5 \times 10 \times 10 = 1,250$, $0.125 \times 1,000 \times 10 = 1,250$, $0.125 \times 100 \times 100 = 1,250$, $12.5 \times 10 \times 10 = 1,250$

Reasoning and Problem Solving Multiplying by 10, 100 and 1,000

Developing

1b. The pattern is multiply by 10. A. 2,000 and 20,000, B. 9,300 and 93,000, C. 7,240 and 72,400.

2b. Chuan is correct. Hafsa has only added a zero to her number and not multiplied by 10.

3b. Possible combinations include $0.45 \times 100 = 45$, $0.45 \times 1,000 = 450$, $45 \times 10 = 450$

Expected

4b. The pattern is multiply by 30. A. 3,510 and 105,300, B. 23,490 and 704,700, C. 1,107 and 33,210.

5b. Gabriel is correct. Hannah has only added 3 zeros to her number and not multiplied by 1,000.

6b. Possible combinations include $2.475 \times 10 = 24.75$, $2.475 \times 100 = 247.5$, $2.475 \times 1,000 = 2,475$, $24.75 \times 10 = 247.5$, $24.75 \times 100 \times 2,475$, $247.5 \times 10 = 2,475$

Greater Depth

7b. The pattern is multiply 20. A. 80 and 1,600, B. 56 and 1,120, C. 192 and 3,840. Various possible answers which follow the pattern $\times 20$.

8b. Ben is correct. Isabel has only multiplied her number by 5 not 50.

9b. Possible combinations include $0.375 \times 10 \times 10 = 37.5$, $0.375 \times 10 \times 100 = 375$, $0.375 \times 10 \times 1,000 = 3,750$, $0.375 \times 100 \times 100 = 3,750$, $37.5 \times 10 \times 10 = 3,750$