Decimal Remainders Maths Mastery Challenge Cards **Answers**

1. Pavel completes these division calculations using the written method of short division. Can you spot and explain any mistakes?

```
   2   0   8 • 5
4 | 9   3  ³4 • ²0

   2   3   3 • 5
4 | 9  ¹3  ¹4 • ²0

   1   9   1 • 0
5 | 8  ³5   6 • 0

   1   7   1 • 2
5 | 8  ³5   6 • ¹0
```

2. Nikita completes these division calculations using the written method of short division. Can you spot and explain any mistakes?

```
   0   1   4   4 • 0
5 | 4   7  ²2  ²3 • 0

   1   0   0   9 • 0
8 | 8   3   7  ⁷2 • 0

   0   9   4   4 • 6
5 | 4  ⁴7  ²2  ²3 • ³0

   1   0   4   6 • 5
8 | 8   3  ³7  ⁵2 • ⁴0
```

3. George completes these division calculations using the written method of short division. Can you spot and explain any mistakes?

```
   1   7   0   2   4 • 2   5
4 | 7  ³1   0   9  ¹7 • ¹0  ²0

   1   7   7   7   4 • 2   5
4 | 7  ³1  ³0  ²9  ¹7 • ¹0  ²0

   0   7   7   4   6 • 7   5
8 | 6  ⁶4  ⁶1  ³7  ⁵4 • ⁶0  ⁴0

   0   8   0   2   1 • 7   5
8 | 6  ⁶4   1  ¹7  ¹4 • ⁶0  ⁴0
```

4. Pavel completes this division calculation using the written method of long division.

```
  0  0  8  5 • 6  8  7  5
64| 5  5  8  4 • 0  0  0  0
- 5  2  2
     3  6  4
   - 3  2  0
        4  4  0
      - 3  8  4
           5  6  0
         - 5  1  2
              4  8  0
            - 4  4  8
                 3  2  0
               - 3  2  0
                 0  0  0
```

```
  0  0  8  7 • 2  5
64| 5  5  8  4 • 0  0
- 5  1  2
     4  6  4
   - 4  4  8
        1  6  0
      - 1  2  8
           3  2  0
         - 3  2  0
           0  0  0
```

Decimal Remainders Maths Mastery Challenge Cards **Answers**

5. Pavel thinks that the only divisor which will create a decimal remainder with one decimal point is 2.

   Find calculations using different divisors which prove that Pavel is wrong.

   Many possible answers. Accept any correct answer that uses a divisor other than 2 that results in a decimal answer, such as 7 ÷ 5 = 1.4

6. Nikita thinks that when you divide 65 by 3, 6, 7 or 9, the answer will always have more than two decimal places.

   Prove that Nikita is correct.

   65 ÷ 3 = 21.666 (recurring)

   65 ÷ 6 = 10.833 (recurring)

   65 ÷ 7 = 9.285714 (recurring or 9.29 rounded to 2 d.p.)

   65 ÷ 9 = 7.22 (recurring)

   What do you notice about the answers?
   The answers have recurring decimals.

7. George thinks that when you divide a whole number by 8, you always get an answer that is either a whole number or a decimal remainder with two decimal places.

   Prove that George is incorrect.

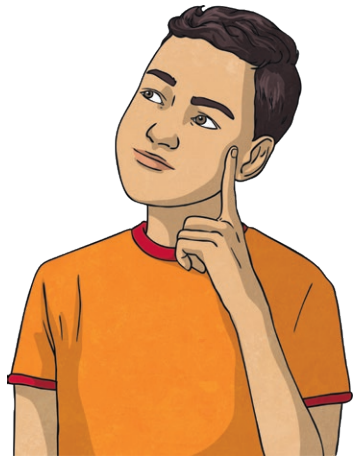
   Many possible answers. Accept any correct calculation which uses 8 as a divisor including 12 ÷ 8 = 1.5 and 9 ÷ 8 = 1.125.

Decimal Remainders
Maths Mastery

1. Pavel completes these division calculations using the written method of short division. Can you spot and explain any mistakes?

$$\begin{array}{r} 2\ \ 0\ \ 8 \bullet 5 \\ 4\overline{)\ 9\ \ 3\ \ {}^{3}4 \bullet {}^{2}0} \end{array}$$

$$\begin{array}{r} 1\ \ 9\ \ 1 \bullet 0 \\ 5\overline{)\ 8\ \ {}^{3}5\ \ 6 \bullet 0} \end{array}$$



2. Nikita completes these division calculations using the written method of short division. Can you spot and explain any mistakes?

$$\begin{array}{r} 0\ \ 1\ \ 4\ \ 4 \bullet 0 \\ 5\overline{)\ 4\ \ 7\ \ {}^{2}2\ \ {}^{2}3 \bullet 0} \end{array}$$

$$\begin{array}{r} 1\ \ 0\ \ 0\ \ 9 \bullet 0 \\ 8\overline{)\ 8\ \ 3\ \ 7\ \ {}^{7}2 \bullet 0} \end{array}$$

3. George completes these division calculations using the written method of short division. Can you spot and explain any mistakes?

$$\begin{array}{r} 1\ \ 7\ \ 0\ \ 2\ \ 4 \bullet 2\ \ 5 \\ 4\overline{)\ 7\ \ {}^{3}1\ \ 0\ \ 9\ \ {}^{1}7 \bullet {}^{1}0\ \ {}^{2}0} \end{array}$$

$$\begin{array}{r} 0\ \ 7\ \ 7\ \ 4\ \ 6 \bullet 7\ \ 5 \\ 8\overline{)\ 6\ \ {}^{6}4\ \ {}^{6}1\ \ {}^{3}7\ \ {}^{5}4 \bullet {}^{6}0\ \ {}^{4}0} \end{array}$$

4. Pavel completes this division calculation using the written method of long division.

Can you spot and explain any mistakes?

```
      0 0 8 5 • 6 8 7 5
   64 5 5 8 4 • 0 0 0 0
 -    5 2 2
        3 6 4
      - 3 2 0
          4 4 0
        - 3 8 4
            5 6 0
          - 5 1 2
              4 8 0
            - 4 4 8
                3 2 0
              - 3 2 0
                0 0 0
```


5. Pavel thinks that the only divisor which will create a decimal remainder with one decimal point is 2.

Find calculations using different divisors which prove that Pavel is wrong.

6. Nikita thinks that when you divide 65 by 3, 6, 7 or 9, the answer will always have more than two decimal places.

Prove that Nikita is correct.

What do you notice about the answers?

7. George thinks that when you divide a whole number by 8, you always get an answer that is either a whole number or a decimal remainder with two decimal places.

Prove that George is incorrect.