Booster Pages KS2

Missing Digits
Calculator

Level 3/4

Number of practice sheets: 9

MathSphere

Notes

The questions in this module are similar to the ones set on the calculator papers in previous years. Some do not need a calculator if the children are proficient at mental arithmetic, but children can use a calculator if they wish. In any case, they should be encouraged to check their answers on the calculator.

Techniques to be used in this work include working a sum backwards and using rules of multiplication to find missing numbers.

Eg. if a missing digit must be multiplied by 7 and the answer ends in 1, the missing digit must be 3 (7 × 3 = 2**1**).

Some missing digits may be found by quickly trying all possibilities on a calculator. Eg 8 ☐ 3 × 7 = 5831. By trying the numbers 0 – 9 in the box, they will quickly find the missing digit to be 3.

Children need to appreciate the need to bring many resources to this type of problem.

Although this type of problem does not appear too often on test papers, these questions are certainly worth practising as they focus on many techniques that may be used elsewhere in number work.

Some questions are written horizontally Eg 4☐7 – 236 =☐51.
In finding the missing digits children may prefer to rewrite the sum in vertical form, although this is not always necessary if a calculator is being used.

The first worksheet is printed large so that you may use it on an OHP or interactive whiteboard for demonstration purposes.

1.

| 9 | 6 | 2 | 5 |

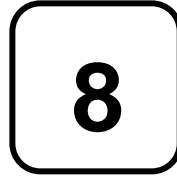Use all the number cards to make the **smallest** and **largest** numbers you can between **2000** and **3000**.

Smallest ➡ ☐ ☐ ☐ ☐

Largest ➡ ☐ ☐ ☐ ☐

2.

| 6 | 7 | 3 | 8 |

Use all the number cards to make the sum correct:

$$+ \begin{array}{cc} \square & \square \\ \square & \square \end{array}$$

1 1 4

How many different answers are there?

1.   Will any **even** number divide exactly into **371**?

_____

Using your calculator, try dividing each of the numbers **3, 5, 7** and **9** into **371**.
Which one divides exactly?   _____

Use what you have discovered to fill in the number boxes

$$\boxed{} \times \boxed{} = \textbf{371}$$

2. Use the same idea to fill in the number boxes below.

$$\boxed{} \times \boxed{} = \textbf{335}$$

$$\boxed{} \times \boxed{} = \textbf{194}$$

$$\boxed{} \times \boxed{} = \textbf{219}$$

$$\boxed{} \times \boxed{} = \textbf{539}$$

$$\boxed{} \times \boxed{} = \textbf{265}$$

1.   **A**   **B**

$$\boxed{} + \boxed{} = 157$$

A and **B** are both two-digit numbers.

What is the smallest number that **A** can be
to make the sum true?   _____

2.   **A**   **B**

$$\boxed{} + \boxed{} = 128$$

A and **B** are both two-digit **even** numbers.

What is the smallest number that **B** can be
to make the sum true?   _____

3.   **A**   **B**

$$\boxed{} + \boxed{} = 161$$

A and **B** are both two-digit **multiples of 7**.

What is the smallest number that **A** can be
to make the sum true?   _____

1. Write the missing numbers in the boxes in each sum.
Use your calculator to check your answers.

a)

```
   [ ]  1   3
-   2  [ ]  9
 _____
    4   6   4
```

b)

```
    8   4   6
-   5   1  [ ]
 _____
    3  [ ]  7
```

c)

```
    8   2   5
-  [ ]  7   6
 _____
    4  [ ] [ ]
```

d)

```
    4  [ ]  2
-   2   7  [ ]
 _____
   [ ]  2   5
```

e)

```
    5   9   8
-  [ ]  9   9
 _____
    2  [ ] [ ]
```

f)

```
    7  [ ]  5
-   3   9  [ ]
 _____
   [ ]  6   8
```

When I do exams I know all the answers. It's the questions that get me!

Do not forget to use your calculator when you can.

1. Write in the missing digits:

a) $4\ \boxed{}\ 7 + 2\ 7\ \boxed{} = 6\ 8\ 3$

b) $\boxed{}\ 4\ 7 + 5\ \boxed{}\ 5 = 9\ 0\ 2$

c) $\boxed{}\ 8\ 3 + 4\ 9\ \boxed{} = 9\ 8\ 0$

d) $\boxed{}\ 0\ 7 + 1\ \boxed{}\ 2 = 9\ 9\ 9$

e) $4\ \boxed{}\ 4 + 3\ 8\ \boxed{} = 8\ 8\ 0$

f) $2\ 8\ \boxed{} + \boxed{}\ 9\ 7 = 7\ 8\ 5$

Animals are great.
Dolphins are so intelligent it takes them only a few days to train a human to stand on the edge of the pool and throw them fish!!!!!

Where do you get these rotten jokes from?

A rotten joke book, of course!

1. Write in the missing digits:

a) $3\ \square\ 8\ -\ 1\ 6\ 4\ =\ \square\ 1\ 4$

b) $7\ \square\ 3\ -\ \square\ 6\ 4\ =\ 5\ 1\ 9$

c) $\square\ 8\ 8\ -\ 3\ 7\ 5\ =\ 6\ \square\ 3$

d) $\square\ 6\ 7\ -\ 4\ \square\ 2\ =\ 1\ 7\ 5$

e) $4\ \square\ 5\ -\ 1\ 9\ \square\ =\ 2\ 8\ 6$

f) $8\ 5\ \square\ -\ \square\ 9\ 5\ =\ 5\ 5\ 8$

1. Write the digits that could go in the boxes. Both numbers have two digits.

$$\boxed{\,\Big|\,} \times 7 = \boxed{\,\Big|\,}$$

Can you find all 5 possible answers?

2. Write the digits that could go in the boxes. Both numbers have two digits.

$$\boxed{\,\Big|\,3} \times 4 = \boxed{\,\Big|\,}$$

Can you find two possible answers?

3. Find all the possible answers for the following:

$$\boxed{\,\Big|\,} \times \boxed{\,\Big|\,} = \mathbf{280}$$

$$\boxed{\,\Big|\,} \times \boxed{\,\Big|\,} = \mathbf{440}$$

$$\boxed{\,\Big|\,} \times \boxed{\,\Big|\,} = \mathbf{400}$$

$$\boxed{\,\Big|\,\,\Big|\,} \times \boxed{\,\Big|\,} = \mathbf{2000}$$

$$\boxed{\,\Big|\,\,\Big|\,} \times \boxed{\,\Big|\,} = \mathbf{5000}$$

1. Write in the missing digits:

a)

$$2\ \boxed{}\ 5$$
$$\times\ 3$$
$$\boxed{}\ 4\ 5$$

b)

$$\boxed{}\ 2\ 9$$
$$\times\ 4$$
$$5\ 1\ \boxed{}$$

c)

$$1\ 5\ 3$$
$$\times\ \boxed{}$$
$$\boxed{}\ 1\ 8$$

d)

$$\boxed{}\ \boxed{}\ 7$$
$$\times\ 5$$
$$8\ 3\ \boxed{}$$

e)

$$4\ \boxed{}\ 3$$
$$\times\ 8$$
$$\boxed{}\ \boxed{}\ 8\ 4$$

f)

$$\boxed{}\ 5\ 3$$
$$\times\ 6$$
$$4\ 5\ 1\ \boxed{}$$
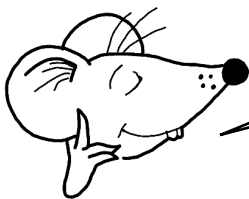
Part **e)** has two answers.
Can you find them both? I did!

1. Write in the missing digits in these division questions.
None of the sums has a remainder.

a)

```
    1 2
7 )□ 4
```

b)

```
    1 2
6 ) 7 □
```

c)

```
      1 6
□ ) 9 6
```

d)

```
    □ 3
5 ) 3 6 5
```

e)

```
    1 0 8
9 )□ 7 2
```

f)

```
    1 □ 5
7 ) 8 7 5
```

g)

```
    2 0 8
4 )□ 3 □
```

h)

```
    1 □ 3
6 ) 9 1 □
```

i)

```
    □ 5 9
□ ) 7 □ 7
```

Are you brainy enough to solve the last division?
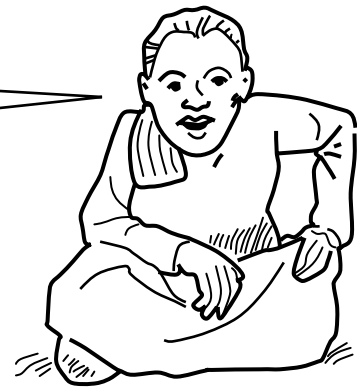
2. Complete this magic square. In the square the rows, columns and diagonals add up to the same number.

5 7		7 5
6 6	4 8	
		3 9

Answers

Page 3
1.   Smallest: 2569   Largest: 2965
2.   76 + 38 **OR** 78 + 36 (two answers).

Page 4
1.   No even numbers.   Divides by 7.   **56 × 7** = 392

2.   **67 × 5** = 335
     97 × 2 = 194
     73 × 3 = 219
     77 × 7 = 539
     53 × 5 = 265

Page 5
1.   **58 + 99** = 157   so 58 is smallest number.

2.   **98 + 30** = 128 (98 is largest even number with two digits)
      so 30 is smallest number

3.   **63 + 98** = 161 (98 is largest multiple of 7 with two digits)
      so 63 is smallest number

Page 6

1. **a)**   **7**13 - 2**4**9 = 464   **b)**   846 - 51**9** = 3**2**7
   c)   825 - **3**76 = 449   **d)**   40**2** - 277 = **1**25
   e)   598 - **2**99 = **2**99   **f)**   7**6**5 - 39**7** = **3**68

Page 7
1. a)   4**07** + 27**6** = 683   b)   **3**47 + 5**5**5 = 902
    c)   **4**83 + 49**7** = 980   d)   **8**07 + 1**9**2 = 999
    e)   4**9**4 + 38**6** = 880   f)   28**8** + **4**97 = 785

Page 8
1. a)   3**7**8 – 236 = **2**14   b)   7**8**3 – **2**64 = 519
    c)   9**8**8 – 375 = 6**1**3   d)   **6**67 – 4**9**2 = 175
    e)   4**8**5 – 19**9** = 286   f)   85**3** – **2**95 = 558

Answers (Contd)

Page 9

1. $10 \times 7 = 70$, $11 \times 7 = 77$, $12 \times 7 = 84$, $13 \times 7 = 91$, $14 \times 7 = 98$

2. $13 \times 4 = 52$, $23 \times 4 = 92$

3. $28 \times 10 = 280$
$14 \times 20 = 280$

$44 \times 10 = 440$
$22 \times 20 = 440$
$11 \times 40 = 440$

$40 \times 10 = 400$
$20 \times 20 = 400$
$25 \times 16 = 400$

$200 \times 10 = 2000$
$100 \times 20 = 2000$
$125 \times 16 = 2000$

$500 \times 10 = 5000$
$250 \times 20 = 5000$
$125 \times 40 = 5000$
$100 \times 50 = 5000$
$200 \times 25 = 5000$

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1.   **a)** $215 \times 3 = \mathbf{6}45$ **b)** $\mathbf{1}29 \times 4 = 51\mathbf{6}$
c) $153 \times \mathbf{6} = \mathbf{9}18$ **d)** $16\mathbf{7} \times 5 = 83\mathbf{5}$
e) $42\mathbf{3} \times 8 = \mathbf{33}84$ **or**   **f)** $\mathbf{7}53 \times 6 = 451\mathbf{8}$
   $4\mathbf{7}3 \times 8 = \mathbf{37}84$

Page 11

1. a) 84   **b) 7**2   **c)** 6   **d) 7**3   **e) 9**72   **f)** 125   **g) 8**32
   h) 1 **5**3 and 91**8**   **i) 2**59   **3**   777

2.   57   **12**   75
          66   48   **30**
          21   **84**   39