



Number Operations and Calculation Methods

Age 11+ Level ★ Worksheet 1

1. Reverse Subtraction

In this subtraction, a , b and c are digits, and a is less than b . What is the value of c ?

$$\begin{array}{r} b \ a \\ - a \ b \\ \hline c \ 6 \end{array}$$

2. Bus Route

Nine bus stops are equally spaced along a bus route. The distance from the first to the third is 600m. How far is it from the first to the last?

3. Debasing the Coinage

In 1990 a new size 5p coin was minted. The old size weighed 5.65g while the new size weighs 3.25g. How much lighter will your pocket be if it contains £5 worth of the new size coins instead of the old size?

4. Fly Away

In this addition, each letter represents a different non-zero digit.

Find the values of A , F , L , W and Y .

$$\begin{array}{r} F \ L \ Y \\ F \ L \ Y \\ + F \ L \ Y \\ \hline A \ W \ A \ Y \end{array}$$

5. Hot Dogs

A hot dog lover ate 60 hot dogs over an 8-day period. Every day, she ate one more hot dog than she had eaten the day before.

How many hot dogs did she eat on the first day?

6. 2014 Even Numbers

What is the difference between the sum of the first 2014 odd numbers and the sum of the first 2014 even numbers?

These problems are adapted from UKMT (ukmt.org.uk) and WMC (competition.ac) problems.



Age 11+ Level ★ Worksheet 2

1. Down and Along

The letters J , M and C represent three different non-zero digits.

What are the values of J , M and C ?

$$\begin{array}{r} J \ J \\ M \ M \\ + C \ C \\ \hline J \ M \ C \end{array}$$

2. 354972

What is the remainder when 354972 is divided by 7?

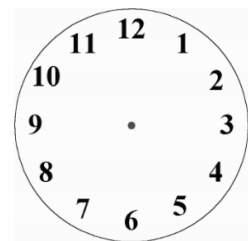
3. Subtracting to 2008

In this subtraction, P, Q, R and S are digits. What is the value of $P + Q + R + S$?

$$\begin{array}{r} 8 \text{ Q } 0 \text{ S} \\ - \text{ P } 0 \text{ R } 2 \\ \hline 2 \text{ 0 } 0 \text{ 8} \end{array}$$

4. Split Clock face

Use 2 straight lines to split the clock face into 3 parts, so that the sums of the numbers in each of the parts are equal.



5. 50, 50, 50 and 50

Aroon says his age is 50 years, 50 months, 50 weeks and 50 days. What age will he be on his next birthday?

6. Missing Digits

In this calculation, K, L, M, N and P each denote a single digit.

Find K, L, M, N and P.

$$\begin{array}{r} \begin{array}{cccccc} & K & L & M & N & P & 4 \\ \times & & & & & & 4 \\ \hline 4 & K & L & M & N & P & \end{array} \end{array}$$

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Age 11+ Level ★ Worksheet 3

1. Identical Digit Multiplication

77 is multiplied by another two-digit number with identical digits.

The third digit of the product, counting from left to right, is a 3.
What is the product?

2. In Sum-mary

The sum of three numbers is 2009. The sum of the first two numbers is 1004, and the sum of the last two is 1005.
What is the product of all three numbers?

3. Carry Over

Each letter stands for a different digit,
and S is non-zero.

Which letter has the lowest value?

$$\begin{array}{r} UK \\ + \quad 4 \\ \hline SMC \end{array}$$

4. Magic Error

Two numbers in the 4 x 4 grid can be swapped to create a Magic Square (in which all rows, all columns and both main diagonals add to the same total).

What is the sum of these two numbers?

9	6	3	16
4	13	10	5
14	1	8	11
7	12	15	2

5. Walk or Run?

When John walks to school and then runs home, it takes him 40 minutes. When he runs both ways, it takes him 24 minutes.

He has one fixed speed whenever he walks, and another fixed speed whenever he runs.

How long would it take him to walk both ways?

These problems are adapted from UKMT (ukmt.org.uk) and WMC (competition.ac) problems.