

**Age 14+ Level ★★
Worksheet 1****1. 2011 Digits**

What is the sum of the first 2011 digits when $20 \div 11$ is written as a decimal?

2. Recurring Mean

What is the mean of $1.\dot{2}$ and $2.\dot{1}$?

3. Pineapple Juice

The Juice Drink company decides to mix leftover juice drinks to make a new drink.

They have 450 litres of pineapple drink, which is 42% juice.
They mix it with 630 litres of orange drink.
The new drink is 35% juice.

What percentage of the orange drink was juice?

4. Bargain

A shop advertised "Everything half price in our sale", and then advertised that there is "An additional 15% off sale prices".

Overall, this is equivalent to what reduction on the original prices?

5. Washing-up

A survey for washing-up liquid revealed that $\frac{2}{3}$ of all customers bought Jinx and $\frac{1}{3}$ of customers bought Kleenz. Nobody bought both. After an advertising campaign for Kleenz, the only change in sales was that $\frac{1}{4}$ of the people who had bought Jinx were now buying Kleenz instead.

What fraction of customers now buy Kleenz?

6. Fractions of 1000

What is the value of $\frac{1}{2}$ of $\frac{2}{3}$ of $\frac{3}{4}$ of $\frac{4}{5}$ of $\frac{5}{6}$ of $\frac{6}{7}$ of $\frac{7}{8}$ of $\frac{8}{9}$ of $\frac{9}{10}$ of 1000?

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