**Math teasers**

1. Use digits 1 through 8 to fill the circles below. But wait! Make sure that no line connects consecutive numbers. That means 3 can’t join 2 or 4; 6 can’t join 5 or 7 and so on.

![Diagram of circles connected by lines](image1)

2. Use numbers 4 through 12. Fill the circles so that the numbers on each straight line add up to 21.

![Diagram of circles connected by lines](image2)

3. Use two straight lines to divide this watch into 3 parts, so that the numbers in each of the sections add up to the same sum.

![Watch diagram](image3)

4. Can you make five 3’s equal to 13? Here’s how:

   \[ 3 \times 3 + 3 + \frac{3}{3} = 13 \]

Now you try a few

A. Make thirteen 1’s equal to 13
B. Make thirteen 2’s equal to 13
C. Make thirteen 9’s equal to 13
5. Move one toothpick to correct

\[
\sqrt{1} - \sqrt{1} = \times 1
\]

\[
\times + \sqrt{1} = \sqrt{1}
\]

\[
\times 1 + \times = 11
\]

6. Farmer counts 9 heads and 24 legs. How many chickens and cows does he have?

7. Find 6 numbers whose sum is 123456. Each of the numbers can only use the digit 1.

From Mad Maths by Sue Macy
Answers

1.

2.

3.

4.

\[ 11 \times 1 + \frac{11}{11} + \frac{111}{111} = 13 \]

\[ 22 - 2 - 2 - 2 - 2 - 2 - \frac{2}{2} = 13 \]

\[ \frac{9}{99/99} + \frac{9}{9} + \frac{9}{9} + \frac{9}{9} = 13 \]
5.  \[ \lor \lor \land = x \]
    \[ x - \land = \lor \]
    \[ \lor - \lor = \land \]

6.  6 chickens and 3 cows

7.  
    1
    1 1 
    1 1 1
    1 1 1 1
    1 1 1 1 1
    1 1 1 1 1 1