

Answers to Maths Challenges: Week Six

Challenges Part 1

54 Joins

Using four numbers:
the highest score is $19 + 15 + 17 + 18 = 69$,
the lowest score is $6 + 5 + 2 + 17 = 30$.

Using five numbers:
the highest is $20 + 18 + 13 + 17 + 18 = 86$,
the lowest is $6 + 18 + 2 + 5 + 6 = 37$.

Using five numbers and diagonal joins:
the highest is $19 + 17 + 14 + 15 + 18 = 83$,
the lowest is $13 + 6 + 20 + 2 + 6 = 47$.

61 Make five numbers

For example:

a. 12, 39, 45, 60, 78.

b. 7, 42, 63, 98, 105.

c. 5, 23, 67, 89, 401.

There are other solutions.

57 Presents

Gurmit paid £2, £4, £6, £1 and £8 for the five presents.

62 Maze

There are two routes that total 100 exactly:

$$+6 \quad \times 7 \quad -6 \quad \times 3 \quad -8 \quad = 100$$

$$+9 \quad \times 7 \quad +3 \quad \times 5 \quad -5 \quad = 100$$

The route giving the highest total is:

$$+9 \quad \times 7 \quad -6 \quad \times 7 \quad -8 \quad = 391$$

The route giving the lowest total is:

$$+6 \quad \times 7 \quad +3 \quad \times 3 \quad -8 \quad = 34$$

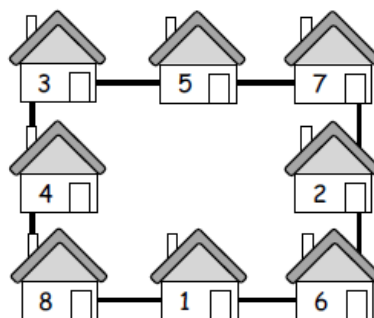
Challenges Part 2

65 Age old problems

1. I am 48 years old (or possibly 104).
2. I am now 26 years old. In 38 years' time, when I am 64, my age will be both a square number and a cube.
3. I am 9 years old now.

68 Albert Square

For example:



72 Shape puzzle

The circle has the value 5.
The triangle has the value 8.
The club has the value 6.

▲	♣	▲	○	27
♣	○	♣	▲	25
○	○	○	○	20
▲	♣	♣	▲	28
27	22	25	26	

75 Bus routes

There are six different routes from A back to A:

A B C D E F A
A B D C E F A
A B D E C F A

and the three reversals of these.

The cheapest routes are A B D E C F A and its reversal, which each cost £21.