# Homework 1: Solving logic problems Answers

Note: No marks are awarded for these questions – answers can form a class discussion in the next lesson.

1. You need to make n pancakes for a number of people as quickly as possible. Your only frying pan is big enough to make two pancakes at a time. A pancake needs one minute’s cooking on each side, regardless of whether there are one or two pancakes in the pan.

 What is the minimum time to fry 3 pancakes?

 Three minutes: Fry 2 pancakes together on one side, then remove one of them and fry the third on one side together with the second side of the first pancake. Put the other pancake back in and fry both on their second sides.

 What is the minimum time to fry n pancakes?

 If n is even, then time is n minutes.

 If n is odd, then the last three are done in 3 minutes as shown above so the answer is always n minutes for n pancakes.

2. There are three children whose first names are Anne, Brian and Mary. Their surnames are Brown, Green and White, but not necessarily in that order. Given the following two clues, can you find each child’s full name and age?

 Tip: *Use the grid to help you. Place an x in each box which you know to be wrong, and a ✓ in each box that you know to be right.*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Brown | Green | White | 7 | 9 | 10 |
| Anne | ✓ | x | x | x | x | ✓ |
| Brian | x | x | ✓ | x | ✓ | x |
| Mary | x |  | x | ✓ | x | x |
| 7 | x |  |  |  |  |  |
| 9 | x | x | ✓ |  |  |  |
| 10 | ✓ |  |  |  |  |  |

**Clues**

1. Miss Brown is three years older than Mary.

2. The child whose surname is White is 9 years old.

Answer:

Miss Brown (clue 1) cannot be Brian. Place an X in the Brian/Brown box. She cannot be Mary, so put an X in the Mary/Brown box. Miss Brown is therefore Anne. Place a ✓ in that box and an X against other possible surnames for Anne.

Anne Brown is three years older than Mary (clue 1). She must be 10 and Mary, 7. Place ✓s in the Anne/10, Brown/10 and Mary/7 boxes. Place Xs in the empty boxes in each row and column containing these ✓s.

From the chart, you can now see that Brian’s age is 9. Place a ✓ in the Brian/9 box.

Clue 2 states that White is 9, so he must be Brian. Place a ✓ in the White/9 box and Brian/White box and an X in the other boxes in each row and column containing these Xs.

The unfilled boxes must contain ✓s, so Green must be the surname of 7-year-old Mary.

For further puzzles, look at a site such as <http://www.brainbashers.com/showpuzzles.asp?formpost=Y&field=ctop10a&page=1&puzzletext=A>