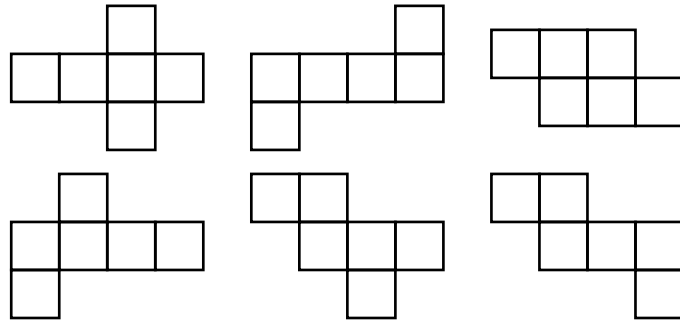


2004 QAMT Problem-Solving Competition - Year 8 Paper

Question 1 Which of the figures below can **not** be folded to make a cube?

2 marks



Question 2 3 bushwalkers meet at a camping ground. Bushwalker A has 5 chocolate bars, B has 3 and C has none, but C has \$8. A and B agree to distribute their chocolate bars so that everyone has an equal share; C agrees to pay for the chocolate bars with his \$8. What is the fair amount that C should pay A?

2 marks

Question 3 Find a four digit even number $abcd$ (where a, b, c, d are the four digits) such that 1.5 times $abcd$ equals the four digit number $dcba$. ($a = 0$ is not allowed.)

4 marks

Question 4 Show how to place 12 matches of unit length to form the perimeter of a single polygon to enclose exactly 4 square units of area. No matches may be placed inside the polygon. No match may be broken, or placed on top of another match and each match must be laid end to end with other matches.

4 marks

Question 5 Professor Kato has forgotten her 8 digit phone number. But she remembers that the first digit is the number of 0's in the number, the second digit is the number of 1's, the third digit is the number of 2's and so on. What is her phone number?

4 marks

Question 6 An astronaut comes across four different species of Martians. One species always lies. One always tells the truth. One sometimes lies and sometimes tells the truth. The final species always lies and also refuses to answer any questions. The Martians always travel in groups of four, with one of each species present. Unfortunately the astronaut cannot tell the Martians apart! One day he comes across four Martians (one of each species) called Andrew, Betty, Charles and Dianne. They say the following things to him:

Andrew says: "Talk to Dianne. She always tells the truth." Betty says: "Don't talk to me. I never answer questions." Charles says: "That's true. Betty never answers questions."

Which one of the four always tells the truth?

4 marks