Year 5 and 6 (ENGLISH VERSION)

Thursday, 15th March 2018 Time allowed: 75 minutes

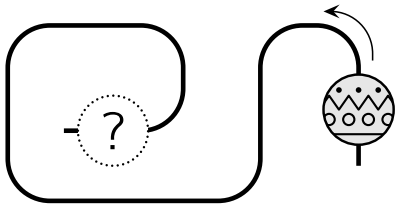
1. For each question exactly one of the 5 options is correct.
2. Each participant is given 24 points at the beginning. For each correct answer 3, 4 or 5 points are added. No answer means 0 points are added. If a wrong answer is given, one quarter of the points is subtracted, i. e. 0.75 points, 1 point or 1.25 points, respectively. At the end, the maximum number of points is 120, the minimum is 0.
3. Calculators and other electronic devices are not allowed.

3 point problems

A1 Which of the following calculations gives the largest result?

(**A**) $2+0+1+8$ (**B**) $2\times0\times1\times8$ (**C**) $2\times0+1\times8$ (**D**) $20+18$ (**E**) 20×18

A2 Katharina threads a bead on a string and then moves it to the other end. What can be seen now?



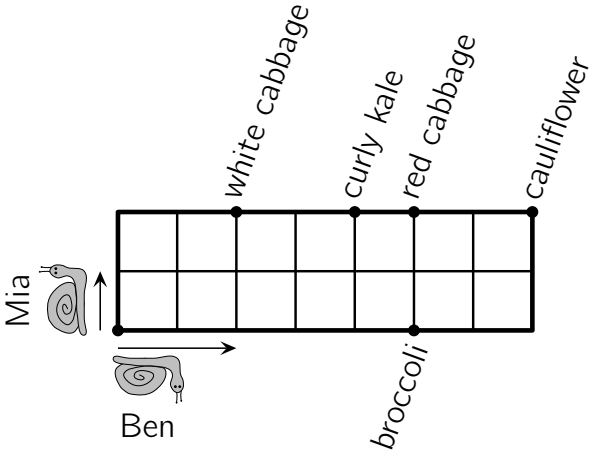
(**A**)  (**B**)  (**C**)  (**D**)  (**E**) 

A3 Ferdinand's birthday is on 2nd August which is a Thursday this year. His brother's birthday is on 25th August. On what day of the week is his brother's birthday?

(**A**) Monday (**B**) Tuesday (**C**) Wednesday (**D**) Friday (**E**) Saturday

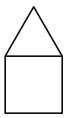
A4 A vegetable patch is divided up into squares. The two racing snails Ben and Mia chose its boundary as a race course. They start at the starting point in the direction of the arrows. Ben is twice as fast as Mia. At which vegetable do they meet?

(**A**) white cabbage (**B**) curly kale
(**C**) red cabbage (**D**) cauliflower
(**E**) broccoli



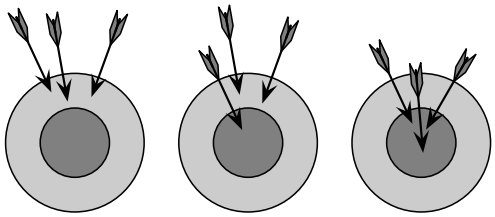
A5 Our teacher spent 400 euros for the excursion to a museum. The train ride made up for half of the money. A round of drinks cost a quarter of the remaining half of the money. The rest of the money was spent on admission. How much was the admission in total?

(**A**) 160 euros (**B**) 150 euros (**C**) 140 euros (**D**) 130 euros (**E**) 120 euros

A6 The figure  consists of a square and a triangle which has three sides of the same length. The perimeter of the square is 36 cm. What is the perimeter of the triangle?

(**A**) 24 cm (**B**) 25 cm (**C**) 27 cm (**D**) 28 cm (**E**) 30 cm

A7 Skadi is shooting arrows at the target shown. On her first attempt she scores 12 points. On her second attempt she scores 15 points. How many points does Skadi score on her third attempt?



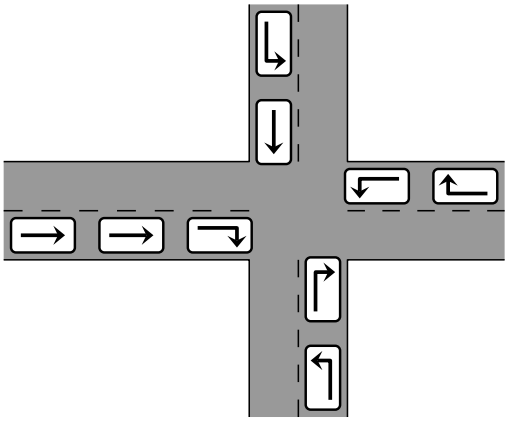
(**A**) 18 (**B**) 19 (**C**) 20 (**D**) 21 (**E**) 22

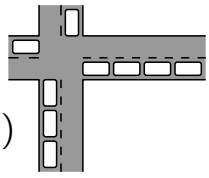
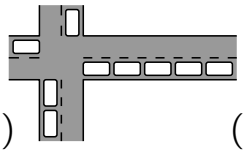
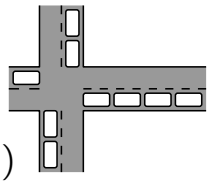
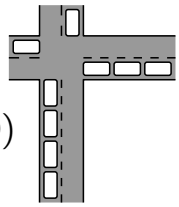
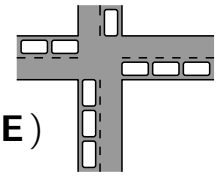
A8 How many dice  must be rolled at the same time to be sure that one number is rolled at least twice?

(**A**) 3 (**B**) 6 (**C**) 7 (**D**) 10 (**E**) 12

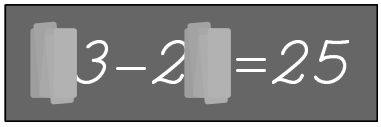
4 point problems

B1 Nine cars arrive at a junction and cross it as indicated by the arrows. Which diagram shows these cars after they have crossed the junction?



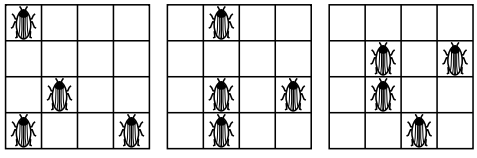
(**A**)  (**B**)  (**C**)  (**D**)  (**E**) 

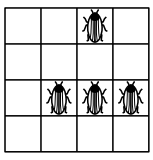
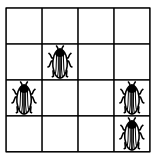
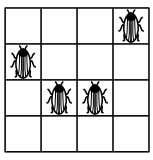
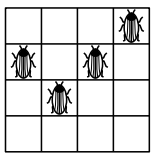
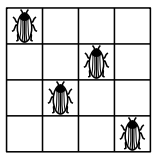
B2 After the break, the pupils returned to the class room and realized that two digits in the calculation on the blackboard were wiped away. What is the sum of these two digits?



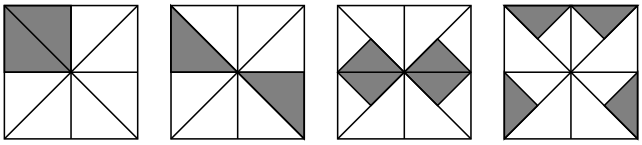
(**A**) 8 (**B**) 9 (**C**) 11 (**D**) 13 (**E**) 15

B3 Four beetles sit in a 4×4 grid. One of them is fast asleep. At each whistle, the others move left, right, up or down to a neighbouring cell. Which of the following pictures could be the result after whistle number 3?



(**A**)  (**B**)  (**C**)  (**D**)  (**E**) 

B4 In which of the four squares is the area of the shaded part the largest?



(**A**) in *A* (**B**) in *B* (**C**) in *C*
(**D**) in *D* (**E**) The area of the shaded part is the same for all four squares.

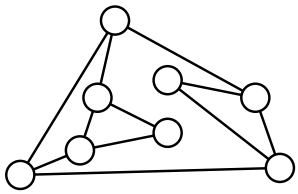
B5 As Benjamin enters the kitchen, his little sister starts giggling because Benjamin's t-shirt is turned inside out. Normally, the word BENJAMIN can be read on his t-shirt. What does Benjamin's sister see now?

(**A**) ƎNIꞀAMIИ (**B**) ИIMAꞀIИƎB (**C**) ƎBNꞀAMIN
(**D**) NIMAꞀNƎB (**E**) ИIMAꞀIƎB

B6 The numbers 1, 2, 3, 4 and 5 are replaced by the symbols ■, ▲, ♦, ♣ and ★ but in a different order. We know that ■ + ▲ − ♦ = 8 and ■ × ★ ÷ ♦ = 8. Which number has been replaced by ♣?

(**A**) 1 (**B**) 2 (**C**) 3 (**D**) 4 (**E**) 5

B7 The diagram shows 8 light bulbs that are connected with each other. In the beginning, all light bulbs are turned off. When you touch a light bulb, this light bulb and all its neighbours are lit. At least how many light bulbs do you have to touch to light all the light bulbs?



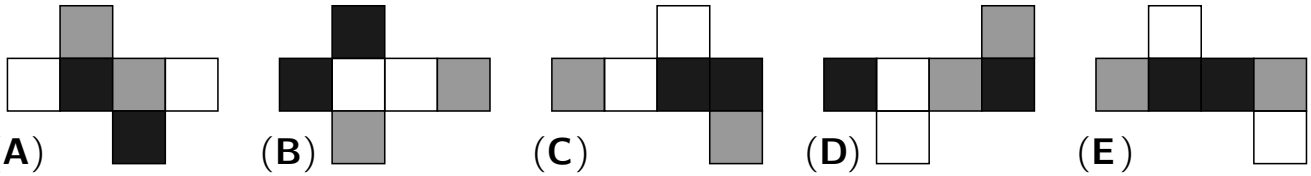
(**A**) 2 (**B**) 3 (**C**) 4 (**D**) 5 (**E**) 6

B8 Jaro, his mother and his grandmother have birthdays on the same day. The sum of the ages of Jaro and his mother is 46, and the sum of the ages of Jaro's mother and his grandmother is 91. How old was his grandmother when Jaro was born?

(**A**) 42 (**B**) 45 (**C**) 49 (**D**) 53 (**E**) 56

5 point problems

C1 The six faces of a cube are painted in such a way that opposite faces are of different colour. Which of the following five nets does not belong to this cube?



C2 For the calculation on the right, Rosalie used the four different digits A, B, C and D. Which digit does B stand for?

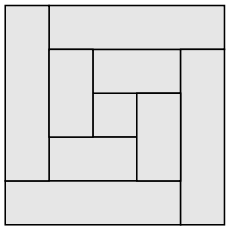
$$\begin{array}{r} A\ B\ C \\ +\ C\ B\ A \\ \hline D\ D\ D\ D \end{array}$$

(**A**) 0 (**B**) 2 (**C**) 4 (**D**) 5 (**E**) 6

C3 Snow-White's stepmother keeps her magic mirror in one of three chests. The inscription on chest 1 says: "The mirror is in chest 2." The inscription on chest 2 says: "The mirror is not in this chest." The inscription on chest 3 says: "The mirror is in this chest." Exactly two of the three inscriptions are true. Where is the magic mirror?

(**A**) in chest 1 (**B**) in chest 2 (**C**) in chest 3
(**D**) in chest 1 or 2 (**E**) Each chest is possible.

C4 Peat's grandfather sawed a very long and 12 cm wide wooden board into 9 rectangular 12 cm wide pieces. The smallest of these pieces is a square. Then, he put all the pieces together to make the tabletop shown in the diagram. How long was the board?



(**A**) 252 cm (**B**) 288 cm (**C**) 300 cm (**D**) 336 cm (**E**) 348 cm

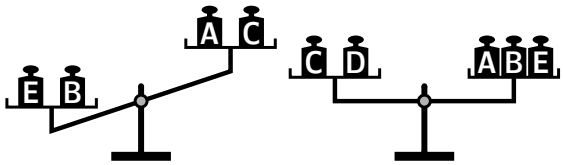
C5 Djamila thinks of a 3-digit number. Her number

... has exactly one digit in common with 458 and this digit is at the right position,
... has exactly one digit in common with 431 but this digit is at a wrong position,
... has exactly two digits in common with 824, but both are at a wrong position,
... has no digit in common with 765.

What was the number that Djamila thought of?

(**A**) 328 (**B**) 238 (**C**) 253 (**D**) 423 (**E**) 218

C6 Three of the five weights A, B, C, D and E are of the same material and weigh exactly 50 g each. One of the other weights weighs 30 g, and the last one weighs 80 g. The results of two weighings are shown on the right. Which of the five weights is the 30 g weight?

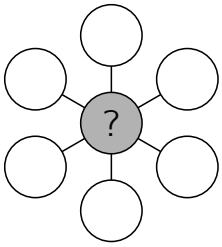


(**A**) A (**B**) B (**C**) C (**D**) D (**E**) E

C7 We choose three different digits A, B and C and form all possible 6-digit numbers with three digits A, two digits B and one digit C. Which of the following is certainly not the largest of these numbers?

(**A**) $AAABBC$ (**B**) $CAAABB$ (**C**) $BBAAAC$ (**D**) $AAABCB$ (**E**) $AAACBB$

C8 The numbers 3, 4, 5, 6, 7, 8 and 9 must be written in the 7 circles such that the sums along each of the three lines are equal. What is the sum of all numbers that can possibly be written in the grey circle?



(**A**) 6 (**B**) 12 (**C**) 18 (**D**) 24 (**E**) 42