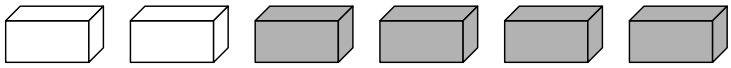
Year 5 and 6 (ENGLISH VERSION)

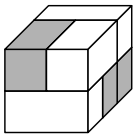
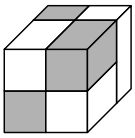
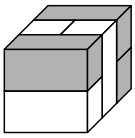
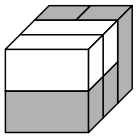
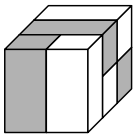
Thursday, 18th March 2021 Time allowed: 75 minutes

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.

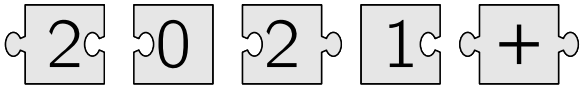
3 point problems

A1 Which of the following 5 cuboids can be built from these 6 building blocks?



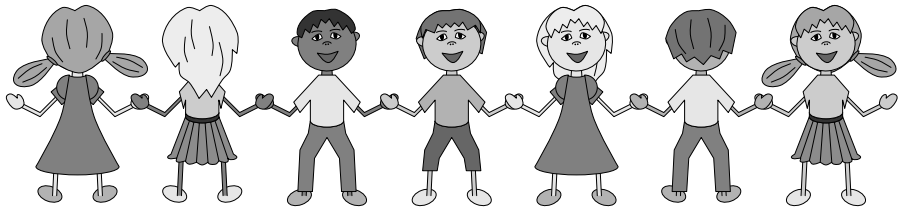
(**A**)  (**B**)  (**C**)  (**D**)  (**E**) 

A2 When put together correctly, the 5 pieces of the puzzle form a calculation. What is its result?



(**A**) 22 (**B**) 32 (**C**) 41 (**D**) 122 (**E**) 203

A3 How many of the 7 children hold the left hand of another child with their left hand?



(**A**) 2 (**B**) 3 (**C**) 4 (**D**) 6 (**E**) 7

A4 Juliane cuts the strip of paper shown into 3 parts so that the number 51927 is broken down into 3 numbers. Then she adds these 3 numbers. What is the smallest possible sum that Juliane can get?

5	1	9	2	7

(**A**) 51 (**B**) 103 (**C**) 22 (**D**) 148 (**E**) 67

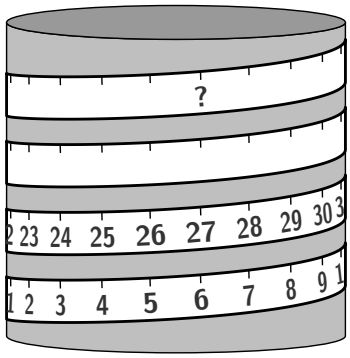
A5 Aunt Carin wants to paint her kitchen green. The colour she bought is too dark. She wants to add white paint. Which of the following mixtures gives the lightest green?

(**A**) 1 part green and 3 parts white
(**B**) 2 parts green and 4 parts white
(**C**) 3 parts green and 2 parts white
(**D**) 4 parts green and 6 parts white
(**E**) 5 parts green and 8 parts white

A6 Vera and her little brother Pavel wrote down a total of 20 flower names. Vera wrote down 3 times as many as Pavel. How many flower names did Pavel write down?

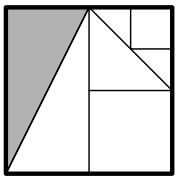
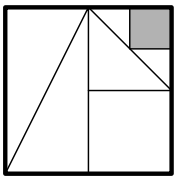
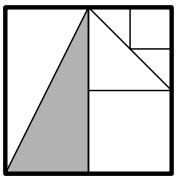
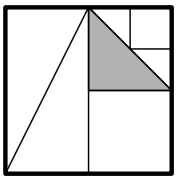
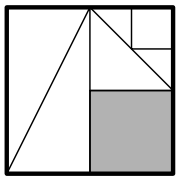
(**A**) 3 (**B**) 4 (**C**) 5 (**D**) 6 (**E**) 8

A7 Raya has wrapped a measuring tape evenly around a round can. What number is represented by the question mark?



(**A**) 53 (**B**) 60 (**C**) 69 (**D**) 77 (**E**) 81

A8 In one of the following figures, one eighth of the area of the large square is coloured grey. In which one?

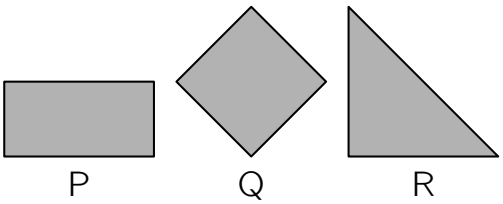
(**A**)  (**B**)  (**C**)  (**D**)  (**E**) 

4 point problems

B1 Claude appends a 0 to one of the numbers 3, 4, 5, 6 and 7. Then he adds the 5 numbers and gets a total of 70. To which number did Claude append a 0?

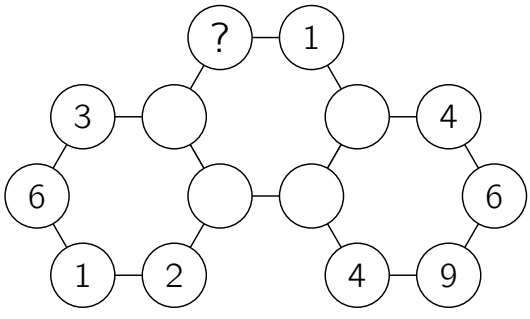
(**A**) 3 (**B**) 4 (**C**) 5 (**D**) 6 (**E**) 7

B2 Amon folds a piece of paper exactly in half. He does this a second time and gets  . Which of these shapes could have been the shape of the original piece of paper?



(**A**) only P (**B**) only Q (**C**) only R
(**D**) only P or Q (**E**) P, Q or R

B3 The diagram shows 3 hexagons with numbers at their vertices, but some numbers are invisible. The sum of the 6 numbers of each hexagon is 30. What number is at the vertex with the question mark?

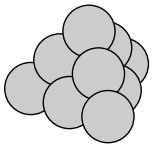


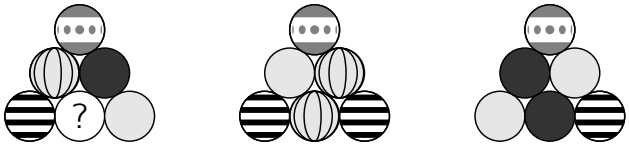
(**A**) 3 (**B**) 4 (**C**) 5 (**D**) 6 (**E**) 7

B4 "I'm glad you fed our Miss Mimi," the mother says happily. "When was that?" "Between 2 pm and 2:30 pm," Merle answers. "That's not true," says Frieder. "It wasn't between 2 pm and 2:40 pm." Both answers are wrong. The kitten was fed at one of the following five times. At which one?

(**A**) 2:05 pm (**B**) 2:15 pm (**C**) 2:20 pm (**D**) 2:35 pm (**E**) 2:45 pm

B5 The 3-sided pyramid shown consists of 10 decorated balls. Each pattern exists twice. The following 3 pictures show the pyramid from 3 sides.

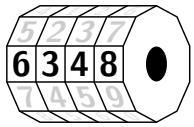




What does the ball with the question mark look like?

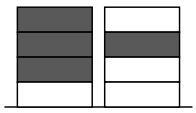
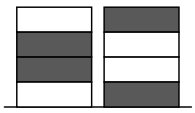
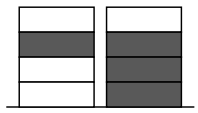
(**A**)  (**B**)  (**C**)  (**D**)  (**E**) 

B6 On Kati's bicycle lock, each of the 4 digits can be set individually with the digits 0 to 9. Kati set the correct combination and then turned each digit in the same direction and by the same number of digits. Now 6348 is visible. Which sequence of digits is certainly not the original correct combination?



(**A**) 3015 (**B**) 1893 (**C**) 8560 (**D**) 4906 (**E**) 0782

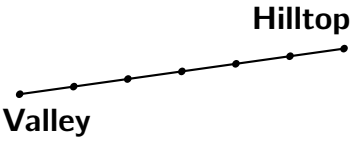
B7 Ronja and Wanja are playing. Ronja has 4 white pieces, Wanja has 4 black pieces. They want to build two towers with 4 pieces each. To do this, they take turns placing their pieces. Ronja starts. Which pair of towers cannot be built by the two of them?

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

B8 From a box with 20 red and 20 blue game pieces, Nele took half the pieces and Moritz the other half. Which of the following statements is definitely correct?

(**A**) Nele has at least one red piece.
(**B**) Nele has the same number of red and blue pieces.
(**C**) Nele has as many red pieces as Moritz has.
(**D**) Nele has as many blue pieces as Moritz has red pieces.
(**E**) Nele has as many blue pieces as Moritz.

5 point problems

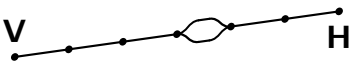


C1 There is a single-track train line between a valley and a hilltop. Every full hour a train departs from the valley for a 40-minute trip to the hilltop and at the same time a train departs from the hilltop for a 30-minute trip to the valley. Both trains run at constant speed. A passing place with two tracks ensures smooth traffic. Where is the passing place located?

(**A**) 

(**B**) 

(**C**) 

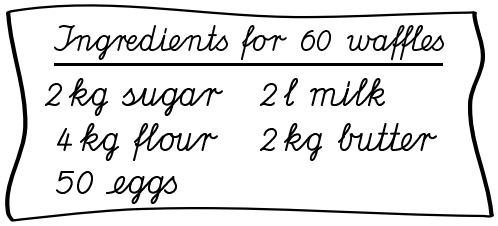
(**D**) 

(**E**) 

C2 The Easter bunnies Zita, Ysette, Xaver, Willi and Vroni squat in a circle and discuss how many eggs each should hide. Willi squats next to Vroni, Zita does not squat next to Ysette. Ysette made sure not to squat next to Willi. Which two Easter bunnies are squatting next to Xaver?

(**A**) Zita and Ysette (**B**) Ysette and Vroni (**C**) Vroni and Willi
(**D**) Willi and Zita (**E**) Zita and Vroni

C3 Baran's mother works in a hotel. The chef wrote down his great waffle recipe for her. She wants to make waffles on Sunday. She has 400 g of sugar, 2 litres of milk, almost 1 kg of flour, 200 g of butter and 7 eggs at her disposal. How many waffles can she make with that <u>at most</u>?



(**A**) 6 (**B**) 8 (**C**) 10 (**D**) 12 (**E**) 15

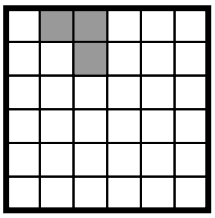
C4 Once upon a time, elves and trolls sat together, each of the 10 beings had a ball in their hand. Each of the numbers from 1 to 10 was on exactly one ball. When asked about the number on their ball, each elf told the correct number. Each troll told any of the numbers from 1 to 10. The sum of all 10 numbers told was 34. What was the smallest possible number of trolls in the group?

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

C5 On a cube with an edge length of 7 cm, <u>both</u> diagonals on each of the 6 side faces were painted red. Then, the cube was cut into small cubes with an edge length of 1 cm. How many of the small cubes have at least one diagonal painted red?

(**A**) 54 (**B**) 62 (**C**) 66 (**D**) 70 (**E**) 78

C6 Florian has marked a 6×6 frame for a picture on squared paper and coloured 3 boxes. What is the minimum number of additional boxes that Florian has to colour so that his finished picture has <u>four</u> axes of symmetry?



(**A**) 3 (**B**) 9 (**C**) 12 (**D**) 18 (**E**) 21

C7 Little Franz loves to play with his many stuffed animals. Today he weighs them on his mother's scales and discovers: Teddy and dog together weigh as much as lion and owl. Teddy and lion together weigh less than dog and owl. Dog and lion together weigh less than teddy and owl. Which stuffed animal is the heaviest?

(**A**) the teddy (**B**) the dog (**C**) the lion
(**D**) the owl (**E**) The animals are of equal weight.

C8 Each shelf board holds a total of 3200 ml of apple juice. The bottles have three different sizes: large, medium and small. How much juice is in each medium-sized bottle?

(**A**) 350 ml (**B**) 450 ml (**C**) 500 ml (**D**) 600 ml (**E**) 650 ml