Year 5 and 6 (ENGLISH VERSION)

Thursday, 16th March 2023 Time allowed: 60 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.
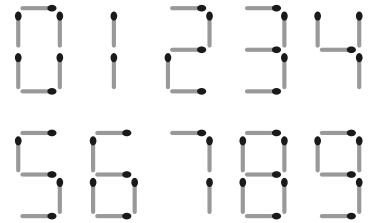3. Calculators and other electronic devices are not allowed.

3 point problems

**1.** Which calculation has the smallest result?

(**A**) $20 \div (2+3)$ (**B**) $2 \times (0+2) \times 3$ (**C**) $(20-2) \div 3$ (**D**) $(2+0) \times 2 \times 3$ (**E**) $(2+0+2) \times 3$

2. Matches can be used to lay the ten digits as shown in the picture. For example, with 7 matches you can lay the number 15, or an 8. What is the largest number that can be laid with 7 matches?
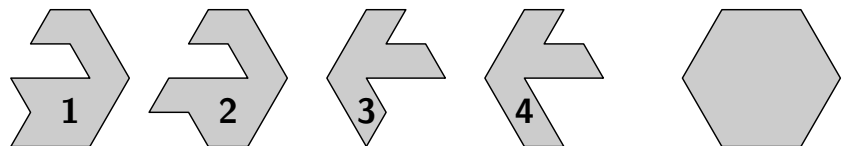
(**A**) 51 (**B**) 74 (**C**) 331 (**D**) 711 (**E**) 840

3. Which of the five figures cannot be divided into two triangles with one straight line?
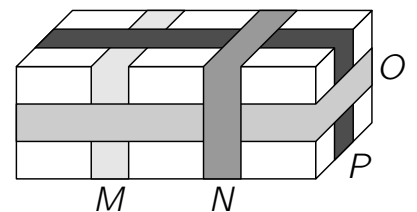
(**A**) (**B**) (**C**) (**D**) (**E**)
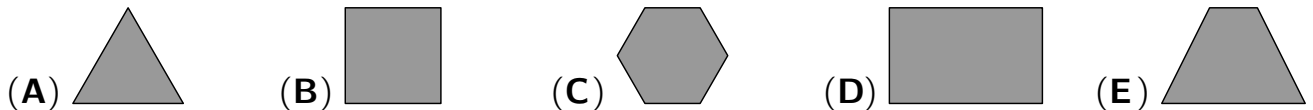
4. Rosalinde has four puzzle pieces. Which two pieces can be put together to make the hexagon?

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

5. In the picture you can see a parcel. Four tapes M, N, O and P are glued around the parcel.
In which order were the tapes glued?

(**A**) M, P, O, N (**B**) O, M, P, N (**C**) N, P, M, O
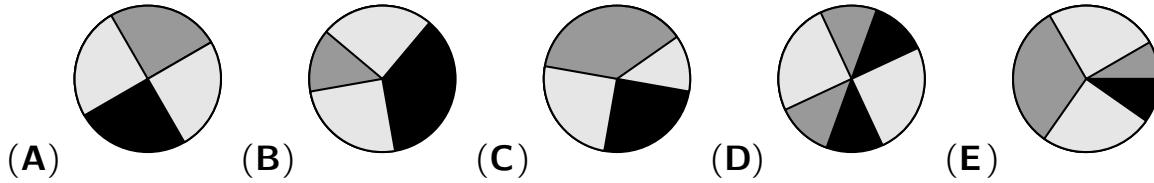(**D**) M, O, N, P (**E**) P, N, M, O

6. Knut plays with five circular discs of different sizes. He wants to build a tower out of four discs. The four discs should get smaller and smaller from the bottom to the top. How many different towers can Knut build?

(**A**) 3 (**B**) 5 (**C**) 9 (**D**) 12 (**E**) 20
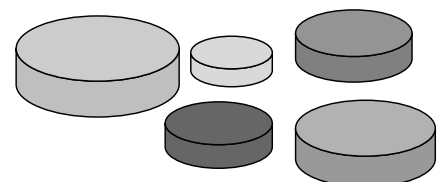
7. Edgar glues the three pieces of paper onto the black circular disc shown on the right. What can Edgar <u>not</u> obtain?

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

8. In February, the 23 children from our class went on a class trip and stayed in a youth hostel. We were accommodated in seven rooms, in groups of three and in groups of four. In how many rooms were four children accommodated?

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

4 point problems

9. Rabbit, beaver and kangaroo want to jump on the ring track shown. They start at the same time in field A and jump in the direction of the arrow. The beaver jumps in every field, the rabbit in every 3rd field and the kangaroo in every 5th field until they land in field Z. Who needs the smallest number of jumps to do this?
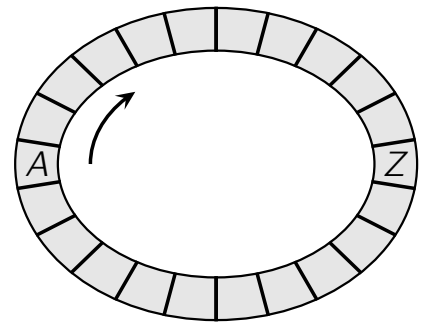
(**A**) the kangaroo   (**B**) the beaver
(**C**) the kangaroo and the beaver   (**D**) the rabbit
(**E**) All three need the same number of jumps.

10. The dark circular disc with the three holes fits exactly on the clock face. Now the dark disc is rotated around the centre. Which three numbers can be seen at the same time?
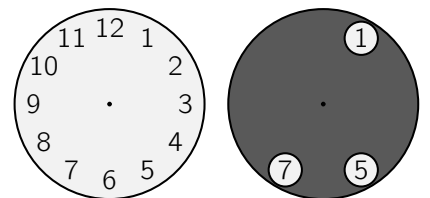

(**A**) 2, 4 and 9   (**B**) 1, 5 and 10   (**C**) 4, 6 and 12   (**D**) 3, 6 and 9   (**E**) 5, 7 and 12

11. After visiting the zoo, Mr Big and his four sons ask themselves how many kangaroos there are in the zoo. Each of the five says a different number: 2, 4, 5, 8, 9. It turns out that one of these numbers is too big by 4 and another one is too small by 2.
How many kangaroos are there in the zoo?

(**A**) 3   (**B**) 4   (**C**) 5   (**D**) 7   (**E**) 8

12. The rectangle in the drawing is composed of squares of three different sizes. The sides of the largest squares are 6 cm long. What is the length of the thickly drawn line?
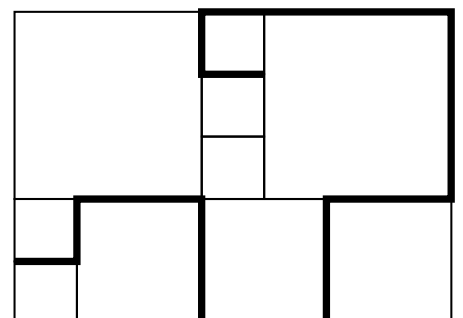
(**A**) 38 cm   (**B**) 40 cm   (**C**) 42 cm   (**D**) 44 cm   (**E**) 48 cm

13. Lamia writes down three <u>consecutive</u> two-digit numbers in order of size. She starts with the smallest number. Instead of digits, Lamia uses symbols: □◊, ♡△, ♡□.
Which number is next?

(**A**) ♡♡   (**B**) □♡   (**C**) ◊□   (**D**) □□   (**E**) ♡◊

14. Niclas wants to colour each of the five areas in the picture red, blue or yellow. Adjacent areas should have different colours.
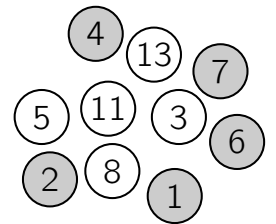In how many different ways can he do this?
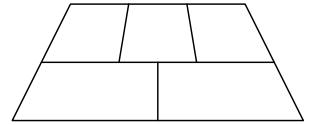
(**A**) 3   (**B**) 4   (**C**) 5   (**D**) 6   (**E**) 7

15. Sophie has written numbers in the 10 circles. The sum of the numbers in the white circles should be equal to the sum of the numbers in the grey circles. To do this, she has to swap two numbers. Which ones?

(**A**) 2 and 8   (**B**) 7 and 13 (**C**) 3 and 7   (**D**) 4 and 13 (**E**) 1 and 11

16. Martha plays with light and dark wooden cubes. She has built towers of dark cubes according to the construction plan. Now Martha wants to add towers made of light cubes according to the construction plan. How does she have to set up the light cubes?

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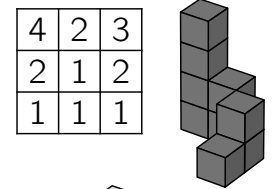
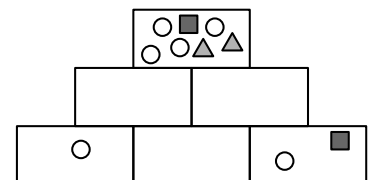(**A**)   (**B**)   (**C**)   (**D**)   (**E**)

> **5 point problems**

17. When I look in the mirror in the bathroom, I see the clock hanging behind me. What would I see if I looked in this mirror 30 minutes later?

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

18. Tian draws small figures in all 6 boxes on the right. Each box should contain all of the figures that are drawn in the two boxes directly below it and nothing more. Three boxes are already finished. What must the box in the middle of the bottom row look like?

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

19. For a children's festival, a 120 m long path is to be divided into sections of equal length with marker poles for competitions. Four poles are already set up as shown in the picture. What is the smallest number of poles that must be added?

24 m   30 m   66 m
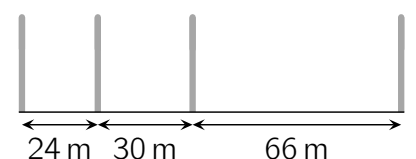
(**A**) 12   (**B**) 15   (**C**) 17   (**D**) 23   (**E**) 37

20. Grandmother invites her grandchildren Ida, Ben, Kay and Tina for lunch. They bring a bouquet of flowers from the meadow. "Who picked the beautiful flowers?" asks grandmother. The children giggle, each of them gives an answer, but only one is correct. Ida says, "Ben did it." Ben says, "Kay did it." Kay says, "I didn't do it." Tina says, "I didn't do it." Who picked the flowers?

    (**A**) Ida   (**B**) Ben   (**C**) Kay   (**D**) Tina
    (**E**) There is no way to tell.

21. A small robot found a path from the start (A) to the finish (Z) along the white fields. It had to enter each white field exactly once, and it did not enter the dark fields. Which of the fields did it enter directly after the field marked with X?

    (**A**) M   (**B**) N   (**C**) O   (**D**) P
    (**E**) There are several possibilities.
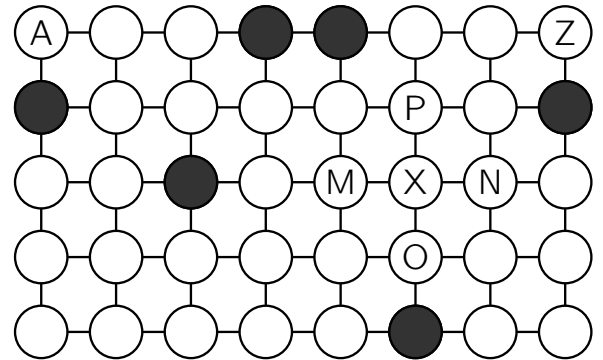
22. Kerim has two coins, each with a number on the front and a number on the back. One coin has a 7 on the front, and the other coin has a 10 on the front. When Kerim throws both coins and adds the numbers that can be seen on top, he gets either 11, 12, 16 or 17 – depending on which sides are on top. How many possibilities are there for the number on the back of the large coin with the 7?
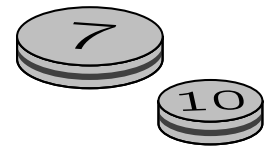
    (**A**) one   (**B**) two   (**C**) three   (**D**) five   (**E**) seven

23. Kateryna and Bastian have a box of game pieces from which they can take 1, 2, 3, 4 or 5 pieces in turn. Whoever has to take the last piece out of the box loses. When there are exactly 10 pieces left in the box, it is Kateryna's turn. How many pieces must she leave in the box for Bastian to lose?

    (**A**) 9   (**B**) 8   (**C**) 7   (**D**) 6   (**E**) 5

24. Rieke's parents have subscribed to a weekly vegetable box. On Wednesdays, they can make requests for the box. For this week they are told:

- 2 pumpkins are worth as much as 5 courgettes.
- 3 courgettes are worth as much as 8 tomatoes.
- 2 tomatoes are worth as much as 3 radishes.

Which of the following combinations has the highest value this week?

    (**A**) 2 pumpkins and 3 radishes   (**B**) 3 courgettes and 5 radishes
    (**C**) 4 courgettes and 2 tomatoes   (**D**) 1 pumpkin and 4 courgettes
    (**E**) 6 tomatoes and 7 radishes