Three points problems
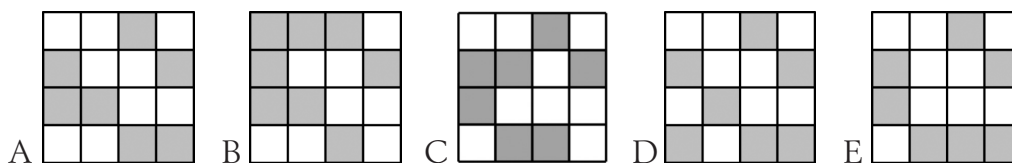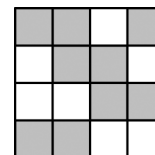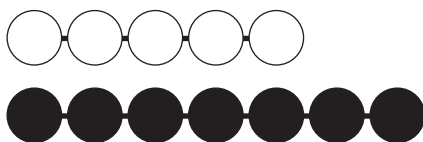
1   Which piece completes the pattern?

A   B   C   D   E

2   A large square is made up of smaller white and grey squares. What does the large square look like if the colours of the white and grey squares are interchanged?

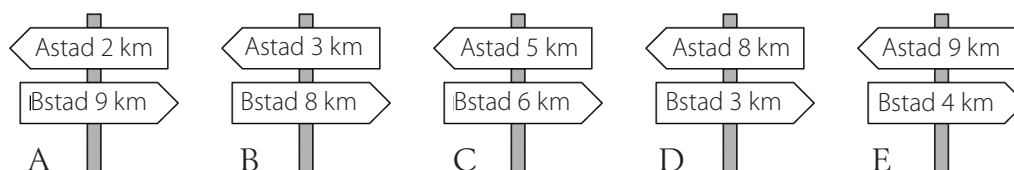A   B   C   D   E

3   Kim has several chains with 5 white and or 7 black pearls.

By joining chains one after the other, Kim can create different lengths. Which of these lengths is possible to make?
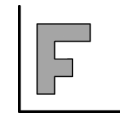
A: 14   B: 15   C: 16   D: 17   E: 18

4   As Amira is travelling from Astad to Bstad she passes the five signposts shown. One of them is incorrect. Which one?
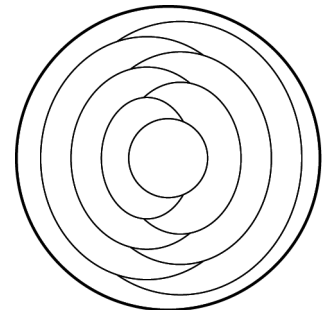

Astad 2 km	Astad 3 km	Astad 5 km	Astad 8 km	Astad 9 km
Bstad 9 km	Bstad 8 km	Bstad 6 km	Bstad 3 km	Bstad 4 km
A	B	C	D	E

5   Flora reflects the letter F in the two lines shown.

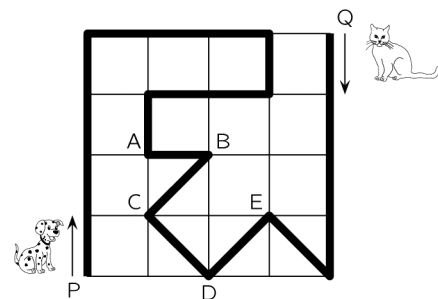What will the reflections look like?

A   B   C   D   E

6   Cindy colours each region of the pattern below either red, blue or yellow.
She colours regions that touch each other different colours.
She colours the outer region blue.
How many regions of the completed pattern are coloured blue?

A: 2   B: 3   C: 4   D: 5   E: 6

7   A dog and a cat walk in the park along the path
marked by the thick black line. The dog starts from
P at the same time as the cat starts from Q. The dogs
walks three times as fast as the cat.
At which point do they meet?

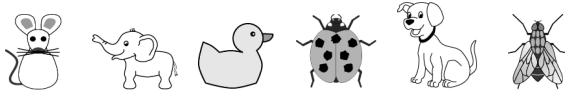A: vid A   B: vid B   C: vid C   D: vid D   E: vid E

8   Four baskets contain 1, 3, 7 and 9 apples respectively.
How many apples should be moved between the baskets
to have the same number of apples in each basket?

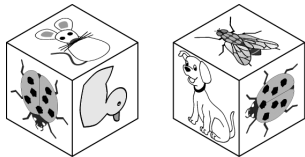A: 3   B: 4   C: 5   D: 6   E: 7

Four points problems

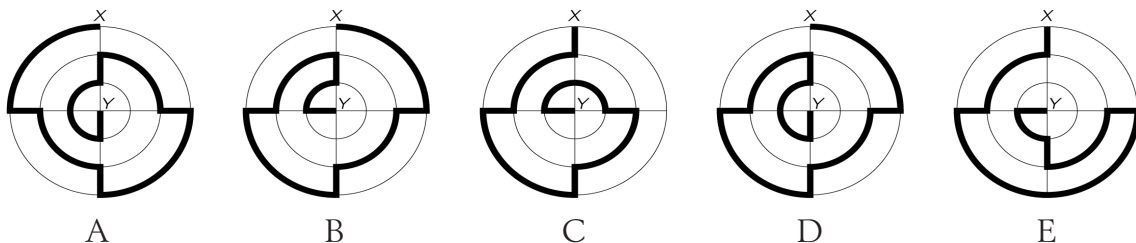9   Amy glues the six stickers shown onto the faces of a cube:

The pictures below show the cube in two different positions.

Which sticker is on the face opposite the face with the mouse on?

A   B   C   D   E

10   The diagrams show five paths from X to Y Y marked with a thick line.
     Which path is the shortest?

     A   B   C   D   E

11   Mikis wants to bake 24 muffins for his birthday party. To bake six muffins two eggs are
     needed. Eggs are sold in boxes of six. How many boxes does Mikis need to buy?
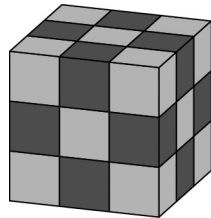
     A:1   B: 2   C: 3   D: 4   E: 8

12   Maria has 10 pieces of paper. She cuts some of them into five parts each. After that Maria
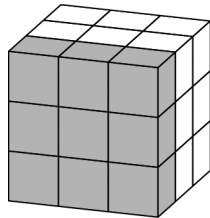   has 22 pieces in total. How many pieces did she cut?

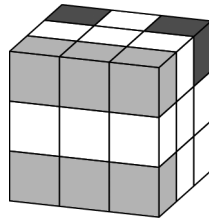   A: 2   B: 3   C: 6   D: 7   E: 8

13   Mary has exactly 10 white cubes, 9 light grey cubes and 8 dark grey cubes, all of the same size. She glues all these cubes together to build a big cube. One of the cubes below is the one she builds. Which one is it?
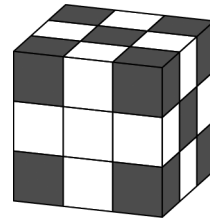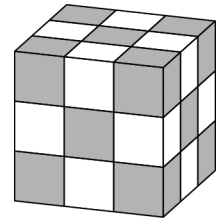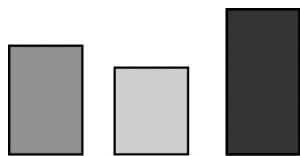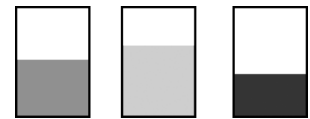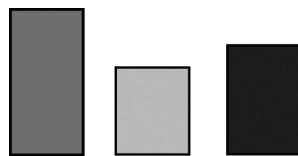

A   B   C   D   E

14   A father kangaroo lives with his three children. They decide on all matters by vote, and each member of the family gets as many votes as its age. The father is aged 36 and the children are 13, 6 and 4 years old, so the father always wins.
How many years will it take for the children to win all votes?

A: 5   B: 6   C: 7   D: 13   E: 14

15   Mary pours the same amount of water into three rectangular fishtanks. Viewed from the front, they seem to have the same size, but the water has risen to different levels in the three tanks. Which of the following images represents the three tanks when viewed from above?
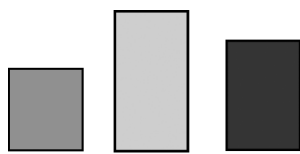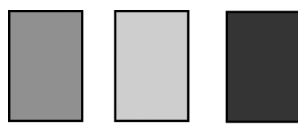

A   B   C

D   E

16   An elf and a troll meet. The troll always lies, while the elf always tells the truth. They both say exactly one of the following sentences: which one?

A: I am telling the truth   B: You are telling the truth   C: We are both telling the truth

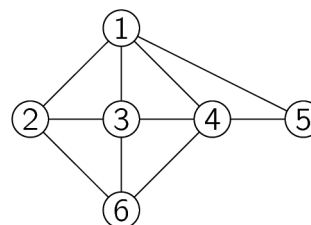D: I always lie   E: Only one of us is telling the truth

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Five points problems

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17 Nine tokens are black on one side and white on the other. Initially, four tokens have the black side upwards. In each turn you have to flip three tokens. What is the least number of turns you need to have all tokens showing the same colour?

⬤⬤⬤⬤○○○○○

A: 1   B: 2   C: 3   D: 4   E: 5

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18 The picture below shows which of the six girls Ann, Beatrice, Chloe, Diana, Elisabeth and Fiona have met each other. Each number represents one of the girls and each line joining two numbers represents a meeting between those two girls. Chloe, Diana and Fiona have each met four girls. Beatrice has met Chloe and Diana but none of the others. Which number represents Fiona?
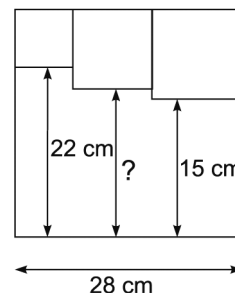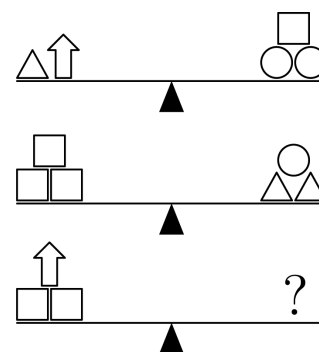
A: 2   B: 3   C: 4   D: 5   E: 6

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19 Three small squares are drawn inside a larger square as shown.

What is the length of the line marked with a question mark?

A: 17 cm   B: 17,5 cm   C: 18 cm   D: 18,5 cm   E: 19 cm

22 cm   ?   15 cm

28 cm

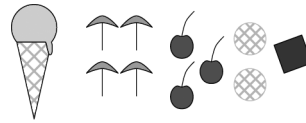20 The picture shows three balance scales. Which of the following options will definitely balance the third scale?

?

A △△△△□   B △△△○

C △○○○   D △□□□□   E ○○□

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21 Ten people each order one scoop of ice cream. They order:

4 scoops of vanilla
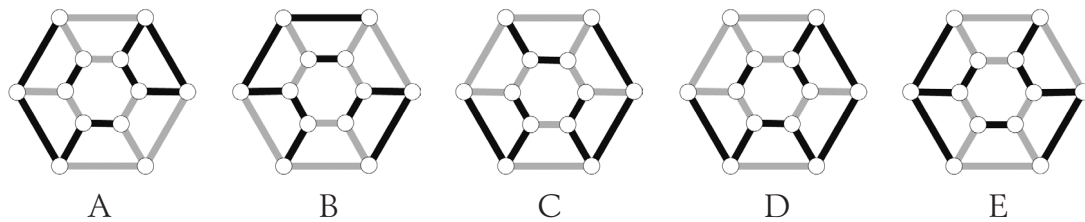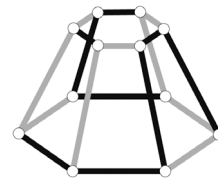3 scoops of chocolate
2 scoops of lemon
1 scoop of mango

They top the ice creams with 4 umbrellas, 3 cherries, 2 wafers and 1 chocolate chip. They use one topping on each scoop, such that no two ice creams are alike. Which of the following combinations is *not* served?

A: chocolate with a cherry   B: mango with an umbrella   C: vanilla with an umbrella

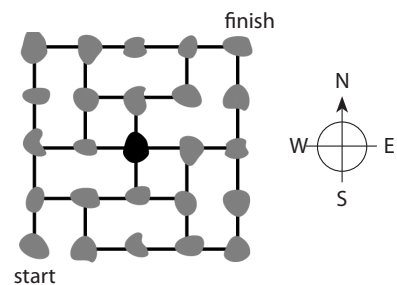D: lemon with a wafer   E: vanilla with a chocolate chip

22 Magnus has to play 15 games in a chess tournament. At some point during the tournament he has won half of the games he has played, he has lost one third of the games he has played and two have ended in a draw. If Magnus wins the rest of his games, how many will he have won in total?

A: 6   B: 7   C: 8   D: 9   E: 10

23 The picture shows an object from the side. What does the object in the picture look like when viewed from above?

A   B   C   D   E

24 The figure shows a map of some islands and how they are connected by bridges. A postman has to visit each island exactly once. He starts on the island marked "start" and would like to finish on the island marked "finish". He has just reached the black island in the centre of the map. In which direction should he move to be able to complete his route?

A: by going North   B: by going East   C: by going South   D: by going West

E: there is no such path as the postman wishes to follow