

Trial Test Paper 1 (B) -June 2019

Instructions

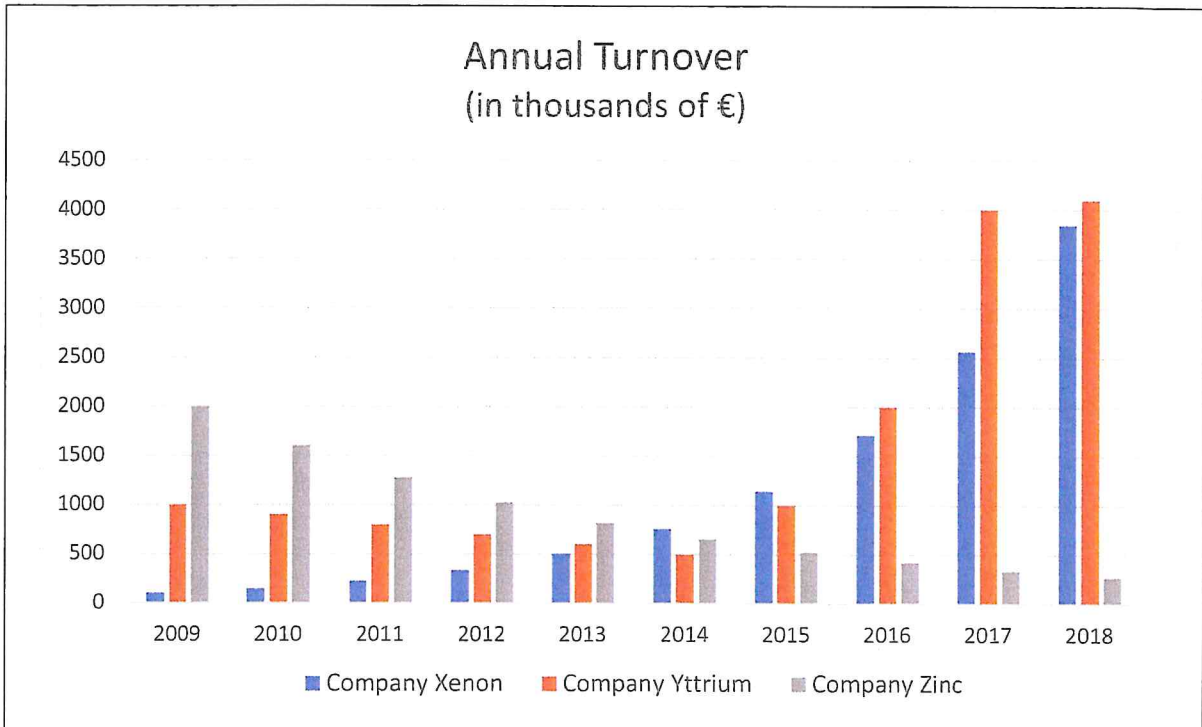
Do not open this test booklet until you are told to do so. There is one correct answer for each question.

You must answer each question by putting a circle around the correct letter, A, B, C, D or E on the ANSWER SHEET.

There are 30 questions. You have 60 minutes to complete the test.

Please be aware that the February 14th test will be a computer based test.

1. Look at this graph showing the annual turnover of three companies during 2009–2018



How many of these statements are correct?

1. The Zinc company and the Yttrium company had decreasing turnovers over the decade.
2. The Yttrium company had increasing turnovers for the first six years, then decreasing turnover for the remainder of the period.
3. For the Zinc company the turnover in 2012 was 1000 euros.
4. In 2016, the Xenon company had a higher turnover than the Yttrium company but a lower turnover than the Zinc company.

- A) 0
- B) 1
- C) 2
- D) 3
- E) 4

2. Consider this formula

$$R = \frac{\sqrt{S}}{S}$$

where S is a positive value

If S increases, then:

- A) R will decrease
- B) R will increase
- C) R will not change
- D) The answer depends on the values of S
- E) None of the above

3. The following equations hold

$$\Delta V = \Delta I \times R \quad \Delta V = V_2 - V_1 \quad \Delta I = I_2 - I_1 \quad g = \frac{1}{R}$$

Given that $V_1 = 2$, $V_2 = 14$, $I_2 = 8$, and $I_1 = 5$, which of these is the value of g ?

- A) 4
- B) 0.25
- C) -4
- D) 0.333
- E) The formulae are ambiguous.

4. James has found this mysterious formula in an ancient book

$$\text{\$} = \% \text{\textsuperscript{\textcircled{0}}} \& \text{\textcircled{c}} \text{\textsterling} @ !$$

Fortunately, on the last page of the book, he found a key to interpret the symbols:

= is the "equal" sign

° is the "add" sign

ç is the "multiply" sign

@ is the "subtract" sign

% = 1

& = 3

£ = 4

! = 3

Using the usual priority of operations, calculate the value of \$:

- A) 4
- B) 8
- C) 10
- D) 13
- E) 16

5. Arrange these numbers in decreasing order

$$5 \quad 1/5 \quad -0.51 \quad -0.05 \quad 0.02 \quad -1/2$$

Choose the correct answer.

- A) 5 1/5 0.02 -0.05 -1/2 -0.51
- B) 5 0.02 1/5 -0.05 -0.51 -1/2
- C) 5 1/5 -0.51 -1/2 -0.05 0.02
- D) -0.51 -1/2 -0.05 0.02 1/5 5
- E) -1/2 -0.51 -0.05 0.02 1/5 5

6. Calculate the value of this expression by using the usual rules that define the priority of operations

$$2 + 3 \times 2^2$$

Choose the correct answer.

- A) 20
- B) 38
- C) 100
- D) 14
- E) the formula is ambiguous

7. You are given three numbers

$$x = 0.3 \text{ million}$$

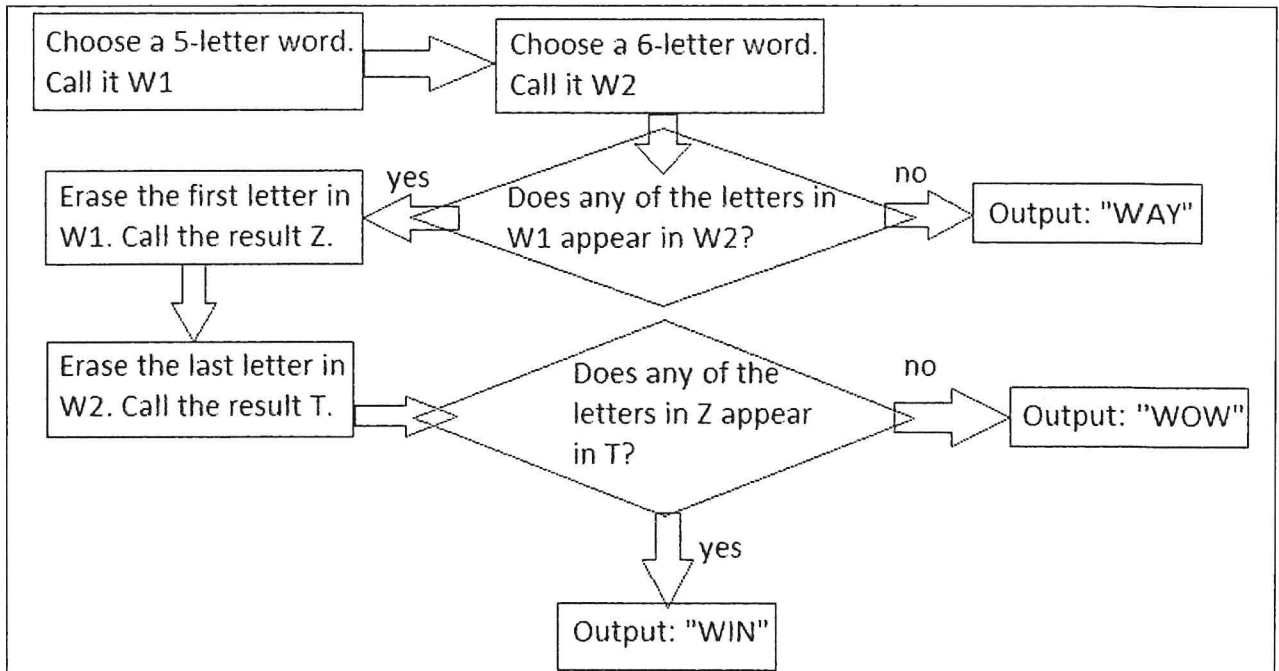
$$y = 30 \text{ thousand}$$

$$z = 300,000$$

Which statement is correct?

- A) x is less than z
- B) z is the same as y
- C) x is the same as z
- D) x is the same as y
- E) y is greater than x

8. This flow chart shows how a computer program functions



Which pair of words gives "WOW" as a result?

- A) W1="jolly" and W2="zigzag"
- B) W1="house" and W2="centre"
- C) W1="awful" and W2="listen"
- D) W1="naive" and W2="tycoon"
- E) W1="noisy" and W2="clumsy"

9. Four integer variables J, K, L, M are such that

- if J increases by 1, then after a few seconds K increases by 1
- if L decreases by 1, then after a few seconds M increases by 1
- if J decreases by 1, then after a few seconds L decreases by 1
- if M increases by 1, then after a few seconds J decreases by 1

At the beginning of an experiment, the four variables are stable with these values:

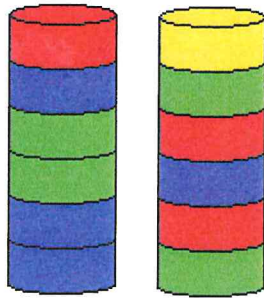
$$J=K=0, L=M=1$$

What will happen if J is set to -1?

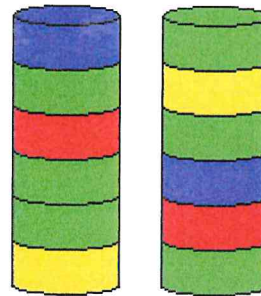
- A) The variables will be stable as well, with the values $J=-1, K=0, L=M=1$.
- B) L will increase without ever stopping.
- C) A new equilibrium point will be achieved in a few seconds.
- D) M will increase without ever stopping.
- E) After a while, the variables will go back to their initial values.

10. In a new game you have to build cylindrical towers made of different coloured pieces, all with the shape of a cylinder with the same dimensions

Luca has built these two towers:



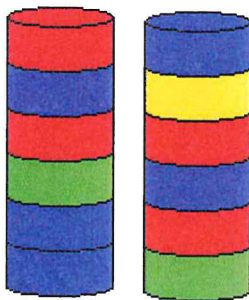
And John has built these two towers:



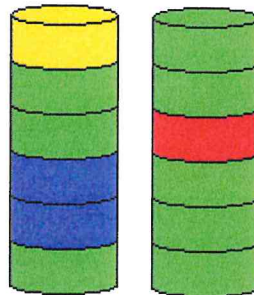
Claudia must combine Luca and John's towers to create a new pair of towers. The rules are: Claudia must choose one of Luca's towers and one of John's towers, but before doing that, she can switch a piece in a tower with the corresponding piece (i.e. the piece situated at the same height) in the other tower built by the same person. She can do this up to twice per person but she does not have to.

Which of these pairs of towers is Claudia **NOT** able to create?

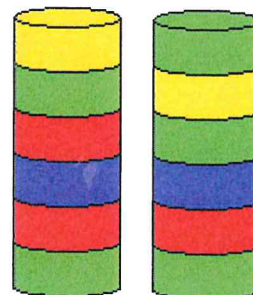
A)



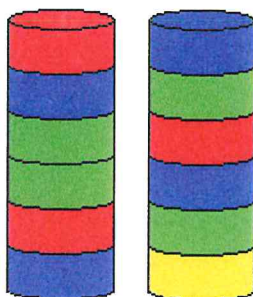
B)



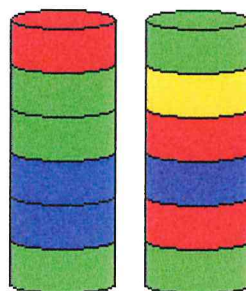
C)



D)



E)



11. Alan, Barbara, Charles, David, and Ellen want to play a board game

They will take a seat, evenly spaced, at a round table. However, each of them would like to sit in a specific position, to maximize his/her chance of winning.

If Charles and David sit next to each other, Alan will sit between Charles and Ellen. Barbara does not want to sit next to David. If Charles and Ellen sit next to each other, then Alan also will sit next to Ellen. Ellen would love to sit between Barbara and Charles, but if this is not possible then she will also be very happy to sit between Barbara and David.

Once the five friends have taken their seat in a way which works for most of them according to their preferences, which of these statements is correct?

- A) At least one person is seated in an unacceptable position
- B) Ellen got her wish and is seated between Barbara and Charles
- C) Charles and David are seated next to each other
- D) Alan and David are seated next to each other
- E) Barbara is seated between Alan and Ellen

12. You are an HR manager and want to select up to three employees for a promotion. The employees must fulfil these criteria

- Knowledge of English: 90 or more in the TOEFL exam or 8 or more in the IELTS exam;
- Knowledge of French: 60 or more in the DALF exam;
- Years work experience: 3 or more within the company or a total of 5 or more including other companies;
- Number of tasks completed after the deadline during the last 6 months: no more than 5;
- Possession of the ECDL (European Computer Driving Licence).

If more than three employees fulfil the criteria, the three with the most work experience within the company will be chosen.

You are given a list of employees that already have the ECDL and the required minimum level in French. The number of tasks refers to the last 6 months:

Name	Number of tasks	Number of tasks completed by the deadline	Working experience within the company	Working experience in other companies	Knowledge of English
J. Smith	50	48	24 months	24 months	9.0 IELTS
R. Jones	81	80	36 months	12 months	89 TOEFL
S. Taylor	45	40	30 months	30 months	8 IELTS
L. Williams	60	55	12 months	48 months	91 TOEFL
M. Brown	71	65	60 months	No exp.	8.5 IELTS
H. Green	65	62	18 months	36 months	8.5 IELTS

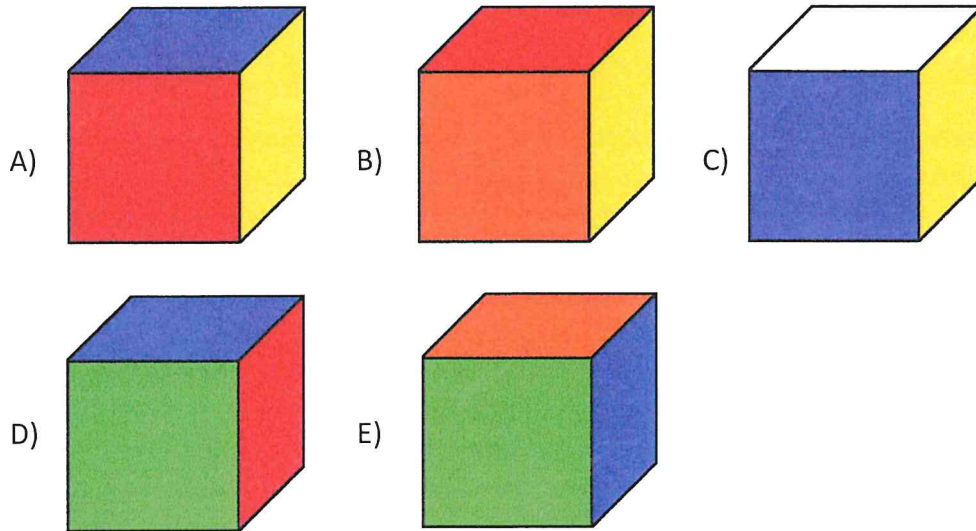
Which employees can be promoted?

- A) J. Smith and R. Jones
- B) R. Jones and S. Taylor
- C) S. Taylor and L. Williams
- D) L. Williams and H. Green
- E) H. Green and J. Smith

13. The faces of a cube have been painted red, green, yellow, blue, orange, and white

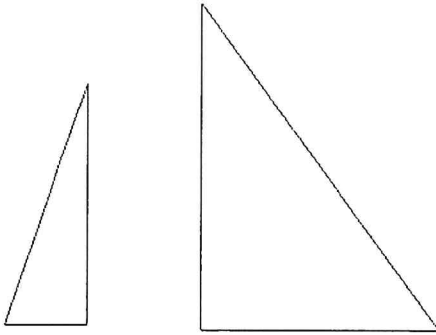
Each face has been painted with one colour and no colour has been used twice.
Red and white faces are opposite, as well as yellow and green faces.

Which of these is an **impossible** view of the cube?

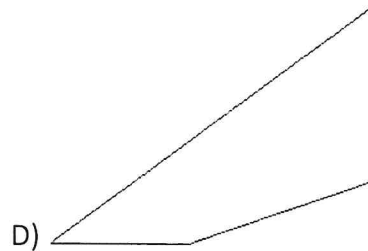
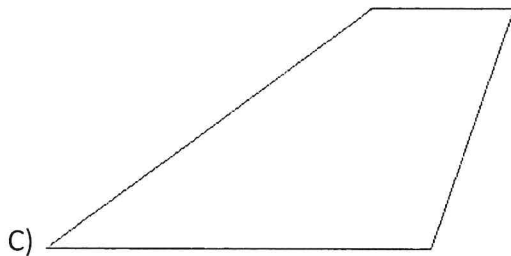
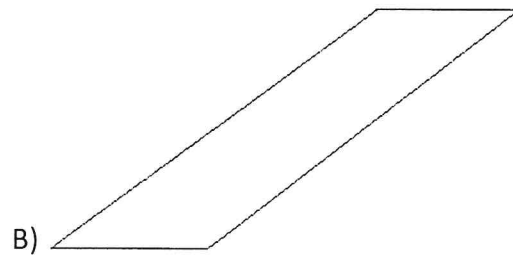
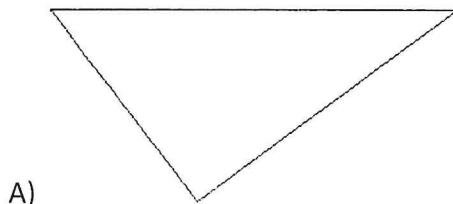


14. Three pieces of wood, when glued together without any overlap, make a rectangle

The pieces can be rotated or flipped. These are two of the pieces:

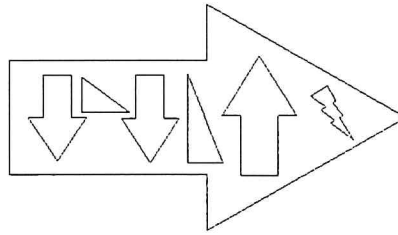


Which is the third piece?

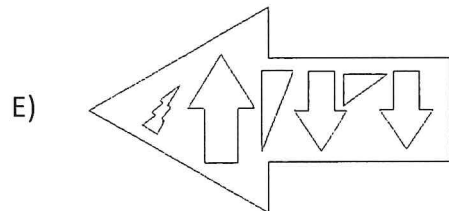
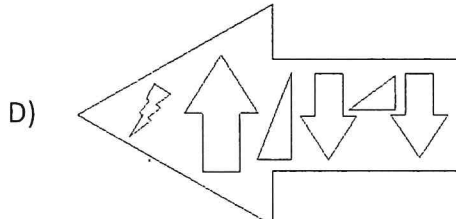
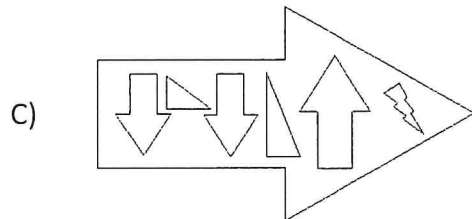
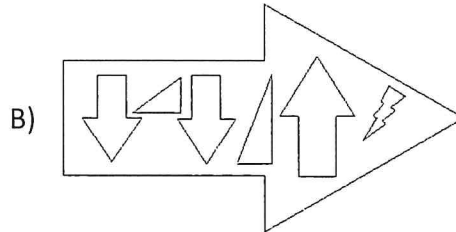
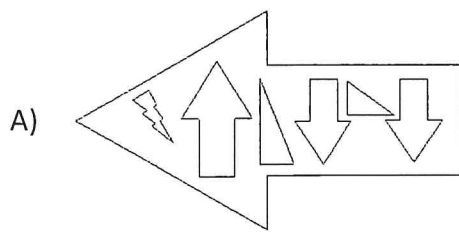


E) none of the above

15. Look at this shape



If the shape is put in front of a mirror, which of these images appears?

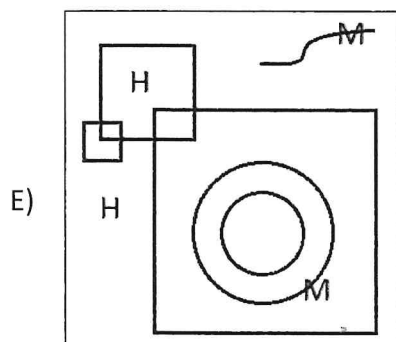
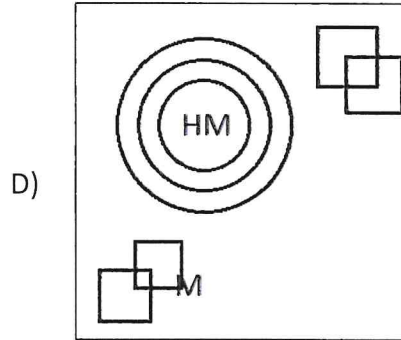
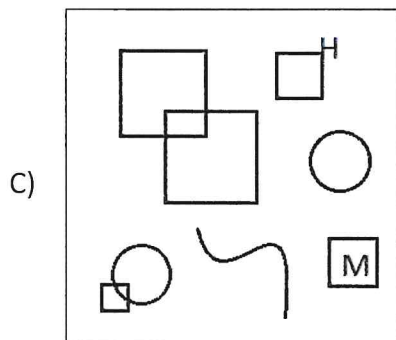
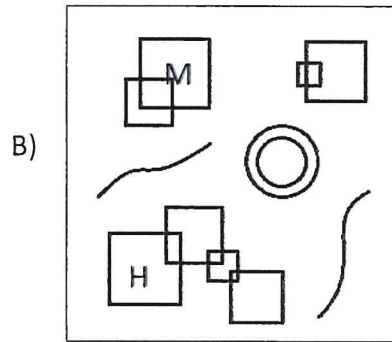
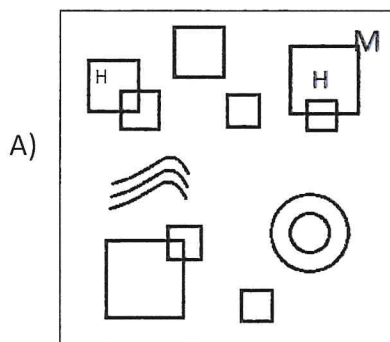


16. You work in a fashion house and your boss has asked you to create a new pattern

The pattern must have these characteristics

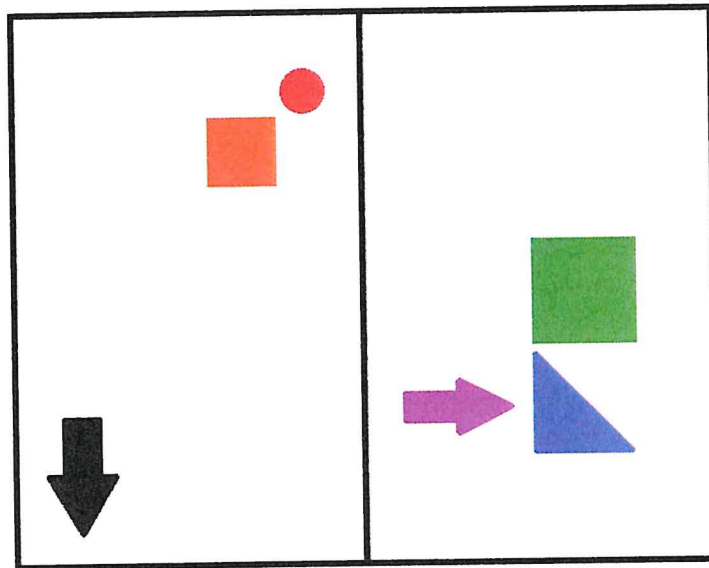
- the letters of the brand, H and M, must appear (they can appear multiple times);
- there must be squares intersecting each other, but no chains made of three or more intersecting squares;
- there must be concentric circles but these must not touch other shapes;
- there can be other shapes or lines;
- each letter M must touch at least one shape or line.

Which of these patterns matches your boss's requirements?



17. Alice is looking at the closed window in her kitchen from the inside, while her friend Bob is looking at the same window from the outside

Alice's kids have put some stickers on the window. This is what Bob can see:

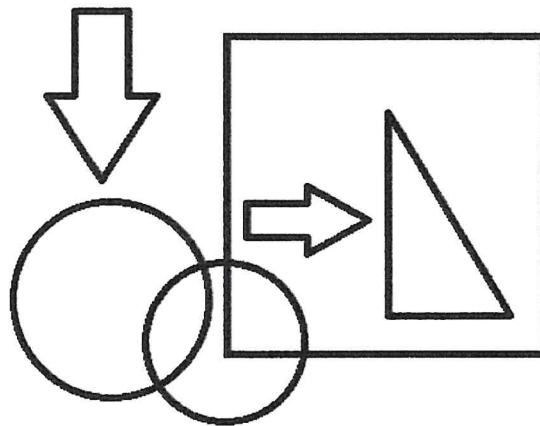


From Alice's point of view, which statement is correct?

- A) The black arrow is to the left of the purple arrow.
- B) The purple arrow is to the left of the blue triangle.
- C) The green square is below the blue triangle.
- D) The red circle is below and to the left of the orange square.
- E) The black arrow is in the bottom-right corner of the window.

18. You are visiting an art gallery with an elderly uncle who cannot see very well

You want to describe this picture to your uncle:

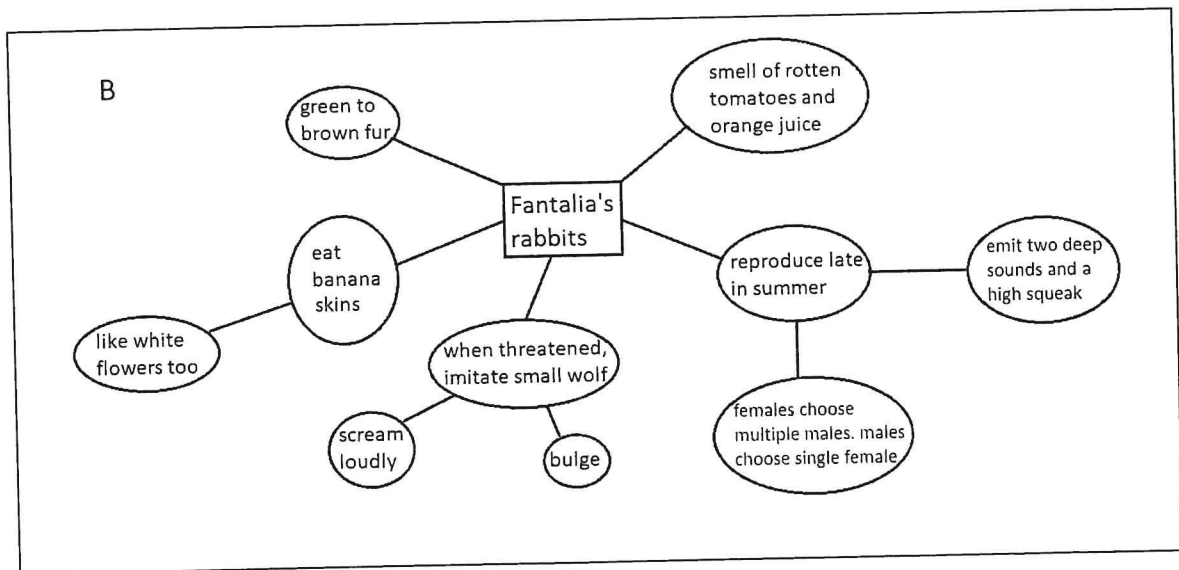
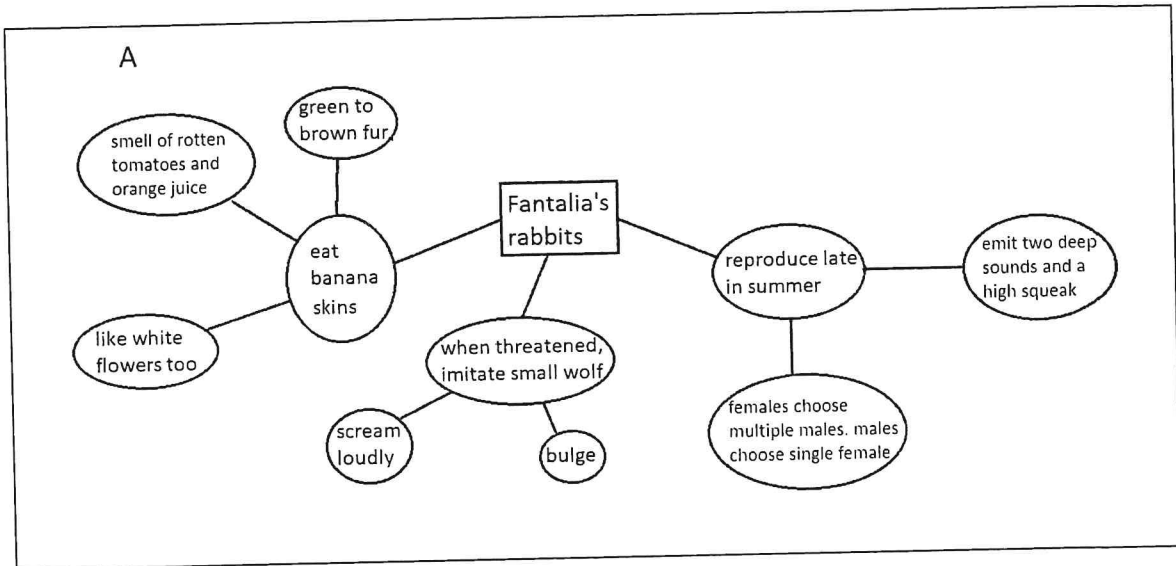


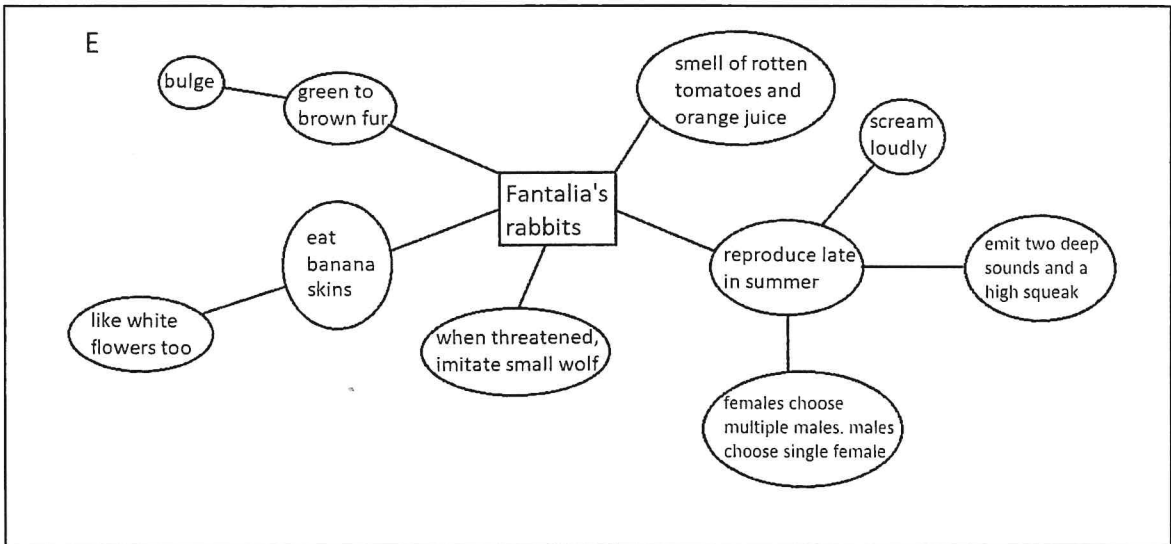
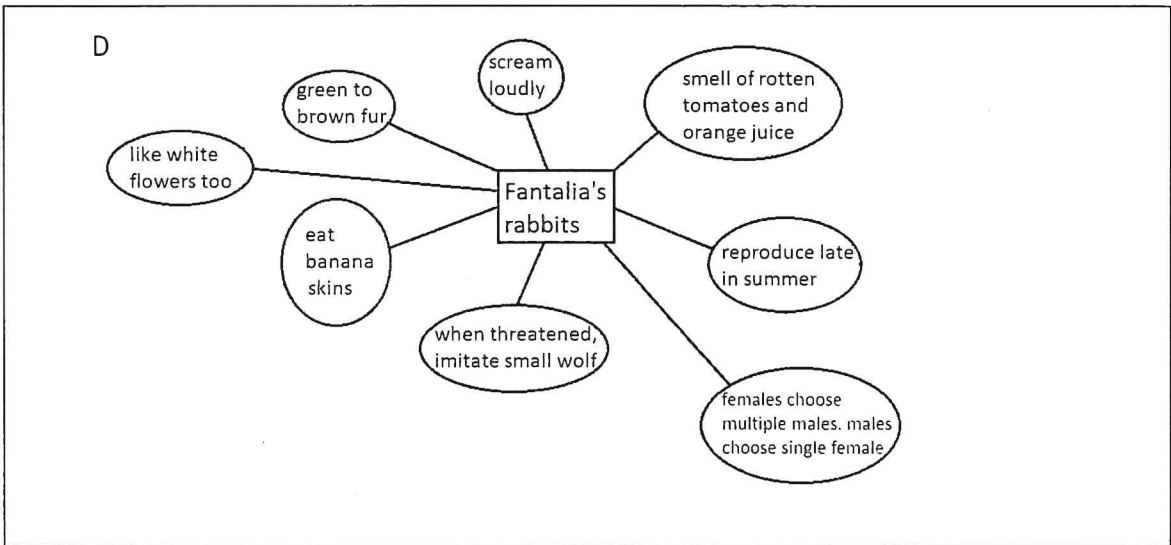
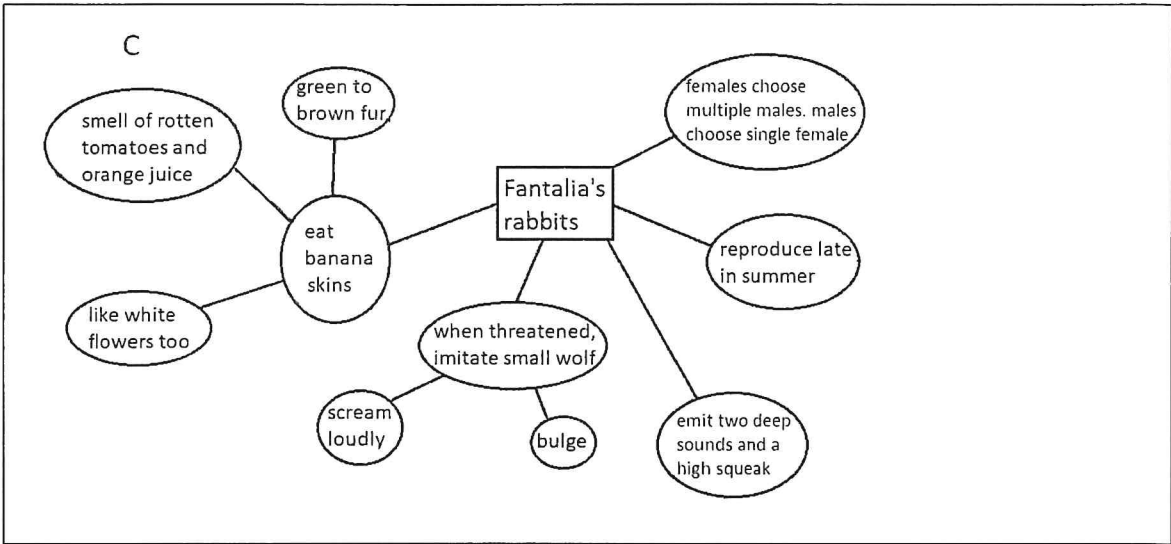
Choose the most accurate and detailed description of the picture:

- A) There is a square, containing a right-angled triangle on the right and an arrow on the left pointing towards it. At its bottom-left corner the square intersects a circle, which in turn intersects another circle on its left. There is another arrow, smaller than the first one, pointing downwards.
- B) There is a square, containing a right-angled triangle on the left and an arrow pointing towards it. At its bottom-left corner the square intersects a circle, which in turn intersects another bigger circle on its left. There is another arrow, bigger than the first one, pointing downwards toward the big circle.
- C) There is a square, containing a triangle on the right and an arrow on the left. At one corner the square intersects a circle, which in turn intersects another circle. There is another arrow pointing downwards.
- D) There is a square, containing a right-angled triangle on the right and an arrow on the left pointing towards it. At its bottom-left corner the square intersects a circle, which in turn intersects another bigger circle on its left. There is another arrow, bigger than the first one, pointing downwards toward the big circle.
- E) There is a big square, containing a right-angled triangle on the right and an arrow pointing right. At its bottom-left corner the square intersects a circle, which in turn intersects another circle. There is another arrow near the square, pointing downwards.

19. Read this text and choose the diagram that most effectively summarises it

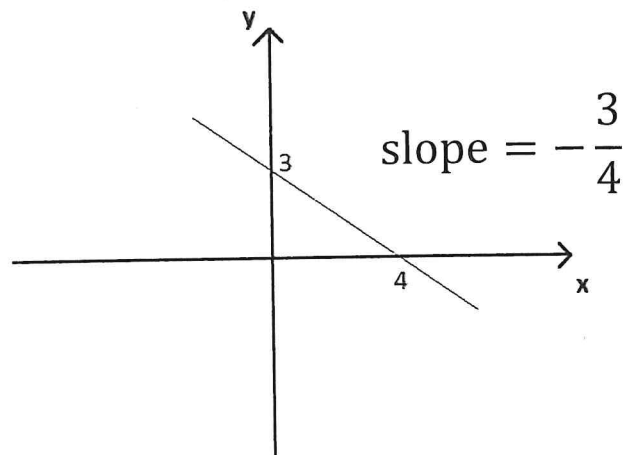
In a strange, far-off land called "Fantalia" a peculiar kind of rabbit exists. These rabbits reproduce late in summer, and to find a partner they emit two deep sounds alternated with a high, frequent squeak. They like eating white flowers, but most of the times they eat banana skins, which are abundant in Fantalia. When threatened, instead of running away they scream loudly and bulge, to imitate another animal – a kind of very small wolf – that lives in Fantalia but is much more dangerous. The rabbits living in Fantalia prefer staying in large groups and rarely detach from the other rabbits. They have a very special smell, which is like rotten tomatoes mixed with orange juice. Their fur can be of several colours, varying from dark green to brown. When reproducing, Fantalia's female rabbits look for multiple males, while male rabbits tend to focus on a single female.





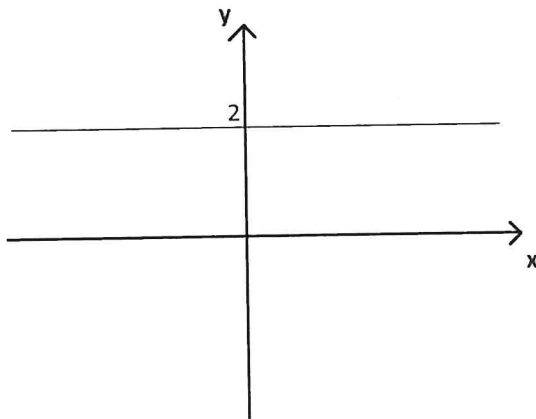
20. In the cartesian plane, there is a fast way to calculate the slope of a straight, oblique line

The method is succinctly shown in this image:

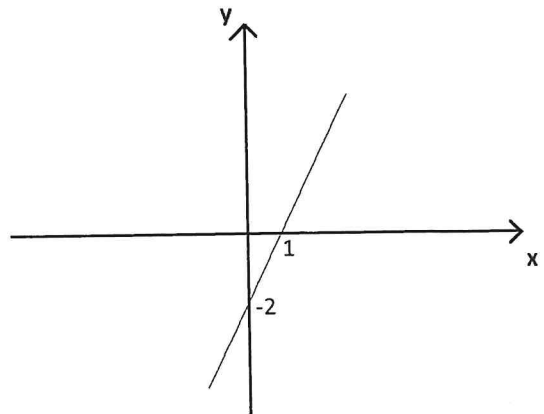


Which of these graphs gives a slope of +2 for the straight line represented in it?

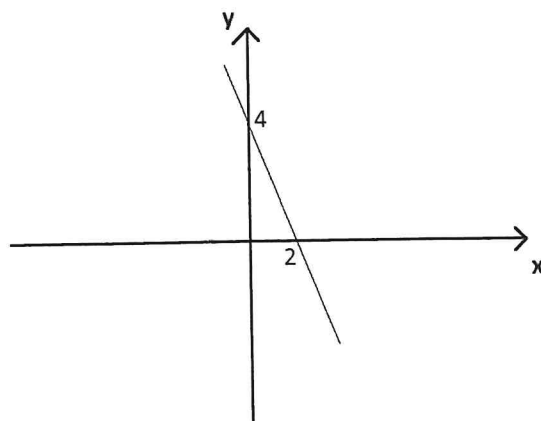
A)



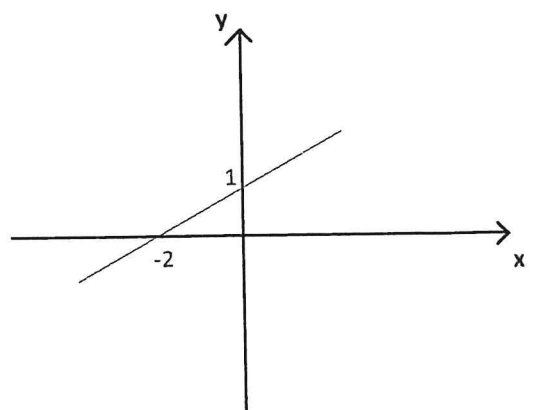
B)



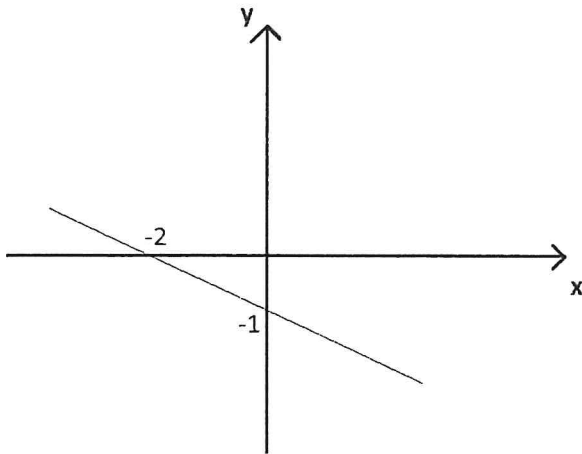
C)



D)



E)



21. Consider this formula

$$X - Y = Z$$

If Z is kept constant while Y increases, what happens to X?

- A) It decreases.
- B) It increases.
- C) It does not change.
- D) The answer depends on the value of Z.
- E) None of the above

22. The following set of formulae is given

$$\begin{aligned}y &= x^2 \\y &= z^3 \\x &= 2t + 1\end{aligned}$$

Knowing that x is negative and all the formulae hold, what is the value of t when $z = 1$?

- A) 0
- B) 1
- C) -1
- D) There is not enough information.
- E) More than one result is possible.

23. Consider these inequalities

1. $10^{-3} < 10^{-4}$
2. $10^5 > 10^3$
3. $10^3 < 10^{-1}$
4. $10^{-2} < 10^{-1}$
5. $0 > 10^{-1}$

Which of the above is/are correct?

- A) 1, 3, and 5 only
- B) 3 only
- C) 2 only
- D) 4 and 5 only
- E) 2 and 4 only

24. This set of equations is given, where symbols \$, £, & represent numbers

$$\text{\$} + \text{\pounds} + \text{\&} = 2$$

$$\text{\$} - \text{\pounds} + \text{\&} = -2$$

$$\text{\$} - \text{\pounds} - \text{\&} = 0$$

What is the correct value of \$?

- A) 0
- B) 1
- C) -1
- D) 2
- E) -2

25. Mia and Mike, two IT consultants, are processing files containing English words and numbers

Mia must follow this procedure:

- 1) Erase the first and last word, and the second number, if present.
- 2) Add the word "heart" at the end of the file.

Mike must follow this procedure instead:

- 1) Erase the word "heart", if present.
- 2) If the word "heart" was present when starting this procedure, add a "5" at the end of the file. If not, add a "2" at the beginning of the file.

Here are two files:

File A = {apple, pear, pineapple, 2, 1, 3, 5, heart, club}

File B = {heart, bone, skin, 5, 5, 4, 5, heart, brain}

If Mike processes File B and then passes the resulting file to Mia so that she can perform her procedure on it, which of the following will be the final resulting file?

- A) {pear, pineapple, 2, 3, 5, club, 5}
- B) {bone, skin, 5, 4, 5, 5}
- C) {pear, pineapple, 2, 3, 5, 5, heart}
- D) {skin, 5, 4, 5, 5, heart}
- E) {2, bone, skin, 5, 4, 5, 5}

26. At a science museum there is a room dedicated to lamps and switches

Marc, Claudia, Robert, and Sophia find an interesting installation containing six lamps, numbered 1 to 6. The even-numbered lamps are on, while the odd-numbered ones are off. There are four switches that operate specific sets of lamps:

Switch S1 operates lamps 1, 2, and 3.

Switch S2 operates lamps 4, 5, and 6.

Switch S3 operates lamps 3 and 4,

Switch S4 operates lamps 1 and 6.

Robert takes control of switch S2, Claudia chooses switch S3, Marc opts for switch S4, and Sophia takes switch S1.

In which order should Marc, Claudia, Robert, and Sophia press their switches in order to turn on all lamps?

- A) Sophia, Marc, Claudia
- B) Robert, Sophia, Marc
- C) Marc, Robert, Sophia
- D) Claudia, Robert, Marc
- E) Sophia, Claudia, Robert

27. Tomorrow is Jonathan's 10th birthday

Jonathan's family have put all his presents into four different bags, numbered 1 to 4. Jonathan can choose one present from each bag. Each bag contains these presents:

Bag 1: Present A, Present B, Present D, Present E

Bag 2: Present B, Present C, Present Y, Present A

Bag 3: Present F, Present H, Present D, Present G

Bag 4: Present T, Present F, Present E, Present Y

Which combination of presents is it **impossible** for Jonathan to choose?
[Presents are listed in random order]

- A) Presents C, G, T, E
- B) Presents F, H, B, A
- C) Presents E, F, Y, A
- D) Presents E, D, B, A
- E) Presents F, H, C, Y

28. You are organising a party for 55 children

You have arranged everything, except the drinks. You calculate that you will need at least one litre of liquid per child, apart from water, which is free at the party venue. You decide to provide Cola, Juice, Soda, and Lemonade, in equal amounts.

Here are the prices of goods at the local supermarket:

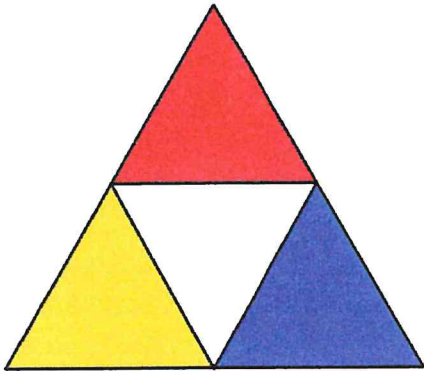
Beverage	500 ml	1500 ml
Cola – Company Alfa	1.50 €	1.90 €
Cola – Company Beta	1.20 €	2.20 €
Apple Juice	1.20 €	Not available
Apricot Juice	1.20 €	Not available
Peach Juice	1.50 €	4.00 €
Soda – Company Alfa	0.80 €	2.00 €
Soda – Company Beta	0.80 €	1.80 €
Lemonade	1.30 €	3.00 €

You want to keep your budget as low as possible.

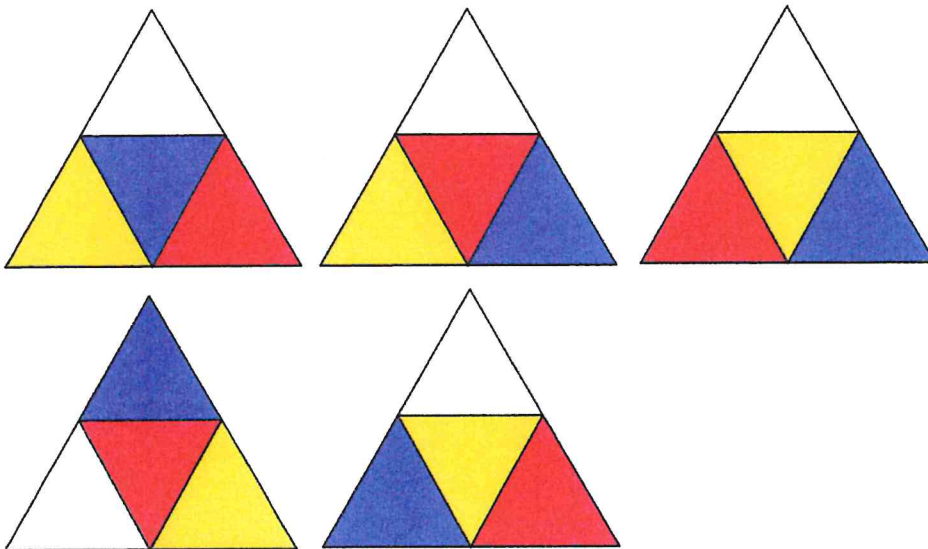
What is the minimum you need to spend on the beverages?

- A) 102.70€
- B) 100.80 €
- C) 98.70 €
- D) 97.20 €
- E) 92.70 €

29. This net, when folded up, becomes a regular tetrahedron, with the coloured faces outwards (the back of the net is completely white)



How many of these nets give the same tetrahedron, when folded up with the coloured faces outwards?



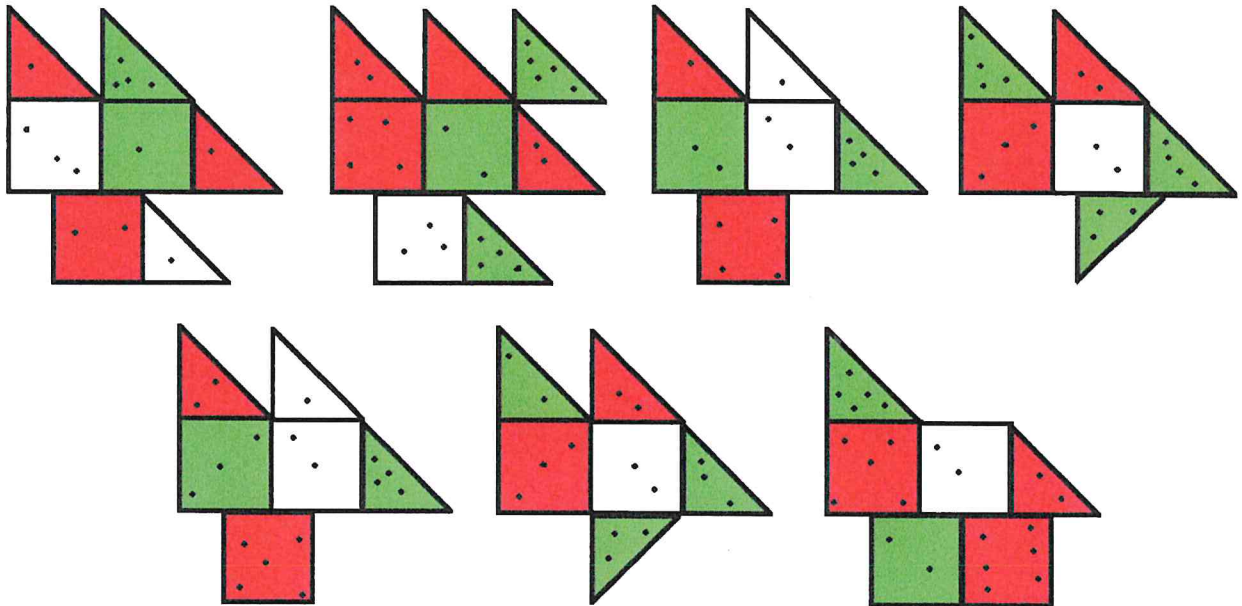
- A) 1
- B) 2
- C) 3
- D) 4
- E) 5

30. You work as a quality controller in a factory

The products are made of triangles and squares glued together to form a planar shape. Each triangle is called "a tail", each square is called "a head", and each complete set is called "a doll". Your job is to check that all the dolls comply with these quality standards:

- Each doll must contain at least 2 heads and 3 tails, but the total number of shapes in each doll must not exceed 7.
- The **maximum** number of dots for a red tail is 2. If a tail is painted green, then it must have **at least** 3 dots on it.
- If a head is painted red, then it must have **at least** 3 dots on it. The **maximum** number of dots for a green head is 2.
- At least **one** of these must be true: the number of tails equals the number of heads, or there is at least one head with exactly 3 dots on it.

How many of these dolls comply with the quality standards?



- A) 0
- B) 1
- C) 2
- D) 3
- E) 4

That is the end of the test.