María the Kangaroo, represented by the symbol $\triangle$, starts in the lower left corner of the field.

She can jump any number of times following these motions:

- 2 units Sideways, to the right.
- 6 units Forward.
- 3 units Backwards.

1) In the field, there are a total of 5 plants labeled A to E. Which plants is María able to grab?

2) What is the least number of moves that will allow María to eat plants C, D and B?

3) In how many different ways can María reach B?

Note: María should not step out of the field drawn here.
Wrapping Presents
Which of these wrapping papers will produce the present on the right?

1  2  3  4  5  6
Planning the escape

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The Rabbits had to create rabbit holes to communicate between different cages and plan an escape...

Rabbits dig paths to connect destinations marked with the **same letter**. The paths cannot cross amongst them and have to stay inside the boundary. Can you draw the paths, **whenever this is possible**? An example is shown.

<table>
<thead>
<tr>
<th>#1</th>
<th>#2</th>
<th>#3</th>
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<tbody>
<tr>
<td>a</td>
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<td>c</td>
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</tbody>
</table>
Music in the Duomo
A wild concert takes place in Milan

Eight professional musicians will perform a musical concert in the Dome of Milan. They are all animals.

The orchestra director needs to place the musician in the following 8 spots.

**Requests**

1. Both the Anteater and the Beaver want to be on the left side.
2. The Coyote and the Hare want to be at the same height, but in opposite sides.
3. The Duck must lie directly below either the Anteater or the Flamingo.
4. The Beaver must be on the top.
5. The Flamingo wants to lie directly above the Hare or the Eagle.
6. The Eagle and the Beaver want to be placed at the same height.
7. The Anteater and the Hare would like to be as far as possible.

**Arranging the Animals**

Place the animals in the eight different positions to fulfill all seven requests.
Calcio Practice
There are 11 players in the Italian Team (the Azzurri). They wear jerseys with numbers from 1 to 11. There is also a substitute player wearing 0.

We want to split the Azzurri into two teams of 6 players each to play a practice game. We do so in a way that the sum of the T-shirt numbers of the first team is equal to the sum of the T-shirt numbers of the second team.
The king and the merchants of Poultryland
There is something wrong with this trade...

Two foreign merchants arrive to the castle of Poultryland to sell their goods to the king in exchange for some chickens.

One merchant sells coats at the price of 9 chickens per coat. The other merchant sells sweaters at the price of 6 chickens per sweater.

Winter is approaching so the King decides to buy coats and sweaters for the entire royal family. He spends a total of 169 chickens. Happy with his purchase, he brings the goods to the queen.

She says: “My dear royal husband, you have been fooled.”

How did the Queen know that his husband was fooled?

Answer:

With 48 chickens

How many coats and sweaters can be bought in exchange for 48 chickens?

(Think of all possibilities...)

Answer:
The Queen’s Garden
The Queen loves gardening and asks the royal carpenter to create a wildflower garden in the castle.

The Queen wants a precious fence around the wildflower garden, made out of expensive sandalwood. The carpenter agrees, but he warns the queen that he only has 60 meters of sandalwood for the fence.

Possible shapes

Which of the following shapes may the queen chose for her garden if she wants to use exactly 60 meters of sandalwood for the fence? Select all that apply.

1 2 3 4 5 6
The King’s Closet
The king’s dressing room contains 25 items (one per closet). There are exactly 5 items of each of the following categories:

**ARMOR (A), CROWN (C), GLOVES (G), HOOD (H) and SCEPTER (S).**

Every day the king selects one row or one column, and wears all the items in the corresponding 5 closets.

**a** Find a way to distribute the 25 items in the closets, so that the king is dressed properly every morning (wearing exactly 1 item of each category).

**b** One night, a fairy magically transforms all gloves into hoods and vice versa. Does this transformation ruin your solution?
Toothpick Challenges
How many matchsticks are required to make 14 squares in a row?

\[ \begin{array}{cc}
N=1 & N=2 \\
\text{ } & N=3 \\
\end{array} \]

How many matchsticks are required to make 1,000 squares in a row?

\[ \begin{array}{cc}
N=1 & N=2 \\
\text{ } & N=3 \\
\end{array} \]

How many matchsticks are required to make \( N \) squares in a row?

\[ \begin{array}{cc}
\text{Number of squares} & \text{Number of matches} \\
1 & \text{ } \\
2 & \text{ } \\
3 & \text{ } \\
14 & \text{ } \\
1,000 & \text{ } \\
N & \text{ } \\
\end{array} \]
It is Halloween and many people are outside trick-or-treating.

At one specific neighborhood residents resolve to dispense only chocolate bars and gummy bears. Quite soon, you and your friends sight people in costumes trading sweets at the local park.

You approach to (someone disguised as) Dracula and he trades 20 gummy bears per 6 chocolate bars. Since your crew wants to get 60 gummy bears, how many chocolate bars do you need to trade?

Frankenstein seems in a hurry and wants to get 12 chocolate bars as soon as possible. How many gummy bears should he trade with Dracula?
Alchemy

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Mariano poured the three potions into a small 100 oz. cauldron to and filled one quarter of it. 

How many (regularly sized) potions does he need to buy in order to fill in the cauldron?

Wizard Mariano bought the following four growth potions at the “Night Cat” store, each having a certain unknown amount of ounces of a precious liquid known as Bigade.

He discovered that
- one potion had one ounce less of Bigade than usual,
- another potion had 2 ounces more than usual.
- The other two were fine.

Next time Mariano will shop at the “Happy Owl”, where all growth potions are guaranteed to have the same amount.