1) Here are two cats and three cushions.

a) Make a list showing all the possible combinations of one cat sitting on one cushion.

b) How many combinations are there? How can you use multiplication to know you have found all possible combinations?

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2) Felix buys lunch for £3.40. He pays using only a combination of 50p and 10p coins.

a) List all the combinations of 50p and 10p coins he could have used to pay the exact price.

b) Explain any pattern you notice in the combinations and suggest how you can use this to make sure you have found all possible combinations.

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3) Red fireworks shoot 6 stars and yellow fireworks shoot 4 stars. A firework display uses only red and yellow fireworks. There are 72 stars altogether.

a) List all the combinations of the two fireworks that total 72 stars.

b) Explain any pattern you notice in the combinations and suggest how you can use this to make sure you have found all possible combinations.

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1) Nishi is choosing the flavours for her ice cream. She chooses **two** different flavours.

There are 6 flavours to choose from:

- chocolate
- vanilla
- strawberry
- mint
- caramel
- raspberry ripple

Nishi

I think there are 12 possible combinations that I can choose from, as 6 × 2 = 12.

a) Do you think Nishi is correct? Prove your answer.

2) At the toy shop, a toy car costs £0.80 and a bouncy ball costs £0.60.

Nishi

I want to spend £5 exactly on toy cars and bouncy balls.
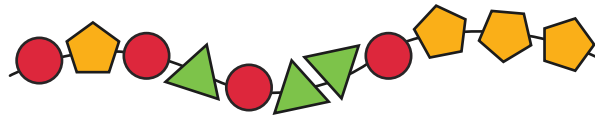I think the only combination is 4 toy cars and 3 bouncy balls.

a) Do you think Nishi is correct? Prove your answer.

b) If Nishi had £4 to spend exactly, how many possible combinations would there be?

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1) The sum of all the beads on this string is 75.
The circle has a value of 2.

List all the possible values of the
pentagon and triangle.

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2) Alex and Beth are playing a computer game. Alex scores 17 times as many points as Beth.

The maximum amount of points that can be scored is 900.
Beth didn't score less than 40 points and Alex's score was odd.

List all the possible score combinations.

Beth's Score	Alex's Score