What is a constellation?

worksheet

You are going to answer the following research question:

What does a constellation look like when seen from different sides?

1 Make a constellation

1 Collect a container with the material you need from your teacher.

2 Examine the items in the container. Take out the **long piece of cardboard**.

3 **Draw a straight line two centimetres from the short edge of the cardboard**.
Write a 1 under this line as shown in figure 1.

4 You now have to **divide the rest of the cardboard into six equal parts** as shown in figure 1. Measure the length of the cardboard from line 1.

The length of the cardboard is centimetres.

5 Divide this figure by six. Write your answer here:

÷ 6 = centimetres.

6 **Starting at line 1, measure the number of centimetres you calculated in step 5. Draw a straight line here**. Write a 2 under this line.

7 Repeat step 6 until you have drawn six lines in total.
The seventh line is the top of the cardboard.

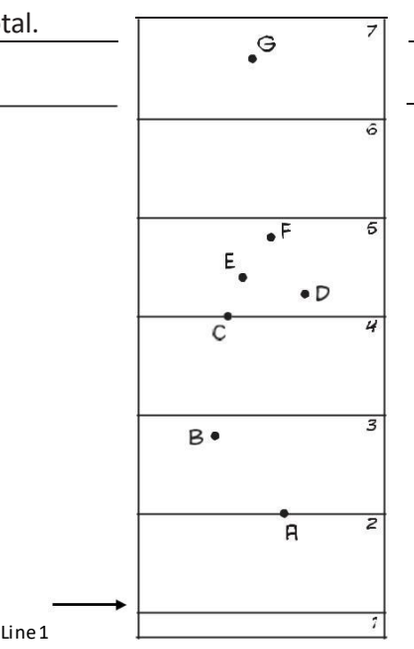


Figure 1

8 Next you will make the eyehole. Take the **square piece of cardboard** (20*20 cm). Draw a cross exactly in the **middle of the card**. Use the compass to **draw a circle with a diameter of 1 centimetre** on this cross. Ask your teacher to cut out this circle for you before doing step 9. You can start step 10 while waiting for your teacher.

9 Glue a thin piece of cardboard (2*20cm) to the long piece of cardboard along line 1. **Use scotch tape to attach the square cardboard to this thin piece of cardboard as shown in the drawing below** (figure 2).

10 Now you are going to make a three-dimensional model of the constellation Orion on your board. The drawing below (figure 2) shows exactly where each star forming Orion should be. Each star has been given a letter from A to G. Stars A and C, are positioned exactly on a line (lines 2 and 4). Stars D, E, F are located in between lines 4 and 5. **Use the pencil to mark the letters A to G on the board using figure 1 and 2 as a guide.**

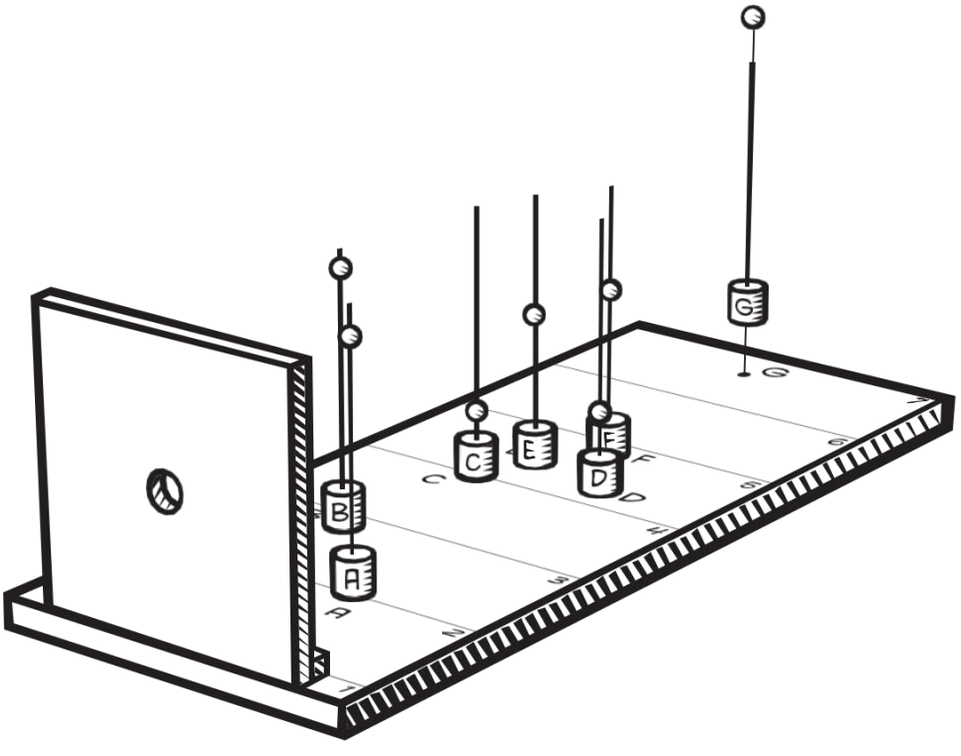


Figure 2

11 Use the waterproof marker to **label each piece of corks with a letter from A to G.**

12 Take the **7 wooden skewers and stick one in each of the lettered corks**.

13 Take the glow-in-the-dark **modelling clay** and **roll seven small balls** about the **size of a pea**. **Slide one ball onto each skewer**. Each ball represents a star.

14 **Place the corks over the corresponding letters on the board**. Figure 3 shows how high each ball needs to be on the skewer. Ball A should be very near the top of the skewer. Ball B is also high. Balls C and D should be near the bottom of the skewer. Balls E, F, and G should be almost halfway down the skewer.

15 **Look through the eyehole** in your cardboard square to see if the stars are in the correct place. The constellation should look the same as in the drawing.

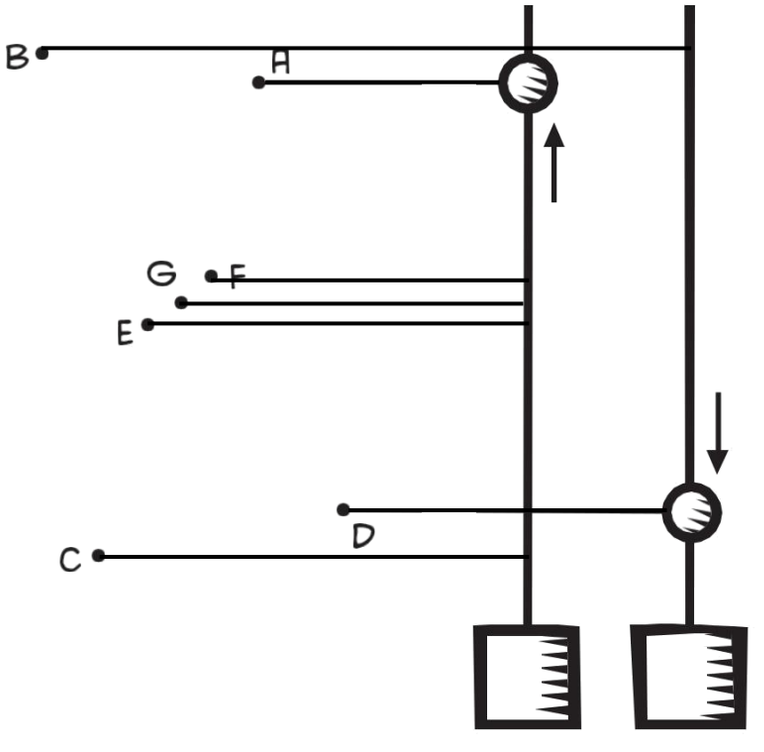


Figure 3

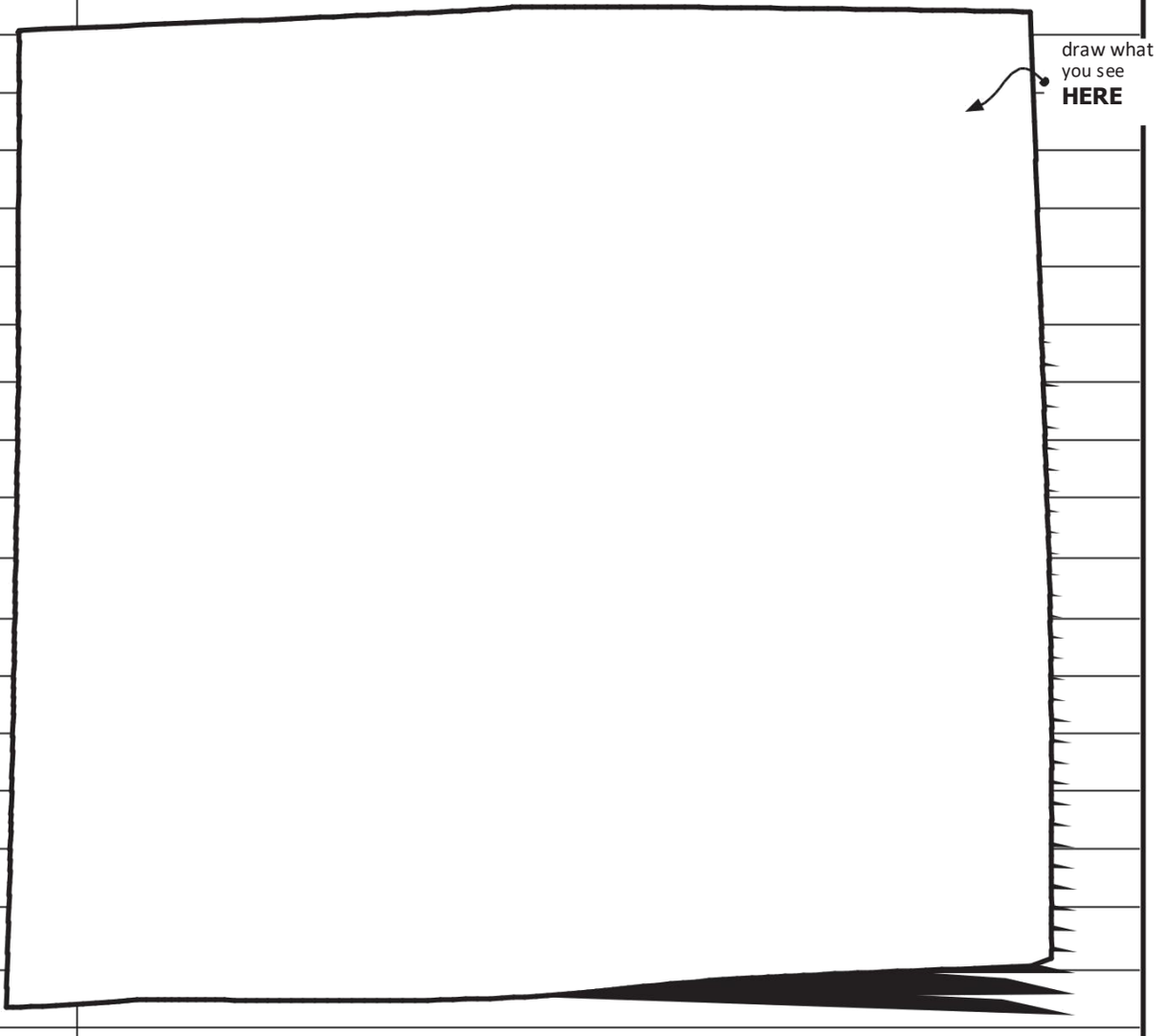
16 Does your constellation look the same? If not, go through steps 10 to 14 again.

Other reasons why your constellation doesn't look the same may be:

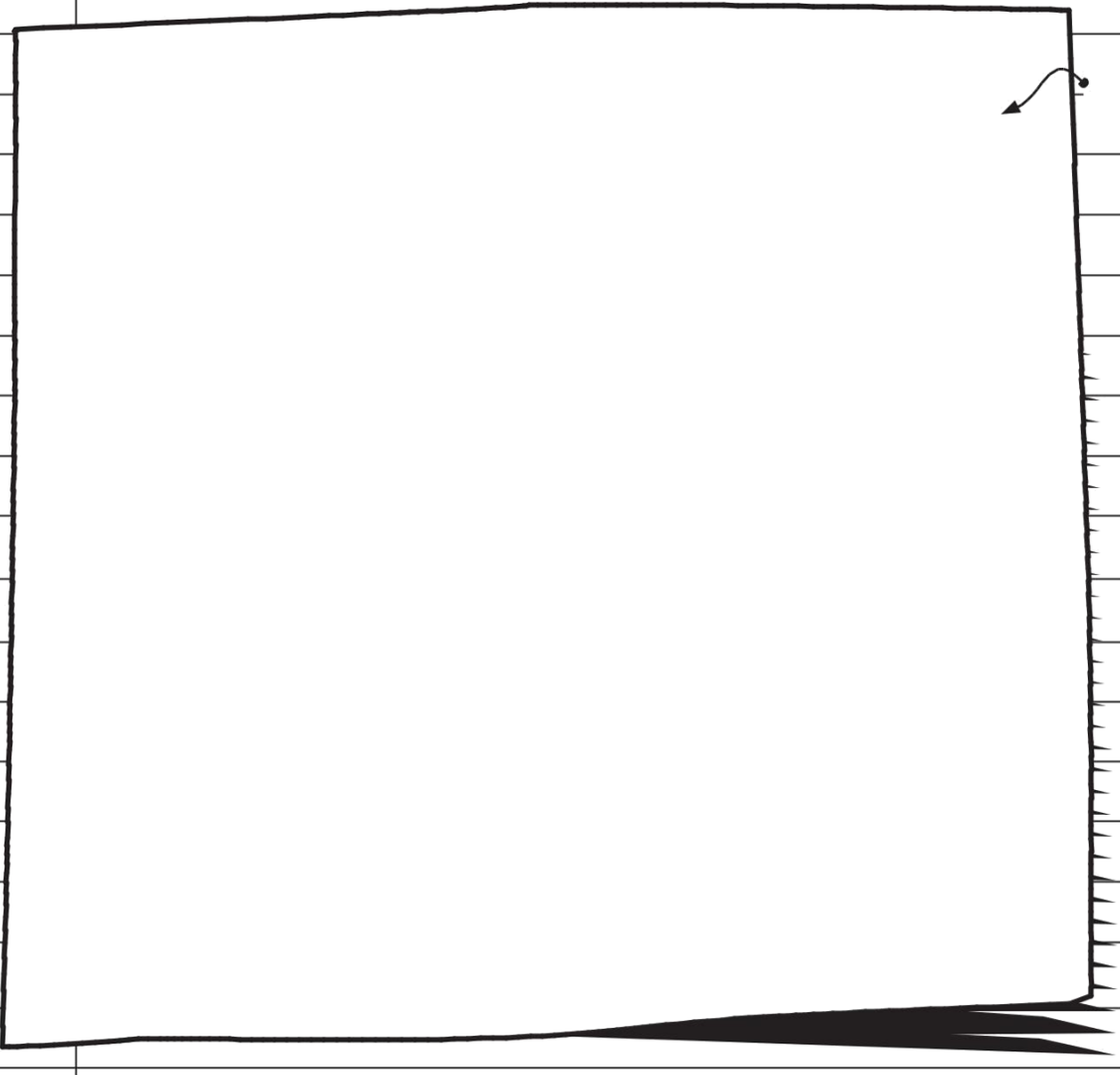
- the balls representing the stars are too large
- the balls are not at the correct height on the skewers
- the hole you are looking through is too small, so you cannot see the whole constellation

2 Not in the same plane

You have now made a three-dimensional model of the constellation Orion. Look through the eyehole. In the box below, **draw what your constellation looks like**.



In the box below, **draw what your constellation looks like from another side.** Does it look the same as your first drawing?



The Orion constellation