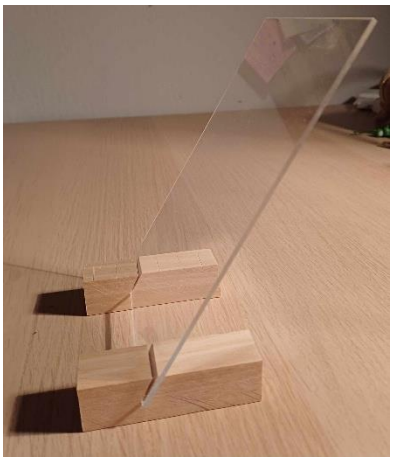
Corner 1

On the table, there are 5 objects, 5 markers and 5 glass plates, each with 2 wooden blocks. Take 1 object and glass plate each, together with the 2 blocks and a marker. Go sit together with the pupils who chose the same object as you.

Place the 2 wooden blocks next to each other, and slide the glass plate into the grooves of the blocks.
Now place the glass in front of you so that the plate tilts a little bit backwards. Your setup should look something like this now:



You will now do 2 experiments, which Simon Stevin did as well all those years ago.

This way, he came to an important conclusion that became one of the basic rules of perspective drawing.
Let's see if you can figure out what this important conclusion is about!

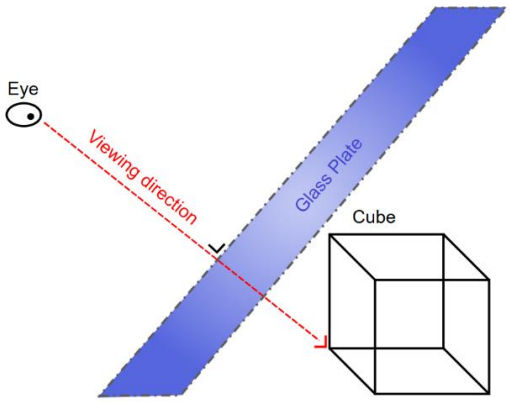
If your subgroup consists of 3 people: 1 person does experiment 1. The other 2 do experiment 2. If your subgroup consist of 2 people, each person does a different experiment.

Follow the instructions and answer the questions afterwards. Lastly, compare your drawings, discuss all of your answers together in group and complete the conclusion.

Experiment *1*

Instructions:

1. Position yourself so that your eye is right above the glass plate. Your viewing direction should be perpendicular (loodrecht) to the plate. (see picture)
2. Place your object behind the glass plate, so that you can see the whole object through the plate.
3. Take your marker.
4. Draw your object on the glass plate, the way that you see it through the plate.



Answer the question or highlight the correct answer.
The object itself has got two/three dimensions.
The glass plate has got two/three dimensions.
Your drawing on the glass has got two/three dimensions.

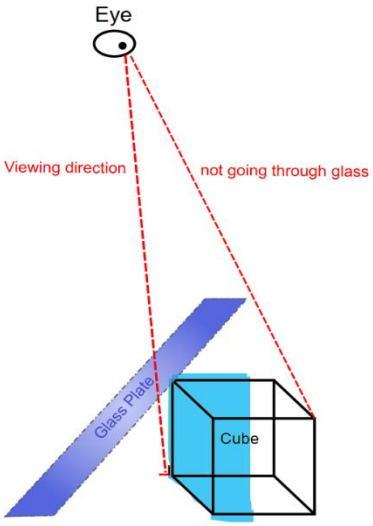
➔ With this method, you are able to make a _____-dimensional drawing on a _____-dimensional surface.

Your drawing is the **perpendicular** (loodrechte) projection of your object onto the glass plate.
Does the drawing of your object have the same shape as the real object? _____

Experiment 2

Instructions:

1. Place your object behind the glass plate.
2. Position yourself above the glass plate. It is possible that you can't see your whole object through the plate. (see picture)
3. Take your marker.
4. Draw (the part of) your object on the glass plate, the way that you see it through the plate.



Answer the question or highlight the correct answer.

The object itself has got two/three dimensions.
The glass plate has got two/three dimensions.
Your drawing on the glass has got two/three dimensions.

➔ With this method, you are able to make a _____-dimensional drawing on a _____-dimensional surface.

Your drawing is a **non-perpendicular** (niet-loodrechte) projection of your object onto the glass plate.
Does the drawing of your object have the same shape as the real object? _____

Conclusion

Highlight the correct answer.
When the viewing direction is perpendicular to the glass plate, the projection of the object on the glass plate has the same shape as / a different shape than the real object.

When the viewing direction is not perpendicular to the glass plate, the projection of the object on the glass plate has the same shape as / a different shape than the real object.

The position from where you look at the object, is the same / different in each experiment.
How you see the object, is the same / different in each experiment.

➔ The _____ from which you look at the figure, affects the perspective of the figure that you see.

Corner 2

On the table, there are 2 envelopes. One envelope contains cards with different names of figures on them, the other one has cards with the unfoldings of figures. You will also see several folded figures on the table.

Your task is to match each of these figures with the correct name and unfolding. There are sheets with information on them that can help you with this.

You can work together with your whole group. When you think that you have made the correct matches, you can raise your hand, and then the teacher will come check if everything's correct.

Corner 3

In his work Wisconstighe Gedachtenissen: van de meetdaet, Simon Stevin solved a lot of mathematical prepositions, or 'voorstellen'as he called it, by drawing constructions.

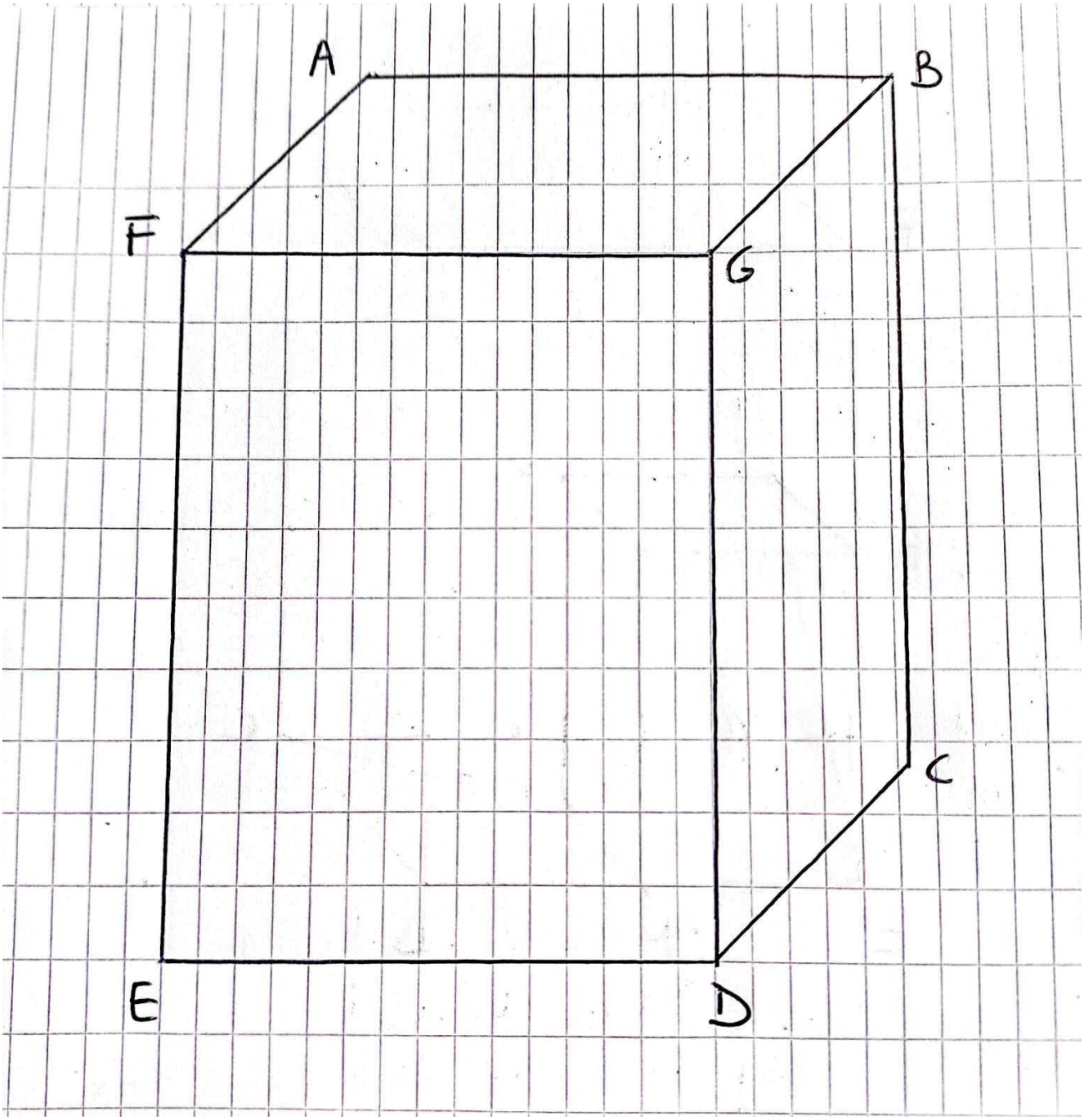
It is now up to you to draw two of his constructions, using his own step-by-step instructions.

A smaller cuboid inside a big cuboid

Underneath the steps, you can find a drawing of the cuboid (balk) ABGFCDE. Follow all the steps to draw a smaller cuboid inside of this one.

Steps:

1) Connect point E to points A, B, C and G.
2) Place point H anywhere randomly on edge (ribbe) EF.
3) Draw [HI], parallel to edge AF, with point I being the intersection point (snijpunt) with [AE].
4) Draw [IK], parallel to edge AB, with point K being the intersection point with [EB].
5) Draw [HL], parallel to [IK], with point L being the intersection point with [EG].
6) Connect point K and point L. You have now drawn the top face (bovenvlak) of the smaller cuboid.
7) Draw [LM], parallel to edge GD, with point M being the intersection point with edge DE.
8) Draw [KN], parallel to edge GD, with point N being the intersection point with [CE].
9) Connect point M and point N.
10) IKLHNME is the smaller cuboid!


A
B
F
G
C
E
D

A cube in two-point perspective

For this construction, you can take a sheet of white paper that's on the table. **Follow the steps down below to draw a cube in two-point perspective!**

There might not be enough time to finish all of these constructions completely. See how far you can get, and you can always continue this another time or at home! 😊.

Steps for a cube at eye level (ooghoogte):

1) Lay down the paper horizontally.
2) Draw a horizontal line in the center of your sheet. Make sure that the line is perpendicular (loodrecht) to the edge of your sheet. This line is called the **horizon or eye level**.
3) Mark 2 vanishing points (verdwijnpunten) somewhere near the edges of your horizon. Call them VP_1 and VP_2.
4) Draw a perpendicular (loodrecht) line somewhere random on the horizon. Make sure that the line continues on both sides of the horizon. This line is the first edge (ribbe) of your cube, and also the one that is the closest to your eye.
5) Mark the ends of the edge with 2 points. Call them A and B.
6) Connect point A to both of the vanishing points. Do the same thing with point B.
7) Now you can draw the other 2 edges of the cube, by drawing a line (⊥ horizon) on each side, in between the lines that you just drew. Draw your lines so that the edge on the right is a bit bigger than the one on the left.
8) Erase the part of the horizon that is behind the cube. We can't see this part from an eye level position.

Steps for a cube above the eye level:

1) Use the same sheet!
2) Draw a vertical, perpendicular line somewhere above the horizon.
3) Mark the ends of the line with 2 points. Connect both of the points with VP_1 and VP_2.
4) Now you can draw the other 2 edges of the cube, by drawing a line (⊥ horizon) on each side, in between the lines that you just drew. Draw your lines so that the edge on the right is a bit bigger than the one on the left.
5) Mark the intersection points of the 2 new edges and the lines to VP_1 and VP_2. Call them C and D.
6) Connect C to both of the vanishing points. Do the same thing with point D.
7) You can highlight all of the edges of your cube to make it more clear.