# Worksheet Pythagoras in space

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class: \_\_\_\_\_\_\_\_\_\_\_\_**

Your group has been given a wire model of a 3-D shape. In this assignment you will work in groups in order to **calculate** the **length of the body diagonal** of this 3-D shape.

1. Write down the correct mathematical name of the 3-D shape of which you will calculate the body diagonal.

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1. Draw the 3-D shape in **parallel projection** on the grid below and name the **vertices**.
2. Take measurements of the **edges** of the 3-D shape **in mm** and add them to your drawing above.
3. Make a **sketch** of the **diagonal plane** in which the body diagonal is placed. Add the names of the vertices and the measurements that you have taken to your sketch.

Sketch of diagonal plane \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:

1. At this point there is still information missing in order to calculate the length of the body diagonal.   
   Of which line segment in your sketch of Q4 do you still need to know the length?

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1. Make a **sketch** of the **face** in which the line segment of Q5 is placed. Add the names of the vertices and the measurements that you know to your sketch.

Sketch of the face\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:

1. **Calculate the length of the missing line segment** of Q5 using your sketch above. Use the Pythagorean Theorem.

Workings on missing line segment:

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1. You now have all the information needed to calculate the space diagonal. Have another look at the sketch of Q4 and use the the Pythagorean Theorem to **calculate the space diagonal**.

Workings on space diagonal:

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1. To check if you did a good job, you can now measure the space diagonal of the 3D shape with a piece of string.

**Measurement of the space diagonal in mm:**

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**And, is it correct? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**