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Problem sheet for chapter 9: Camera models and the view pipeline

Problem 1:

Check that the projection matrix $\mathbf{Q}_{\vec{n},d}$ for perspective projection, as defined in the lecture, satisfies the relation

$$\mathbf{Q}_{\vec{n},d} \cdot \mathbf{Q}_{\vec{n},d} = d\mathbf{Q}_{\vec{n},d}$$

Problem 2:

Consider a vertex in a 3D scene with world space coordinates $(1, 2, 3)$. The camera is configured as follows:

```
const camera = new THREE.PerspectiveCamera(90, 2,
    2, 10);
camera.position.set(5,0,0);
camera.lookAt(0,0,0);
```

Which location (in pixel coordinates) is this vertex projected to on a canvas of width = 600 pixels and height = 300 pixel?