**P inTS**

Progressive Options
*in Technology and Science*

## Quadrangle constructions

**Task:**    In Geogebra software construct in the given half plane quadrangles and discuss the number of solutions in connection to the positive real parameter $t$.

**Exercise 1:**    Parallelogram ABCD:  $a = 10$ cm, $|\sphericalangle BAC| = 45°, |BD| = $ t cm,

        a)   Solve for $t = 8$.
        b)   Solve with the positive real parameter $t$ and hold a discussion.

**Exercise 2 – for advanced students:**
        Trapezium ABC:      $a = 8$ cm,  v $= 6$ cm, $|AC| = 7$ cm, $|BD| = t$ cm

        a)   Solve for $t = 8$.
        b)   Solve with the positive real parameter $t$ and hold a discussion.

**Procedure:**

1.  Copy the task into your school exercise book. Make a rough draft, write down the procedure of the construction for the target parameter $t$, construct and write the number of solutions in the given half plane.

2.  In Geogebra software construct the solution of the task with the circle $k$ defined by the centre B and the point (with the variable radius). Choose the radius of the circle $k$ so that the circle has two intersections with the straight line - as in exercise a).

3.  V Geogebra software change the size of the circle radius and count the number of solutions and the individual shapes (acute-angled, obtuse-angled, right-angled triangle).

4.  Write down into your school exercise book your observation in connection to the positive real parameter $t$, which shows the size of the radius circle $k$.

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