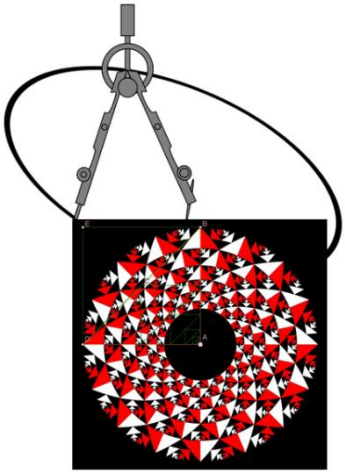

SBIDZ Teacher Professional Development Course

Module 2: Teaching geometry with technology

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Assessment task 1

Concept:

- Classification of figures based on the relationships between their properties
- Defining

Technology:

- Construct versus draw (the drag test)
- Different construction routes: through transformations and classic Euclidean (based on construction and intersections of circles, parallel and perpendicular lines)

Reasoning:

- If… then…
- Is it always true?
- Hypothesis, dynamic investigation, proof

Task:

- Given two line segments of indefinite length. The segments are the diagonals of a rectangle. Construct the rectangle
- Proof that the figure is indeed a rectangle, in two different ways
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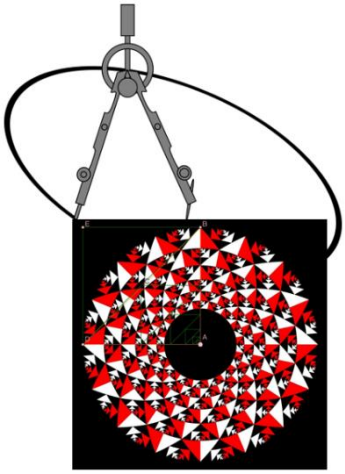

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Assessment task 2

Concept:

- Classification of figures based on the relationships between their properties
- Defining

Technology:

- Construct versus draw (the drag test)
- Different construction routes: through transformations and classic Euclidean (based on construction and intersections of circles, parallel and perpendicular lines)

Reasoning:

- If… then…
- Is it always true?
- Hypothesis, dynamic investigation, proof

Task:

- Given your won construction of an extended tessellation of triangles, prove that the sum of the interior angles of a triangle is a straight angle.
- Prove in at least two ways that the sum of the exterior angles of a triangle is equal to the sum of the opposite interior angle
- Shift your attention to a quadrilateral in your tessellation. Formulate a hypothesis and prove it, about the relationship of the size of an exterior angle of a quadrilateral and the interior angles.

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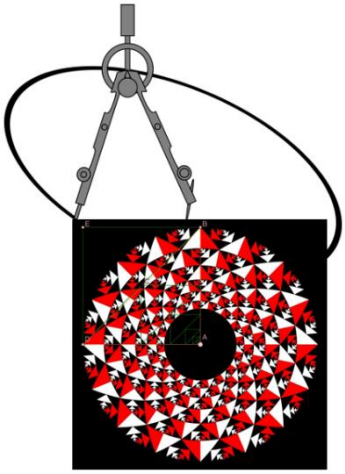

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Assessment task 3

Concept:

- Classification of figures based on the relationships between their properties
- Defining

Technology:

- Construct versus draw (the drag test)
- Different construction routes: through transformations and classic Euclidean (based on construction and intersections of circles, parallel and perpendicular lines)

Reasoning:

- If… then…
- Is it always true?
- Hypothesis, dynamic investigation, proof

Task:

- Given your construction of a manipulable triangle between two parallel lines, investigate the size of the area of such a triangle, despite change in form.
- Prove in at least two ways that the area of trinagles on the same base and with the same heights are equal.
- Shift your attention to a quadrilateral in a similar construction. Make a hypothesis and prove it, about the areas of quadrilaterals on the same base and with same heights.

Assessment rubric			
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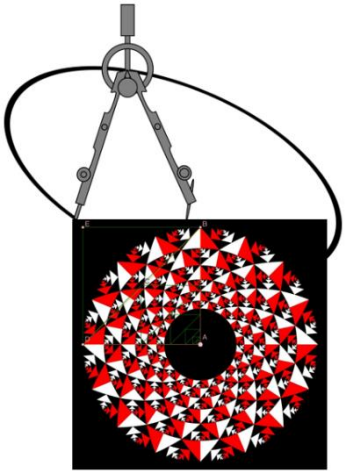

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Concept:

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Technology:

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Reasoning:

- If… then…
- Is it always true?
- Hypothesis, dynamic investigation, proof

Task:

- Given your construction of a manipulable triangle, use transformation and congruence reasoning to investigate the relationship between the area of a rectangle and the area of a triangle
- Use your investigation to derive the formula for the area of a triangle
- Shift your attention to a trapezium. Derive the area formula for a trapezium in two different ways

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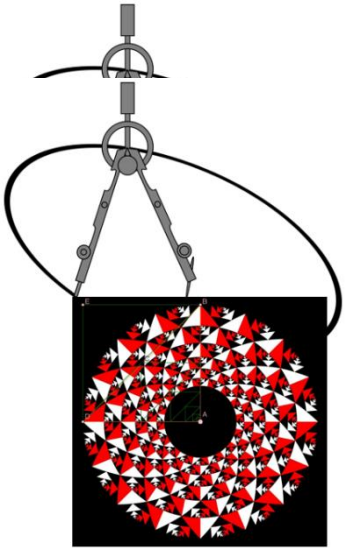

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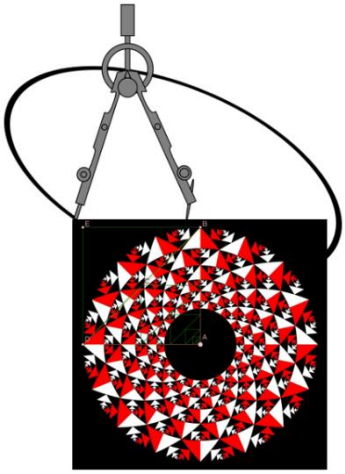

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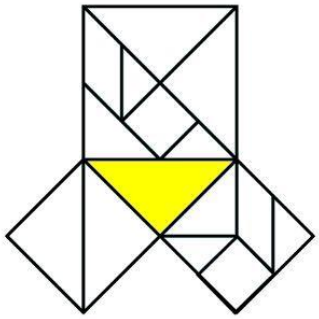
Task:

- Given the standard Chinese tangram in the figure. Start by constructing the yellow triangle (note it is a special case, namely an isosceles triangle).
- Then construct the square on the hypotenuse, and segment the square as in the tangram.
- Use transformations to move the appropriate parts to their positions on the other sides.
- Investigate if the figure can be achieved with even fewer transformations.



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