

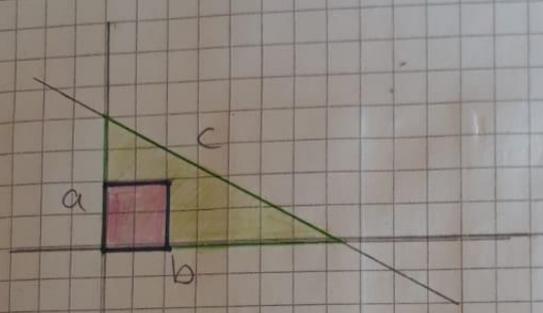
Aufgabe 03 21.04.2020 (Larissa Kappes)

Beweis Satz des Pythagoras (A. Kitching)

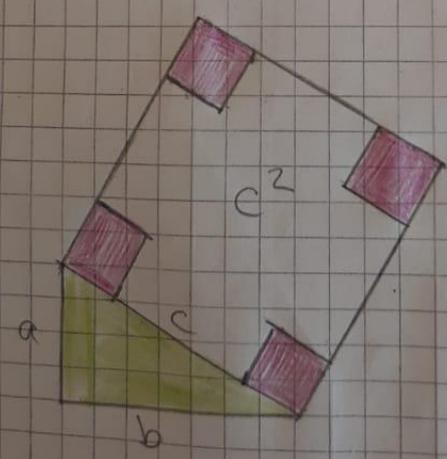
①



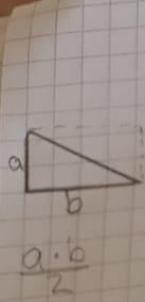
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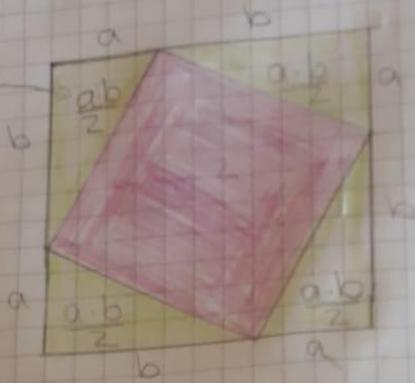
③



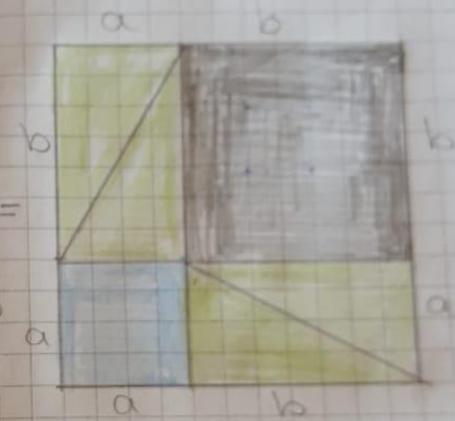
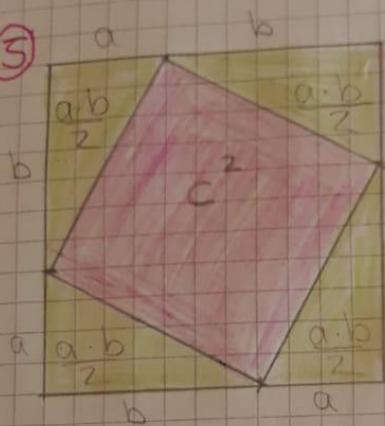
$$A = a + b + c^2$$



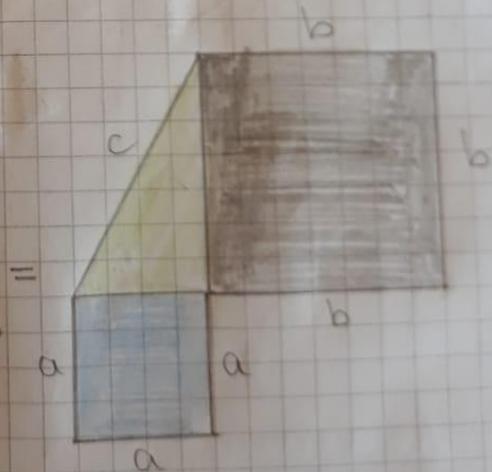
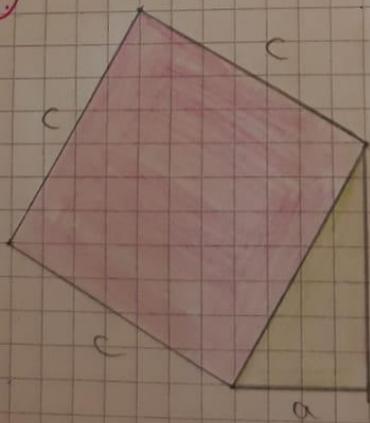
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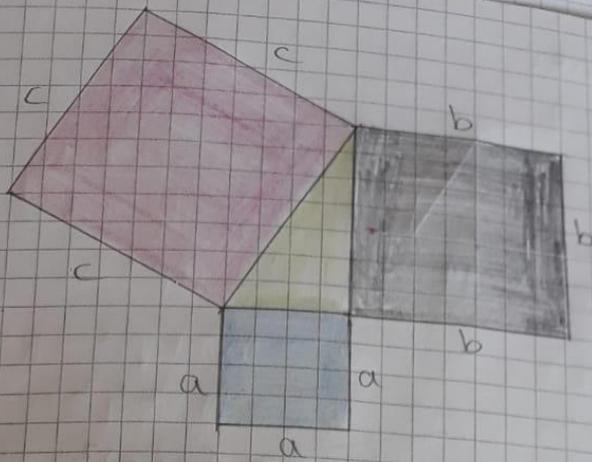
⑤



⑥



7)



q.e.d

Aufgaben

- 1.) Formulieren Sie den Beweis von Alan Turing mathematisch formal korrekt.
- 2.) Beweisen Sie den Höhensatz mittels des Satzes von Pythagoras

$$1.) A = \frac{a \cdot b}{2} + \frac{a \cdot b}{2} + \frac{a \cdot b}{2} + \frac{a \cdot b}{2} + c^2$$

$$4.) A = \frac{4ab}{2} + c^2$$

$$A = 2ab + c^2$$

$$5.) \text{I. } A = 2ab + c^2$$

$$\text{II. } A = a \cdot b + a \cdot b + a \cdot a + b \cdot b$$

$$2ab + a^2 + b^2$$

$$\text{I} = \text{II}$$

$$2ab + c^2 = 2ab + a^2 + b^2$$

6)

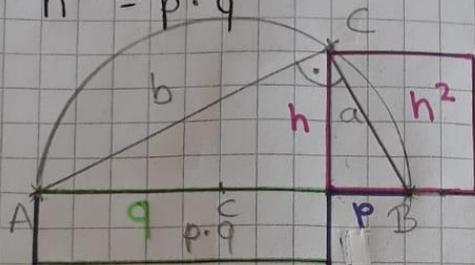
$$\frac{a \cdot b}{2} + c^2 = \frac{a \cdot b}{2} + a^2 + b^2 \quad | - \frac{a \cdot b}{2}$$

$$c^2 = a^2 + b^2$$

q.e.d.

2.) Höhensatz:

$$h^2 = p \cdot q$$



$$a^2 + b^2 = c^2$$

$$a^2 = h^2 + p^2$$

$$b^2 = h^2 + q^2$$

$$c^2 = (p+q)^2$$

$$(h^2 + p^2) + (h^2 + q^2) = (p+q)^2$$

$$h^2 + p^2 + h^2 + q^2 = p^2 + 2pq + q^2$$

$$2h^2 + p^2 + q^2 = p^2 + 2pq + q^2 \quad | -p^2 | -q^2$$

$$2h^2 = 2pq \quad | :2$$

$$h^2 = p \cdot q$$

q.e.d.