ANGLES IN THREE SQUARES

1. The angle c=45°, because it is the angle between the diagonal and the side of square.

2. I mark points on the diagram, which in essentally to name angles.

3. a) The angle ∠ CAE is *a*, ∠BDA is *b*.
   b) The angle∠DCA is symmetric with the angle ∠CAE (alternate angles), so $\angle DCA = a$.
   c) The angle $\angle BCD = b$.
   d) The angle $\angle ABF \cong \angle CBG = b$
   e) $\triangle$ BHC is right − angled, so $\angle CBH = 90° - b$
4. $\angle BCA = a{+}b$
   We have to prove, that $a + b = c = 45°$
5. In △ ABC the line segments AB and BC are symmetric. AB ≅ BC, this is why △ ABC is isosceles, so is ∠BAC ≅ ∠BCA. ∠BAC= a + b.
6. The equation for angles in △ ABC:

$$180° = \angle ABC + \angle BAC + \angle ACB$$
$$180° = ((90° - b) + b) + (a + b) + (a + b)$$
$$180 \ = 90° + (a+b) + (a+b)$$
$$180° = 90° + 2 \cdot (a+b)$$
$$180° - 90° = 2 \cdot (a + b)$$
$$90° = 2 \cdot (a + b)$$
$$90° : 2 = a + b$$
$$\underline{45° = a + b}$$

The sum of angles a and b in 45°. And angle c is 45° *too*.
$a + b = c$