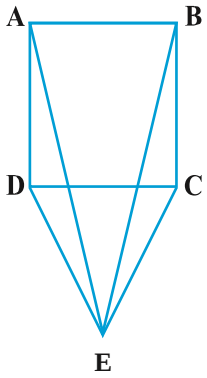
Exercise 7.3

Question 3:

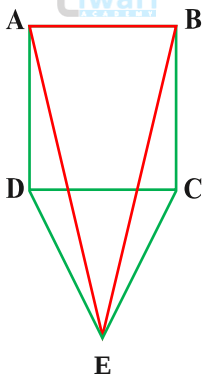
CDE is an equilateral triangle formed on a side CD of a square ABCD. Show that ΔADE ≅ ΔBCE.



Answer 3:

Given: CDE is an equilateral triangle and ABCD is square.

To Prove: ΔADE ≅ ΔBCE.



Proof: ABCD is square [∵ Given]

⟹ ∠ADC = ∠BCD = 90° … (i) [∵ Angles of square]

CDE is an equilateral triangle

⟹ ∠EDC = ∠ECD = 60° … (ii) [∵ Angles of equilateral triangle]

Adding equations (i) and (ii), we get

∠ADC + ∠EDC = ∠BCD + ∠ECD = 90° + 60°

$\Rightarrow \angle ADE = \angle BCE = 150°$

Now, in ΔADE & ΔBCE

$AD = BC$	[∵ Opposite sides of a square]
$\angle ADE = \angle BCE$	[∵ Proved above]
$ED = EC$	[∵ Sides of an equilateral triangle]
$\Delta ADE \cong \Delta BCE$	[∵ SAS rule]

Hence Proved.