01 **ABCD is a parallelogram. From A, line $\overline{AE}$ is drawn perpendicular to $\overline{AB}$ and equal to $\overline{AD}$, E being on the opposite side of $\overline{AB}$ as D. From C, a line $\overline{CF}$ is drawn perpendicular to BC and equal to CD, F being on the opposite side of $\overline{BC}$ from D. Prove that the angles ADE, CDF are equal and that ∠EDF is a right angle.**

Your solution here:

02 **ABCD is a trapezium and P, Q are the mid-points of the diagonals AC and BD. Which of the following is equal to PQ ?**

(A) $\frac{1}{2}(AB)$ (B) $\frac{1}{2}(CD)$ (C) $\frac{1}{2}(AB-CD)$ (D) $\frac{1}{2}(AB+CD)$

Your solution here:

03 **ABCD and APCR are the two parallelograms with AC as the common diagonal. Prove that PBRD is a parallelogram.**

Your solution here:

04 **ABCD is a trapezium in which AB || CD. Which of the following is equal to $AC^2 + BD^2$?**

(A) $AD^2 + BC^2 - 2AB \cdot CD$ **(B)** $AD^2 + BC^2 + 2AB \cdot CD$

(C) $AD^2 - BC^2 + 2AB \cdot CD$ **(D)** $AD^2 - BC^2 - 2AB \cdot CD$

Your solution here:

05 **ABCD is a parallelogram. AB and AD are produced to P and Q respectively such that BP = AB and DQ = AD. Prove that P, C, Q lie on a straight line.**

Your solution here: