Nut and Bolt Drawing: Threaded Fastener Construction

Original tasks 1, 2 / independent work

Task 1

A bolt head has an across-flats width of 30 mm. Using the hypothetical proportion that head thickness is 0.7 times across-flats, calculate the head thickness. Then state how many thread spaces result from a 45 mm threaded length with a 3 mm pitch.

Task 2

A nut has an across-flats width of 18 mm. Calculate the across-corners width using the hypothetical formula across-corners = across-flats divided by cosine of 30 degrees (0.866). If the nut thickness is 12 mm and the shaft diameter is 10 mm, state the side-view rectangle dimensions for the nut.

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Original tasks 3, 4 / independent work

Task 3

A bolt has a shaft diameter of 12 mm and a threaded length of 24 mm. Choose a hypothetical pitch of 3 mm. Calculate the number of thread spaces and the length of each space. Then describe how the threaded end appears in end view.

Task 4

A matched nut and bolt have an across-flats width of 20 mm and a shaft diameter of 14 mm. The nut thickness is 14 mm and the bolt head thickness is 14 mm. State the side-view dimensions of the nut and head, and explain one check to confirm they mate correctly.