**Summary:**

>100 000 variations. Cumulative frequency of grouped data. Median and IQR

**Question:**

The test results of <EFOFEX>
id:fxe{faef1462-1531-4d33-8313-f1477d2b6cb9}
FXGP:DP-nm46UUT
FXData:

</EFOFEX> students were recorded. The table below shows the student’s grouped marks.

1. Complete the table by calculating the cumulative frequencies.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Score (s) | <EFOFEX> id:fxe{9db4c399-4744-4ab0-af94-910c4f1a946b}  FXData:  </EFOFEX> | <EFOFEX> id:fxe{c2d99f68-2cd6-42ea-bc8e-64ec7627aba5}  FXData:  </EFOFEX> | <EFOFEX> id:fxe{50471ae9-1faf-43a5-9fdb-7319e161636c}  FXData:  </EFOFEX> | <EFOFEX> id:fxe{410b96aa-72ae-48d8-bc0a-0cb89660be80}  FXData:  </EFOFEX> | <EFOFEX> id:fxe{44109aba-e7f0-499b-8c71-6cfa22534a1e}  FXData:  </EFOFEX> | <EFOFEX> id:fxe{a773863f-56ed-412b-8a80-da661d50d800}  FXData:  </EFOFEX> |
| Frequency | <EFOFEX> id:fxe{0dee75dd-d745-4d39-986a-bed5fbfdfe28} FXGP:DP-nm46UUT FXData:  </EFOFEX> | <EFOFEX> id:fxe{ef2b03b0-c0cd-43c9-a271-74d910ef7644} FXGP:DP-nm46UUT FXData:  </EFOFEX> | <EFOFEX> id:fxe{e0b36c0e-56ca-47fd-af4b-03ef54b85fb5} FXGP:DP-nm46UUT FXData:  </EFOFEX> | <EFOFEX> id:fxe{c64bbdf4-6432-4a9b-ade3-3820aa2b25ea} FXGP:DP-nm46UUT FXData:  </EFOFEX> | <EFOFEX> id:fxe{402efdd3-c3af-4ac3-8ed1-4cf43ede568e} FXGP:DP-nm46UUT FXData:  </EFOFEX> | <EFOFEX> id:fxe{19be5489-3ffc-42b7-a740-e69cf4d6c383} FXGP:DP-nm46UUT FXData:  </EFOFEX> |
| Cumulative Frequency |  |  |  |  |  |  |

1. On the following axes, draw a smooth cumulative frequency curve to illustrate this information.

<EFOFEX>
id:fxd{d706276a-684f-4a5a-a3d6-1244efdb452b}
FXGP:DP-nm46UUT
FXData:

</EFOFEX>

1. Use your graph to find the lower and upper quartile scores.
2. Find the interquartile range of the scores.
3. Given that <EFOFEX>
   id:fxe{bb8e0419-9f86-4832-a5cd-15ab3329643b}
   FXGP:DP-nm46UUT
   FXData:

   </EFOFEX> of the students passed the test, use your graph to estimate the pass mark.

**Solution:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Score (s) | <EFOFEX> id:fxe{9db4c399-4744-4ab0-af94-910c4f1a946b}  FXData:  </EFOFEX> | <EFOFEX> id:fxe{c2d99f68-2cd6-42ea-bc8e-64ec7627aba5}  FXData:  </EFOFEX> | <EFOFEX> id:fxe{50471ae9-1faf-43a5-9fdb-7319e161636c}  FXData:  </EFOFEX> | <EFOFEX> id:fxe{410b96aa-72ae-48d8-bc0a-0cb89660be80}  FXData:  </EFOFEX> | <EFOFEX> id:fxe{44109aba-e7f0-499b-8c71-6cfa22534a1e}  FXData:  </EFOFEX> | <EFOFEX> id:fxe{a773863f-56ed-412b-8a80-da661d50d800}  FXData:  </EFOFEX> |
| Frequency | <EFOFEX> id:fxe{3b790ddd-79d1-4bb7-9e2e-12cd238a5cda} FXGP:DP-nm46UUT FXData:  </EFOFEX> | <EFOFEX> id:fxe{a5bb86aa-630e-4262-8418-53ecbc17a188} FXGP:DP-nm46UUT FXData:  </EFOFEX> | <EFOFEX> id:fxe{fe0529d4-9f2a-485f-9fc6-80223c24f1d8} FXGP:DP-nm46UUT FXData:  </EFOFEX> | <EFOFEX> id:fxe{7803d760-fd57-43b3-866a-8d8e24a19996} FXGP:DP-nm46UUT FXData:  </EFOFEX> | <EFOFEX> id:fxe{6173afc2-6edf-48be-a13a-d438d38a0b38} FXGP:DP-nm46UUT FXData:  </EFOFEX> | <EFOFEX> id:fxe{384ab622-96b5-40de-8b32-eb4dc7a51073} FXGP:DP-nm46UUT FXData:  </EFOFEX> |
| Cumulative Frequency | <EFOFEX> id:fxe{9f7b41f4-7599-4fe7-a4d4-d34c02a4a0fc} FXGP:DP-nm46UUT FXData:  </EFOFEX> | <EFOFEX> id:fxe{7485e349-f18c-4937-a020-938388c70c93} FXGP:DP-nm46UUT FXData:  </EFOFEX> | <EFOFEX> id:fxe{a8c9d149-a7b2-4d59-adf9-c3a07badf018} FXGP:DP-nm46UUT FXData:  </EFOFEX> | <EFOFEX> id:fxe{f22eb1ba-4e20-4f8d-b5ae-0329758263b9} FXGP:DP-nm46UUT FXData:  </EFOFEX> | <EFOFEX> id:fxe{88dda2b4-39b6-405f-a10c-b5fcbed74577} FXGP:DP-nm46UUT FXData:  </EFOFEX> | <EFOFEX> id:fxe{4adfe1ff-ec33-4c50-8de1-3fd1d148920f} FXGP:DP-nm46UUT FXData:  </EFOFEX> |

<EFOFEX>
id:fxd{a65ad7ff-d7ab-4dee-8b9a-4a4d840d0c12}
FXGP:DP-nm46UUT
FXData:

</EFOFEX>

<EFOFEX>
id:fxd{68228e39-c60e-43ff-9043-6dd4943060fd}
FXGP:DP-nm46UUT
FXData:

</EFOFEX>

From graph, upper quartile is approximately <EFOFEX>
id:fxe{4c4a3a37-a5ba-4e78-adad-fb4474104d9e}
FXGP:DP-nm46UUT
FXData:

</EFOFEX> and lower quartile is approximately <EFOFEX>
id:fxe{d5152f6f-79d4-4c53-bde3-059aa83e33ce}
FXGP:DP-nm46UUT
FXData:

</EFOFEX>. (Note that this graph uses no smoothing. If the student has smoothed the graph, you need to adjust these values to suit the student’s work)

1. The interquartile range is approximately <EFOFEX>
   id:fxe{a9ce2ea3-05d4-4a20-9861-63eb03545d06}
   FXGP:DP-nm46UUT
   FXData:

   </EFOFEX>
2. The pass mark is approximately <EFOFEX>
   id:fxe{45da37e3-cf26-4995-a326-bf7396b68817}
   FXGP:DP-nm46UUT
   FXData:

   </EFOFEX>