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| **Séquence :** | **Classe :** | **Grand sujet :** | **Thématique :** |
| 10 | 1BP | Vie sociale et loisirs | Préparer une compétition sportive |
| **Question clé** |  | **Quel athlète faut-il sélectionner pour participer au marathon de New York 2020 ?** | |
| **Domaine :** |  | **Module :** | **Connaissance :** |
| Statistiques & Probabilités | | 1.1. Statistiques | Diagramme en boite à moustaches |

Vous êtes l’entraineur d’un club d’athlétisme des Hauts de France, et votre club a eu gratuitement un engagement pour courir au marathon de New York de novembre 2020.



Le président du club vous demande de sélectionner l’athlète qui est susceptible de représenter au mieux votre club à cette course. Il vous transmet les temps des deux candidats en lice pour ce marathon.

Voici les neufs derniers temps (en minutes) que ces deux coureurs ont effectués sur 10 kilomètres :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Résultats en minutes d’Usain | | | | |
| 41,1 | 42,3 | 37,2 | 43,5 | 40 |
| 40,9 | 38,5 | 39,8 | 38,2 |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Résultats en minutes de Karl | | | | |
| 36,8 | 38,4 | 42,5 | 41,3 | 42,1 |
| 37,8 | 42,7 | 38,8 | 41,1 |  |

Moi, je pense que ce sera Usain qui va être choisi, il a tellement

progressé !

Oh que non, Karl c’est le plus fort, il a réalisé le meilleur temps du club !

# Problématique : Selon vous, qui d’Usain ou de Karl est-il le plus

**judicieux de sélectionner pour participer au marathon de New York 2020 *?***

***(Bonus)Réaliser le budget prévisionnel de ce déplacement.*** *Afin de vous aider différents documents sont à votre disposition*

*avec les tarifs des vols, les hôtels/restaurants.*



1ère partie : Analyse de la situation et proposition d’une démarche de résolution

### Proposer une méthode de résolution qui permet de justifier le choix du candidat à sélectionner.

**1) Rédiger** votre hypothèse répondant à la problématique posée.

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Rédiger ce que vous pensez faire pour répondre à la problématique posée en précisant les notions et outils mathématiques à utiliser.

**Je pense utiliser :** (écrire les notions mathématiques et les outils mathématiques dont vous avez besoin)

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## **Je décris ma démarche :** (Indiquer toutes les actions à mettre en œuvre pour résoudre cette problématique en commençant vos phrases par des tirets suivis de verbes à l’infinitif)

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**Mon hypothèse sera vérifiée si \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_**

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2ème partie : démarche de résolution guidée

### Partie A : Détermination d’un indicateur statistique à tendance centrale : la moyenne

1. **Déterminer** les **moyennes** des temps obtenus par chaque athlète **à l’aide de la fonction statistique de**

### la calculatrice.



**Coupe de pouce :**





1. **Indiquer** ci-dessous les moyennes **arrondies au dixième**.



𝑥̅ Usain  ……………

𝑥̅ Karl  ……………

1. L’indicateur statistique « moyenne » est-il suffisant pour sélectionner l’athlète le plus performant ? **Justifier** la réponse.



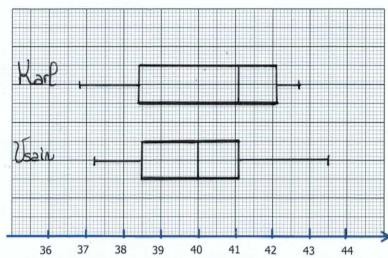
### Partie B : Comparaison des performances de chaque athlète



Le président du club a représenté les résultats des neufs derniers temps effectués par Usain et Karl par deux diagrammes en boite à moustaches.

1. À partir des deux diagrammes en boite à moustaches, **compléter** le tableau ci-dessous **en arrondissant** les résultats au **dixième**.





|  |  |  |
| --- | --- | --- |
|  | Usain | Karl |
| Minimum : |  |  |
| Q1 : |  |  |
| Médiane : |  |  |
| Q3 : |  |  |
| Maximum : |  |  |
| Étendue : |  |  |
| Écart interquartile : |  |  |

1. Quel athlète parait **le plus performant** pour représenter votre club à l’épreuve du marathon de New York ?

### Justifier la réponse.





**Partie C : Comparaison des performances de chaque athlète**



1. Votre **hypothèse de départ** (question 1) est-elle confirmée ? \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_

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1. **Proposer** au président de votre club, votre choix de sélection de l’athlète. **Argumenter** en **utilisant *les résultats obtenus*** et un ***vocabulaire adapté***.

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**Bonus : Réaliser le budget prévisionnel de ce déplacement**



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L’athlète étant choisi, il faut désormais réaliser un **budget prévisionnel** afin de réserver l’hôtel ainsi que la compagnie aérienne choisis.

Le président du club a accordé un budget maximum pour le voyage de **4 500€.** Sachant que bien évidemment vous serez du voyage, en tant qu’entraineur de l’athlète et que **l**es frais de restauration seront pris en charge par l’athlète et vous-même.

Quel hôtel choisir, quelle compagnie aérienne choisir, et combien de jours pourrez-vous rester à New York ?

* 1. Quels sont les critères demandés à respecter pour organiser le voyage ?

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* 1. Rédiger votre résolution à cette problématique à l’aide de la feuille ci-dessous.

Synthèse de votre étude.

(

Rédiger des phrases correctes et précises, en expliquant votre raisonnement)

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