**EST-CE-QUE LA MASSE VOLUMIQUE EST UNE GRANDEUR PHYSIQUE ?**

**Objectifs :**

|  |  |
| --- | --- |
| J**e suis capable de :** | **Je connais ou je sais:** |
| * Reconnaître et nommer un solide usuel. * Calculer des Volumes. * Reconnaître une situation de proportionnalité et déterminer la fonction linéaire qui la modélise. | * Les solides usuels : le cube, le pavé droit, le cylindre. * Les formules du volume du cube, du pavé droit et du cylindre. * La masse d’un corps est liée à son volume par la relation : ρ = |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  | | --- | | C1 s’approprier | |  |  |  | | --- | | C1 s’approprier | |  |  |  | | --- | | C1 s’approprier | |  |  |  | | --- | | C3 : réaliser | |  |  |  | | --- | | C1 s’approprier | |  |  |  | | --- | | C3 : réaliser | |  |  |  | | --- | | C1 s’approprier | |  |  |  | | --- | | C3 : réaliser | |  |  |  | | --- | | C1 s’approprier | |  |  |  | | --- | | C3 : réaliser | |  |  |  | | --- | | C3 : réaliser | |  |  |  | | --- | | C3 : réaliser | |  |  |  | | --- | | C2 Analyser /  raisonner | |  |  |  | | --- | | C5 communiquer | |  |  |  | | --- | | C3 : réaliser | |  |  |  | | --- | | C1 s’approprier | |  |  |  | | --- | | C2 Analyser /  raisonner | |  |  |  | | --- | | C4 valider | |  |  |  | | --- | | C5 : communiquer | |  | | **Qu’est ce qu’une grandeur physique?**  **Rechercher** dans votre cours de co-intervention ce qu’est une grandeur physique et **écrire** la définition :  …………………………………………………………………………………………………………………………….  …………………………………………………………………………………………………………………………….  …………………………………………………………………………………………………………………………….  …………………………………………………………………………………………………………………………….  **La masse et le volume sont-ils des grandeurs physiques ?**  …………………………………………………………………………………………………………………………….  ………….…………………………………………………………………………………………………………………  **Activité 1 : Calculer le volume de différents objets en acier**  **Etude de différent objets en acier :**  **Mesurer puis calculer** le volume des objets, pour compléter les tableaux ci-dessous.  **Objet en acier n°5**  Ce solide est un ………………………………………… donc la formule pour calculer son volume sera …………………………………   |  |  | | --- | --- | | **Mesure**  **en cm** | **Volume**  **En cm3 arrondi à l’unité \*** | |  |  |   **\* exemples d’arrondi à l’unité : 49,8=49 et 57,3=57**  **Objet en acier n°8**  Ce solide est un ………………………………………… donc la formule pour calculer son volume sera …………………………………   |  |  | | --- | --- | | **Mesure**  **en cm** | **Volume**  **En cm3 arrondi à l’unité** | |  |  |   **Objet en acier n°9**  Ce solide est un ………………………………………… donc la formule pour calculer son volume sera …………………………………   |  |  | | --- | --- | | **Mesure**  **en cm** | **Volume**  **En cm3 arrondi à l’unité** | |  |  |   **Objet en acier n°16**  Ce solide est un ………………………………………… donc la formule pour calculer son volume sera …………………………………   |  |  | | --- | --- | | **Mesure**  **en cm** | **Volume**  **en cm3 arrondi à l’unité** | |  |  |   Macintosh HD:Users:DomNCollin:Desktop:cours bureau:Capture d’écran 2017-09-04 à 15.01.27.png **Appel du professeur pour valider vos réponses.**  **Activité 2 : Masse des différents objets en acier**  **Peser** les différents objetspour **compléter** le tableau.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Objet en acier n°** | **5** | **8** | **9** | **16** | | **Masse**  **En g** |  |  |  |  |   Macintosh HD:Users:DomNCollin:Desktop:cours bureau:Capture d’écran 2017-09-04 à 15.01.27.png **Appel du professeur pour valider vos réponses.**  **Activité 3 : Est-ce-que la masse d’un objet dépend de son volume?**  **Je complète les colonnes masse et volume à l’aide des activités 1 et 2, puis je calcule pour compléter la dernière colonne du tableau.**   |  |  |  |  | | --- | --- | --- | --- | | **Objet en acier n°** | **Volume (V)**  **En cm3** | **Masse (m)**  **En g** | **arrondir au dixième\*** | | **5** |  |  |  | | **8** |  |  |  | | **9** |  |  |  | | **16** |  |  |  |   **\*Exemples d’arrondi au dixième : 7,789= 7,8 et 7,838 = 7,8**  **Je complète : Le rapport est ……………………….., alors il y a une ………………………. entre la masse et le volume.**  **Le coefficient de ………………………………………. est ………...**  Macintosh HD:Users:DomNCollin:Desktop:cours bureau:Capture d’écran 2017-09-04 à 15.01.27.png **Appel du professeur pour valider vos réponses.**  **Tracer la courbe de la masse en fonction du volume**  Pour cela :  J’entoure la bonne réponse : L’abscisse (l’axe des *x , y* ) représente *la masse , le volume* où 2 carreaux représentent 5 *g , cm3*. L’ordonnée (l’axe des *x , y* ) représente *la masse , le volume* où 2 carreaux représentent 50 *g , cm3*.  Macintosh HD:Users:DomNCollin:Desktop:cours bureau:Capture d’écran 2017-09-04 à 15.01.27.png **Appel du professeur pour valider vos réponses.**  Je **complète** les axes du graphique et je **place** les points à l’aide du tableau ci-dessus pour les 4 objets.  …………………..   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   0 ………………  Observation du graphique :  …………………………………………………………………………………………………………………………….  ………….…………………………………………………………………………………………………………………  Macintosh HD:Users:DomNCollin:Desktop:cours bureau:Capture d’écran 2017-09-04 à 15.01.27.png **Appel du professeur pour la représentation graphique et votre observation.**  **Interprétation du graphique et du tableau : Je complète :**  La représentation graphique de la masse en fonction du volume est une ……………… qui passe par l’……………………. du repère, je retrouve une situation de ………………………… entre la masse et le volume.  Le rapport  correspond sur la droite au …………………………….. ……………………………. qui a pour valeur ……………………, en sciences et en technologie, ce nombre représente la …………………………… ……………………………. De symbole …….. (rhô)  La ………………………… ……………………. de ces objets en acier est …………. ….../ …….  En mathématiques, une droite passant par l’origine du repère représente une fonction ……………………. de la forme *f(x)= ax,* où *a* est le coefficient directeur de cette droite. Elle modélise une situation de proportionnalité, alors on peut écrire la relation : m= ……….V  Macintosh HD:Users:DomNCollin:Desktop:cours bureau:Capture d’écran 2017-09-04 à 15.01.27.png **Appel du professeur pour valider vos réponses.**  **En vous aidant de l’interprétation, répondre à la question suivante :**  **Est-ce-que la masse d’un objet dépend de son volume? Justifier votre réponse.**  …………………………………………………………………………………………………………………………….  ………….…………………………………………………………………………………………………………………  …………………………………………………………………………………………………………………………….  ………….…………………………………………………………………………………………………………………  **Répondre à la question initiale en vous aidant de la première question de ce travail sur les grandeurs physiques et de celle ci-dessus:**  **EST-CE-QUE LA MASSE VOLUMIQUE EST UNE GRANDEUR PHYSIQUE ?**  …………………………………………………………………………………………………………………………….  ………….…………………………………………………………………………………………………………………  …………………………………………………………………………………………………………………………….  ………….…………………………………………………………………………………………………………………   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | C1 | | C2 | | C3 | | C4 | | C5 | | |  |  |  |  |  |  |  |  |  |  |   **Prévoir une annexe avec les documents nécessaires selon le niveau des élèves.** |