

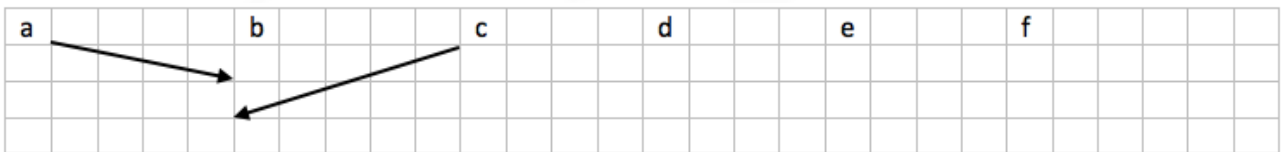
## Column Vectors

### Starter

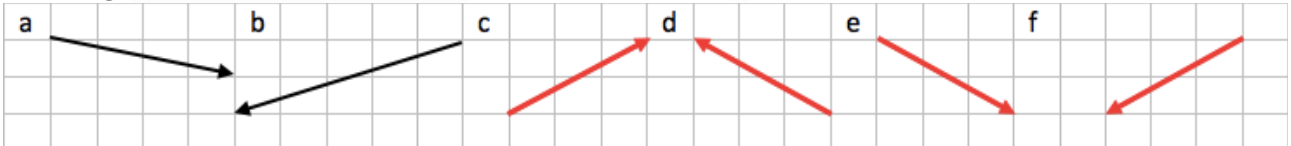
1. **(Review of last lesson)** A hemisphere has a base diameter of 24 cm. Find the exact value of the surface area of the hemisphere (i.e. give your answer in terms of  $\pi$ ).

**Working:** Base radius = 12  
 Surface area of hemisphere =  $3\pi r^2 = 3 \times \pi \times 12^2 = 432\pi \text{ m}^3$

**E.g. 1** Draw these vectors on the grid: (c)  $\begin{pmatrix} 3 \\ 2 \end{pmatrix}$  (d)  $\begin{pmatrix} -3 \\ 2 \end{pmatrix}$  (e)  $\begin{pmatrix} 3 \\ -2 \end{pmatrix}$  (f)  $\begin{pmatrix} -3 \\ -2 \end{pmatrix}$



### Working:



**E.g. 2** Find the magnitude of: (a)  $\begin{pmatrix} -4 \\ 2 \end{pmatrix}$  (b)  $\begin{pmatrix} 3 \\ -3 \end{pmatrix}$

**Working:** (a)  $\left| \begin{pmatrix} -4 \\ 2 \end{pmatrix} \right| = \sqrt{(-4)^2 + 2^2} = \sqrt{20} = \sqrt{4 \times 5} = 2\sqrt{5}$   
 (b)  $\left| \begin{pmatrix} 3 \\ -3 \end{pmatrix} \right| = \sqrt{3^2 + (-3)^2} = \sqrt{18} = \sqrt{9 \times 2} = 3\sqrt{2}$

**Video:** [Column vectors](#)

[Solutions to Starter and E.g.s](#)

### Exercise

9-1 class textbook: p333 M10.12 Qu 1-4  
 A\*-G class textbook: p296 E10.1 Qu 1-4  
 9-1 homework book: p117 M10.12 Qu 1-4  
 A\*-G homework book: p86 E10.1 Qu 1-4

**[Homework book answers \(only available during a lockdown\)](#)**