Exercise 3.2 Moments and stability

In this exercise, you will practise using ideas about the turning effect of a force, centre of mass and stability. These are important ideas which we use to explain why things happen.

In physics, we use words that are carefully defined. They are often related to words which we use in everyday speech.

1 In each sentence below, there is a word printed in bold. For each of these words, write an alternative word or phrase that means the same. You might need to use a dictionary.

a It was a **momentous** day when we reached the top of Mount Everest.

Alternative word or phrase: .....

b After the accident I woke up with a **massive** lump on my head.

Alternative word or phrase: .....

c The baby was very **unstable** because she had just learnt to walk.

Alternative word or phrase: .....

2 Each of the words in bold has a physics word hidden in it. Write these words on the line below.

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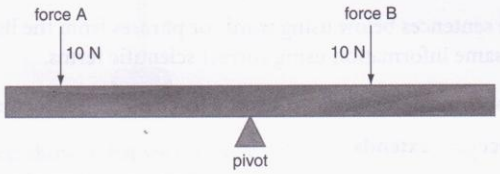
3 Copy these physics words into the table below, in the space next to its definition.

Physics word	Definition
	the amount of matter in an object
	the turning effect of a force
	describes an object which will not easily fall over

4 We can use the ideas of *centre of mass* and *turning effect* to explain why some objects are more stable than others.

- The centre of mass of an object is the point at which we can consider its weight acting. An object with a low centre of mass and a wide base will be stable (less likely to fall over).
- A force can make an object turn (rotate). The bigger the force and the further it is from the pivot, the greater its turning effect.

We use the word *because* to introduce an explanation – *why* something happens. Complete the statements below so that the second half explains the first half.



a Force A has a greater turning effect about the pivot than force B because …

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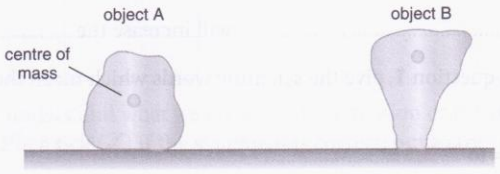

b Object A is more stable than object B because …

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