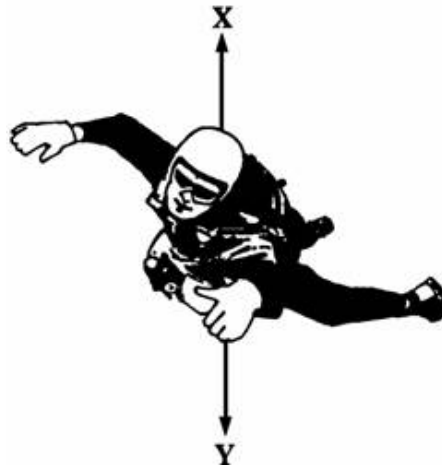


**Q1.** A sky-diver jumps from a plane.

The sky-diver is shown in the diagram below.



(a) Arrows **X** and **Y** show two forces acting on the sky-diver as he falls.

(i) Name the forces **X** and **Y**.

**X** .....

**Y** .....

(2)

(ii) Explain why force **X** acts in an upward direction.

.....

.....

(1)

(iii) At first forces **X** and **Y** are unbalanced.

Which of the forces will be bigger? .....

(1)

(iv) How does this unbalanced force affect the sky-diver?

.....

.....

(2)

(b) After some time the sky-diver pulls the rip cord and the parachute opens.

The sky-diver and parachute are shown in the diagram below.



After a while forces **X** and **Y** are balanced.

Underline the correct answer in each line below.

Force **X** has

*increased / stayed the same / decreased.*

Force **Y** has

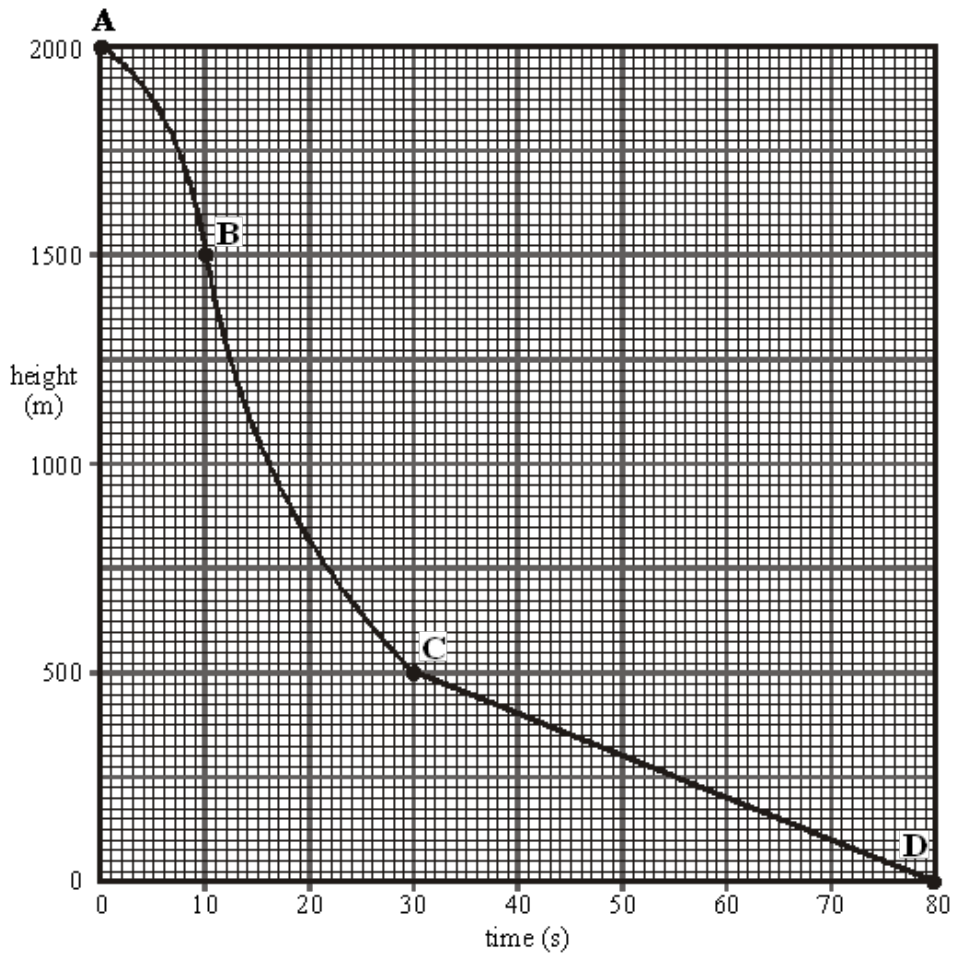
*increased / stayed the same / decreased.*

The speed of the sky-diver will

*increase / stay the same / decrease.*

(3)

(c) The graph below shows how the height of the sky-diver changes with time.



(i) Which part of the graph, **AB**, **BC** or **CD** shows the sky-diver falling at a constant speed?

.....

(1)

(ii) What distance does the sky-diver fall at a constant speed?

Distance ..... m

(1)

(iii) How long does he fall at this speed?

Time ..... s

(1)

(iv) Calculate this speed.

.....  
.....  
.....

Speed ..... m/s

(2)

**(Total 14 marks)**

