8.8 Particles of masses $2M$, m and M are respectively at points A, B and C with AB = ½ (BC). m is much-much smaller than M and at time $t = 0$, they are all at rest (Fig. 8.1).
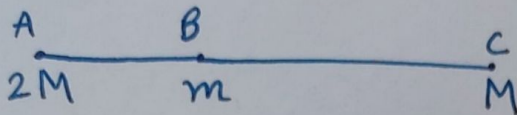At subsequent times before any collision takes place:

```
A              B                        C
•              •                        •
2M             m                        M
```

Fig. 8.1

(a) m will remain at rest.
(b) m will move towards M.
(c) m will move towards $2M$.
(d) m will have oscillatory motion.

8)

A   B   C

2M   m   M

$AB = \ell$

$BC = 2\ell$

Force on B due to A $\Rightarrow \dfrac{G \cdot 2M \cdot m}{\ell^2}$ — ①

"   "   "   "   " C $\Rightarrow \dfrac{G \cdot M \cdot m}{(2\ell)^2} = \dfrac{G M m}{4\ell^2}$ —②

$\therefore$ ① > ②

So, B will move towards A.   (C)