**Free body diagrams** show the magnitude and direction of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of the forces acting on an object.

Generally we represent the object as a box with the \_\_\_\_\_\_\_\_\_\_\_\_\_\_coming out from the centre, in the direction they are acting.

Remember that the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of the arrow indicates its relative magnitude.

Unit 4: Newton’s Laws **- FBDs**

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| --- | --- |
| Force | Description |
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1. A book is at rest on a table top.

2. A girl is suspended motionless from a bar which hangs from the ceiling by two ropes.

3. An egg is free-falling from a nest in a tree. Neglect air resistance.

4. A plane flies at a constant velocity (**Note**: there will be an applied force generated by the engines as well as a lift force provided by the wings).

5. A rightward force is applied to a book in order to move it across a desk with a rightward acceleration. Consider frictional forces. Neglect air resistance.

6. A rightward force is applied to a book in order to move it across a desk at constant velocity. Consider frictional forces. Neglect air resistance.

7. A college student rests a backpack upon his shoulder. The pack is suspended motionless by one strap from one shoulder.

8. A skydiver is descending with a constant velocity. Consider air resistance.

9. A force is applied to the right to drag a sled across loosely-packed snow with a rightward acceleration.

10. A football is moving upwards towards its peak after having been *booted* by the punter.

11. A car is coasting to the right and slowing down. Diagram the forces acting upon the car.