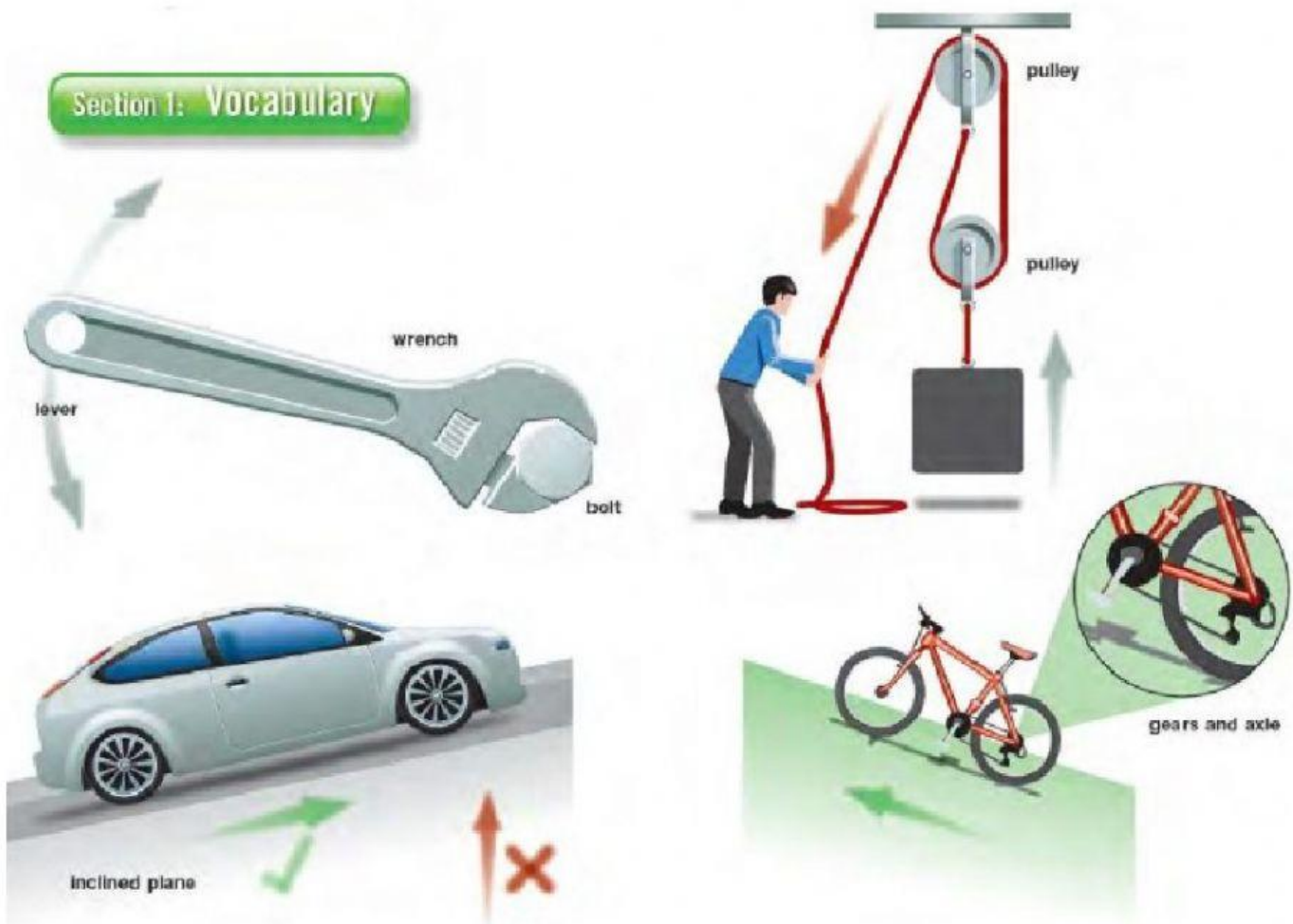


## Forces, loads and tools

1) Qué crees que significan las 3 palabras del título de esta clase?



2) Estudia estas nuevas palabras y marca su significado en español. Qué tipo de fuerzas puedes ver que estén siendo empleadas?

3)

**Read the text and look at the pictures.**

The human body has a lot of **energy** in it and it can **exert** a lot of **force** to move a **load** – to push things, to pull things, to lift things and to turn things. But sometimes the force required to do something is greater than the energy a human body can provide. When this happens we need to use a **tool** to move the load. A tool increases the distance between the force and the load. There is a simple rule of physics – if you increase the distance between the force and the load, you can reduce the force required to move it. To put it another way:

**SMALL FORCE + LARGE DISTANCE = LARGE FORCE**

For example, **wrenches** are used for tightening and loosening **bolts**. A wrench has a long

**handle**. This increases the distance between the force (from a human hand) and the load (the bolt), so we can tighten a bolt with only human energy. This is an example of a **lever**. Other simple tools are:

- the **pulley** – this increases the length of a rope and so increases the force we can exert by pulling on it, so we can lift a heavy crate from a ship.
- the **inclined plane** – this increases the distance that the load has to travel and so decreases the force we need to exert to move it, so we can push a car up a ramp.
- the **gear wheel and axle** – the gear wheel turns through a greater distance than the axle but moves the axle with more force — so we can pull our own weight up a steep hill on a bicycle.

**4) Busque el significado de estas palabras y también las del recuadro verbs/nouns**

Exert:

Crate:

Steep:

| Verbs    | Nouns  |
|----------|--------|
| put in   | nails  |
| take out | screws |
| hold     | bolts  |
| tighten  | holes  |
| loosen   | things |
| make     |        |