1. What is dry friction?

Dry friction resists relative lateral motion of two solid surfaces in contact. The two regimes of dry friction are 'static friction' between non-moving surfaces, and kinetic friction (sometimes called sliding friction or dynamic friction) between moving surfaces. The Coulomb friction may take any value from zero up to one, and the direction of the frictional force against a surface is opposite to the motion that surface would experience in the absence of friction. Thus, in the static case, the frictional force is exactly what it must in order to prevent motion between the surfaces; it balances the net force tending to cause such motion. In this case, rather than providing an estimate of the actual frictional force, the Coulomb approximation provides a threshold value for this force, above which motion would commence. This maximum force is known as traction. The force of friction is always exerted in a direction that opposes movement (for kinetic friction) or potential movement (for static friction) between the two surfaces. For example, a curling stone sliding along the ice experiences a kinetic force slowing it down. For an example of potential movement, the drive wheels of an accelerating car experience a frictional force pointing forward; if they did not, the wheels would spin, and the rubber would slide backwards along the pavement. Note that it is not the direction of movement of the vehicle they oppose; it is the direction of (potential) sliding between tire and road.

What is fluid friction?

Fluid friction occurs between fluid layers that are moving relative to each other. This internal resistance to flow is named viscosity. The viscosity of a fluid is described as its "thickness". Thus, water is "thin", having a lower viscosity, while honey is "thick", having a higher viscosity. The less viscous the fluid, the greater its ease of deformation or movement. All real fluids (except super fluids) offer some resistance to shearing and therefore are viscous. Examples of fluid friction are

* Water flowing through a tube. Its speed is minimum where water is in contact with tube material and maximum at the center.
* Viscosity of honey is another example of fluid friction.

1. Wedges

**A wedge is a** device that tapers to a thin edge, usually made of metal or wood, and used for splitting, lifting, or tightening, as to secure a hammer head onto its handle. Along with the lever, wheel and axle, pulley, and screw, the wedge is considered one of the five simple machines.

1. Square-Threaded screws

The square thread form is a common screw thread form, used in high load applications such leadscrews and jackscrews. It gets its name from the square cross-section of the thread. It is the lowest friction and most efficient thread form, but it is difficult to fabricate. The greatest advantage of square threads is that they have a much higher intrinsic efficiency than trapezoidal threads. Due to the lack of a thread angle there is no radial pressure, or bursting pressure, on the nut. This also increases the nut life.

1. Journal Bearings

A Journal Bearing is a comprehensive kind of bearing that contains a journal or shaft that freely rotates in a support with a shell or metal sleeve. In the bearing there are no rolling elements present. The construction and design of these bearings is very simple but the operation and theory is complicated. The Journal Bearing is designed in a plain or straight configuration along with a flange that accommodates the combination of axial and radial loads with the corrosion resistant coatings and materials. These are offered in a water resistant and high temperature series.

The Journal Bearing includes a babbitt, sleeve and shell bearing. The shell journal bearings only accept the radial loading that is perpendicular to the shaft, usually because of the downward load or weight of the shaft. The axial or thrust loads with the axis of shaft can be accommodated by the Journal Bearings which are designed for this purpose. Babbitt Journal Bearings are the softer metal layers that form a contact surface of metal on the bearing shell. Being softer metals, they can overlay the strong steel support shells. They are required to cushion the shells from hard rotating shafts.