8.5 Gears

Science understanding

Visual/Spatial Logical/Mathematical

Gears are wheels with teeth. These teeth mesh together to transfer rotational motion. The driving gear is attached to an axle and drives the interlocking gears, which are called driven gears. Different-sized gears can increase the speed of rotation or the force of rotation. Bevel gears change the plane of rotation by 90°; rack and pinion gears convert rotational motion into back and forth motion. Study the gear train shown in Figure 8.5.1.

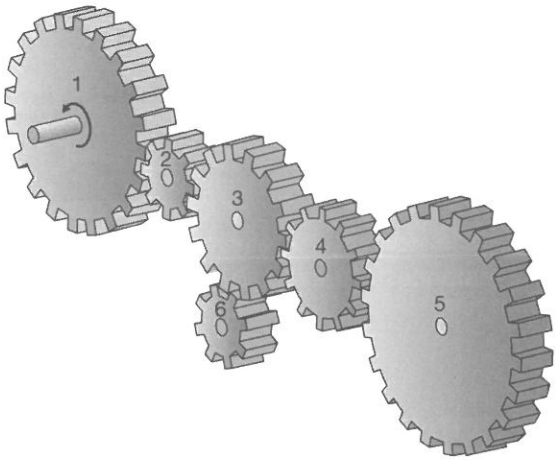

Figure 8.5.1

1 (a) **State** which gear is the driving gear. _____

(b) **Identify** the direction of rotation of each gear by drawing an arrow over each.

(c) **Identify** which gear/s will rotate the fastest. _____

(d) **Identify** which gear/s will rotate the slowest. _____

2 Study Figure 8.5.2.

(a) **Identify**:

(i) a bevel gear combination by circling it with a blue pen

(ii) a rack and pinion system by circling it with a red pen.

(b) If gear **a** turns in a clockwise direction, **deduce** the direction of rotation of:

(i) gear b _____

(ii) gear d _____

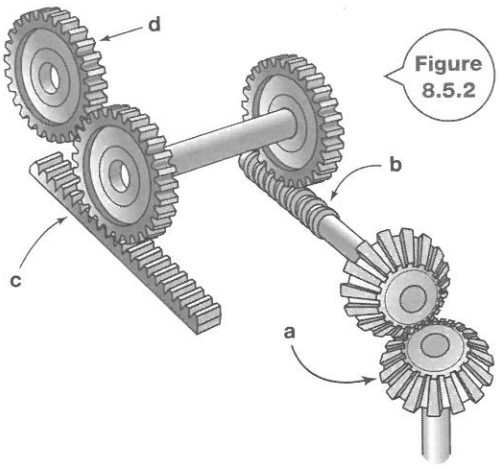

Figure 8.5.2