

In all drive systems there is friction which produces heat. This can cause the gears to expand which causes damage to the drive system. To help reduce this you can lubricate the system using oil or grease which in turn increases the efficiency of the drive system. Another option is to use bearings as these can be easily replaces when worn out instead of damaging and replacing the whole

Grease is used to lubricate the gear system within the drill.

(b) Describe a reason for lubricating the gear system.

Reduce wear on the gear system

Gears run smoother/quieter

Improve efficiency/battery life of the drill

Less heat/sound/energy losses

13. (continued)

Part of a drive mechanism used in the combine harvester is shown.



(c) Calculate the number of teeth on gear D.

 $MMR = \frac{Driven}{Driver} \times \frac{Driven}{Driver}$ Input Speed VR =Output Speed 15 50 D  $VR = \frac{3750}{250}$  $\frac{11}{1} = \frac{30}{10} \times \frac{3}{12}$  $15 = 5 \times \frac{D}{12}$ VR = 15:115 D 5 <sup>=</sup> 12  $3 \times 12 = D$ D = 36 teeth

1. A gear train is shown below



