Research and report

The following is a list of topics for written or oral reports.

The reports you will produce are *physics* based so you should explain all the physics concepts you use. You can include other information but your report must convey your understanding of the *physics* involved to your audience.

1 Investigate the equipment worn by scuba divers. Explain why each piece of equipment is necessary.

2 The rules governing the javelin event have changed greatly over the years. Competitors used to hold the javelin by the tail and whirl it in around horizontally before releasing it. This technique has since been banned. Investigate how the event conditions have changed and why these modifications were necessary.

3 Investigate how weight lifters perform the 'clean and jerk'.

4 Why does a frisbee fly better than a flat disk?

5 Investigate the different styles of kites people use.

6 The development of modern day track or playing surfaces - their advantages and disadvantages. You might consider the surfaces required for cycling, tennis, hockey, athletics or some other sport.

7 High jumping techniques in the last 50 years - advantages and disadvantages.

8 The physics of pole vaulting.

9 Skiing - the physics of the ski and the skier. You may wish to restrict this to either water skiing or snow skiing.

10 'Should we walk or should we run?' - the physics of each and the advantages and disadvantages.

11 'Skating - Starting, Stopping and Accelerating'. You may wish to restrict this to either ice skating or roller skating.

12 The design features for bikes and cyclists aimed at improving performances. You may wish to restrict your report to a consideration of only sprint bikes.

13 Maintaining the efficiency of the new car - basic maintenance techniques that will extend the life of the car.

14 The basic operation of the modern day engine.

15 Safety features for our cars - the physics behind the safety features which are now available.

16 Tyres - how they're made and the different types.

17 The Formula 1 Racing Car - the physics behind the design features that makes it different from the family car.

18 Sports shoes - why different designs are used for different sports.

19 The physics of long jumping.

20 The design of wheelchairs for normal use and the special modifications made for different types of wheelchair sports.

21 Diving under water - the effects of pressure

22 Roller-skates, roller-blades and skateboards - how friction affects their performance and how they are designed to minimise its effect.

23 Design of a solar car to achieve maximum performance from a given power input, as determined by a specified solar panel

24 Physics involved in the designing of restraining devices such as seat belts, air bags etc.

25 Physics of traffic accidents.

26 Investigate the design of the Formula 1 racing cars.

Items that may be considered: drag coefficient, aerofoils, braking systems, cooling systems, wet weather tyres vs 'slicks.'

27 How has the design of the bicycle varied over the years?

A comparison of the Penny Farthing through to the latest carbon fibre racing models. You may choose to include discussions about: solid wheels vs spoked, all terrain vs road bicycles, and the arguments for the wearing of helmets.

28 Investigate the difference between helmets worn by cyclists and motor cyclists.

You may choose to include discussions about the helmets worn by fighter pilots, sky divers and American 'grid iron' footballers depending upon the availability of information.