NAME:_____ DATE: _____ Physics

IB PHYSICS: Investigations Suitable for Planning Labs

1. Balloon blow
Investigate the relationship between the size of a balloon and the number of breaths required to inflate it.

2. Balloon shape
Investigate the physical properties of a balloon (pressure and volume).

3. Batteries and lemons
Cells can be easily produced using lemons or potatoes, along with electrolytes and electrodes of different metals. Plan an experiment to investigate factors affecting the voltage produced by such a cell.

4. Bicycle stopping
How, when riding a bicycle, is the stopping distance related to its speed?

5. Bouncing ball
Every time a ball bounces on a surface, there is a loss of mechanical energy. Several factors affect this loss. Plan an experiment to investigate how the loss of mechanical energy is affected by these factors.

6. Bubbles
Investigate the physical properties of bubbles as they flow through a soft drink (size and level in fluid).

7. Bungee jump
Bungee jumping can be simulated in a laboratory experiment in different ways. Plan an experiment to investigate the factors affecting the safety of a bungee jump.

8. Candle power
Determine the power output of a burning candle, or the power output of a Bunsen burner flame.

9. Cantilever
Investigate the factors that affect the declination of a cantilever.

10. Catapult energy
Design an experiment to investigate some variables affecting the energy stored in an elastic catapult (elastic/rubber band).

11. Copper sulfate
Investigate the effect of concentration on the conductivity of copper sulfate solution.

12. Craters
What effect does the velocity of impact have on the formation of craters in modelling clay?

13. Dominoes
Investigate the domino effect with a set of dominoes.

14. Drinking fountain
Investigate the factors affecting the distance travelled by the water from a hosepipe.

15. Electric charge
Using only sticky tape, investigate the properties of static electricity.

16. Electric motor
Investigate the factors affecting the efficiency of a small electric motor.

17. Electromagnetic strength
Build your own electromagnet, and investigate the factors affecting its strength.

18. Fluid resistance
Fluid resistance can be studied in a laboratory with different fluids and small balls falling through them. Investigate one factor affecting the terminal velocity of small balls falling through a fluid.

19. Heat and an electric current
Investigate the factors affecting the rate at which energy is dissipated in a wire carrying an electric current.

20. Index of refraction
Investigate the effect of salt concentration on the refractive index of water, or investigate the effect of temperature on the refractive index of water.

21. Lift/elevator
Investigate the motion of a lift/elevator.

22. Margarine tub
Investigate one factor affecting the distance travelled by a weighted margarine tub when it is propelled along a runway by a stretched rubber band.

23. Mixing coffee and milk
Investigate the effects of mixing milk with coffee. What factors affect the cooling of hot coffee when you add cold milk?

24. Slinky freefall
Investigate the physics of a free-falling slinky spring.

25. Snow/ice
Investigate a thermal property of snow or ice.

26. Squash ball and temperature
Investigate the effect of temperature on the performance of a squash ball.

27. Swimming pool depths
Submerge balls of various sizes at the bottom of a school's swimming pool. Investigate any relationship between the size or mass of the ball and the time it takes it to rise to the surface when released.

28. Transformer
Investigate the factors affecting the efficiency of a small transformer.

29. Water pouring out
Picture a container with water. A hole at a certain height, and of a certain size, is cut into it. The water will come out and what we get is projectile motion. Plan an experiment to investigate the factors influencing the distance travelled by the water from this hole.

30. Water wave speed and salt concentration
Investigate the effect of salt concentration on the speed of surface waves in a ripple tank.

31. Water wave speed with depth
Investigate factors that affect the speed of water waves in a ripple tank.

Other general topics…….

Wave Optics
The Doppler Effect
Aerodynamics
The effect of obstacles on wind speed
Radioactive decay
Energy sources for the future
Investigating the behaviour of materials under tension
Rates of cooling in porridge (!)
Collisions
Pendulums
How does surface tension vary with temperature?
The physics of a chicken egg
Solar energy
Water power
Variation of resisting forces with velocity in fluids