

**THEME : SCIENCE in the World around us**  
**28 Sept 2009**

7:00	<p><b><u>Opening Parade ()</u></b></p> <ul style="list-style-type: none"> <li>- DIBS</li> <li>- Flag &amp; Escorts</li> </ul>
7.10	<p><b><u>Game - Follow-Ball</u></b> (while bases are being set up)</p> <p>Cubs stand in a circle, and one is given a ball. The cub with the ball throws it to ANY other cub, and having thrown, he/she crouches down and cannot be thrown the ball again. This continues until all are crouching.</p> <p>Now all stand and the ball is to be thrown to exactly the SAME SEQUENCE of cubs (no crouching this time). Tests memory and throw/catch skills.</p> <p>The next game starts with a new sequence - they cannot throw to the same person in the new game as they did in the previous one.</p> <p>If they are doing well, a 2<sup>nd</sup> ball can be added.</p>
7.20	<p><b><u>Science Activities</u></b></p> <p>See below</p>
8.20	All cubs to assist with packing up in time for Parade
8.25	<p><b><u>Closing Parade</u></b></p> <ul style="list-style-type: none"> <li>-DIBS</li> <li>-Flag</li> </ul>

**ACTIVITY NOTES.**

Cubs divide into 4 groups. 4 bases to be set up - one leader per base. Allow about 12-15 minutes per rotation. Each leader to state the purpose of the base, describe what the cubs will learn at that base, how that relates to them, and describe what they will do.

#	BASE	ACTIVITY	SECTN	MATERIALS LIST
1	Cub Coke	Making Sherbet	G10b	Citric Acid, Bi-carb of Soda, Icing Sugar, (jelly), plastic cups and teaspoons/stir-sticks.
1	Sowing	Growing Seeds	B10a	1 open container per cub, cotton wool, mustard seeds
2	No Guessing	Estimation	B10d S10d	Rule, long tape measure, rope
3	Time Bombs	Making Pop-Rockets	G10b	Kodak film canisters, water, "Eno", cup, teaspoon.
4	Sound Effects	How sound Moves	G10d (B4c)	Balloons, Radio, Timber board, thick (box) cardboard, tealight/Candle, matches, 1.5L plastic bottle x2

*This program utilises 4 bases to split a large pack into smaller, more manageable groups. Each base should end up with about 5-5 cubs at a time.  
 Each activity os on a new page so each leader/parent has a set of instructions for their activity.*

## **1b. CUB COKE** (Sherbet Making)

**Purpose:** the chemistry of food. Mixing the ingredients changes the whole qty. Once mixed, they cannot be separated back to the basic ingredients. Compare this with mixing veges in a sucepan of water. Even after cooking, the corn, carrot & brocolli are all still separate, and can be taken back out individually, showing it is a physical change, not a chemical one like the Sherbet is.

Qty per cub:

½ tsp of citric acid

¼ tsp Bi-carb of Soda

3 Tsp Icing Sugar

½ tsp of jelly crystals if desired.

Each cub to place the amt of ingredient into their own cup, and stir.

A paddle-pop stick each is better than a teaspoon to stir & eat it with too.

Mix in the cup and feel free to eat immediately

### **1a. A TIME TO SOW and a TIME TO REAP** (“Planting” seeds)

**Purpose:** To grow some seeds and observe what happens. Cubs can report back next week on how their seeds are growing and maybe we can discover out which spot at home was the best

Any small containers will do for this, about 200-500ml in size. Best size is about 40mm deep an 80mm Sq. (we used plastic drink tumblers).

Per cub:

1 plastic container

Enough cotton wool to cover the base of the container

Seeds – probably 30 or so (depends on container size really)

First – each cub to write their name on the side of their container.

Each cub to pull the cotton apart a bit to loosen its fibers and spread it out to about twice it’s size. Enough cotton is needed to cover the base of the container about 5mm thick minimum.

Sprinkle some seeds on it and add some water. A spray bottle is actually best for this – it needs to be damp, not soaking. During the week(s) following, water will need to be added to keep them damp.

For the first week, they should be kept in a dark spot until they sprout, then moved into the sun.

Mustard seed sprouts can be cut off after a week or so and eaten on a sandwich like bean sprouts can as well.

Take home and report back next week on how it is going. How many cubs are game to try eating them? (note: the sprouts are not hot like mustard is.)

## **2. NO GUESSING** (Estimation)

*IF you have enough leaders/parents helping, then this should be split into 2 sub-groups – Bronze doing the first item, and silver and gold doing the second, or it can be made into two separate bases instead.*

*We did find that there was not time to have all the cubs do both parts of this, so splitting is necessary in one of the two ways suggested.*

**Purpose:** to develop skills in estimation.

### **Section One (B10d)**

Each cub needs to measure their hand and foot (shoes on is fine).

Using these two known measurements, estimate

1. the width of the scout hall
2. the height of one of the other cubs in their group.

WRITE their estimates on a sheet of paper.

Using the tape measure, confirm these estimates.

### **Section Two (S10b)**

Estimate

1. the length of the scout hall
2. the distance from the exit door to the front (car) gate
3. The height of the flagpole outside (behind the toilets)

Using a rope of known length, measure 1 & 2.(maybe #3 will need to be known by the leader in advance)

### **3. TIME BOMBS** (Pop-Rocket (or time-bomb) making)

**Purpose:** Chemical reactions and the pressure of gas

Describe the activity and discuss what will happen and WHY, before starting, as it will be too difficult to get their attention once they are doing it themselves.

Need KODAK film canisters (Fuji ones seal differently).

Half fill a canister with water, add  $\frac{1}{2}$  a teaspoon of Eno (or similar fizzing antacid), and quickly seal with the lid.

Place on floor and watch the lid blow off as the pressure builds!

(could be best outside due to water spills, as these usually do spill)

NOTE – only one or two cub in the group should be allowed to do this at a time. This is mainly to stretch out the time used for this base. Only ONE or maybe two goes per Cub!

#### **4. SOUND EFFECTS** (How sound waves move)

**Purpose:** to demonstrate how sound waves move through the air and through a solid object.

Have two balloons blown up in advance.

##### **Experiment One**

Turn on the radio/CD and cubs take turns holding a balloon with both hands, about 10cms away from the speaker of the radio. They should be able to feel the vibration of the sound waves as they vibrate through the balloon.

Now try with the piece of thick cardboard – depending on the volume and distance, there may still be some sound felt. Next try with the wooden board (eg.breadboard). The sound should be absorbed by the timber, and no vibrations felt. These three tests show how poorly sound travels through a solid compared with how easily it travels through the air.

##### **Experiment Two**

For the second experiment, a 1.5L drink bottle needs to be prepared in advance. Cut the base off at approximately the top of the straight sides, giving you a funnel section. Stretch a sheet of light paper across the wide end and tape it onto the funnel, forming a sort of funny-shaped drum with a small open end (cling wrap works fine too, but tears fairly easily).

Aim the funnel at each cub in turn (10 cms away) and tap the drum, letting them feel the air flow it causes.

Light the tealight/candle, and “aim” the funnel at the candle flame. Each cub in turn gets to tap the drum. The sound waves and air affected by the drum-tap should blow out the candle. How far away can it still work?

(If each cub also gets to light the candle correctly for their turn, you can also cover section B4c, otherwise have the 2<sup>nd</sup> candle burning continuously and use it to relight the one in use).

Try having a cub yell close to the drum – does it have a similar effect or not?

##### **Experiment Three**

The third experiment on this base uses the other drink bottle which has been cut off in the same way. Have the cubs try listening to someone whisper about 30cm away, and then try again with the funnel used as an ear-trumpet.

The funnel has the same effect on the sound waves as it did in putting out the candle.