



## Cub Scouts, start your engines! District Cub Mobile Derby

**When:** Saturday, July 13<sup>th</sup>, 2013  
**Time:** Check-in 7:45 – 8:30  
Racing Starts @ 8:30  
**Where:** Flag Pole Hill Park  
(Northwest Hwy / Buckner)



This event is sure to be fun for the entire family and bring some excitement to our summer Cub Scout program. Each Cub is encouraged to build their own car, or a den, patrol, or pack can work together to make a team car. Each team should keep their car-to-Cub ratio 5:1. The cars will race using gravity to propel them down the hill and across the finish line. Each car must comply with the safety rules that are outlined here before it will be allowed to race. There are design suggestions in the Bear rank book. You can also Google “cub mobile” for many other design ideas. Each Cub must wear protective gear – a bicycle safety helmet, football helmet, or racing helmet; long pants; and no open toed shoes. Each Cub must be able to demonstrate how to steer and brake their car. Cubs will queue to race their cars in this fun and casual competition.

Regarding the Cub mobile’s design and construction, make it “your own” (bling bling). Make your car the best and safest it can be. Remember who is riding in it!

**Cost:**

**Free!**

Questions: **Tom Fox**, 214-732-1297 or [foxdropbox@gmail.com](mailto:foxdropbox@gmail.com)

**This is a rain or shine event... come enjoy the race!**

## Race Day Procedures

1. All Scouts are required to wear personal protection to race. Protection equipment they will need to bring includes: helmet, long pants, and closed-toe shoes. Optionally, knee and elbow pads.
2. All Scouts must go through driver safety education upon registration.
3. Each car must pass a safety inspection before moving it to the staging area.
4. Scouts must wear their designated wrist band in order to race.
5. This is a fun and friendly competition. Scouts must queue to race. Only two cars will race at a time.
6. Safety first! If a car is determined to be unsafe by the event coordinator, it will not be permitted to race. Likewise, if a Cub is not adequately outfitted, he will not be permitted to race.

### Registration Information:

Scouts name \_\_\_\_\_ Age \_\_\_\_\_

Pack \_\_\_\_\_ District name \_\_\_\_\_

Rank \_\_\_\_\_ Phone number \_\_\_\_\_

Email \_\_\_\_\_

## INFORMED CONSENT AGREEMENT

I understand that participation in the Cub Mobile Races offered by Northern Trail District and Circle Ten Council, Boy Scouts of America, involves a certain degree of risk. I have carefully considered the risk involved and give my son, \_\_\_\_\_,  
First and Last Name of Child  
consent to participate in the Northern Trail District Cub Mobile Race on July 13<sup>th</sup>, 2013.

This form must have a legal **guardian** signature:

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

## Safety & Inspection Requirements

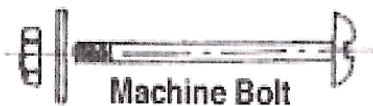
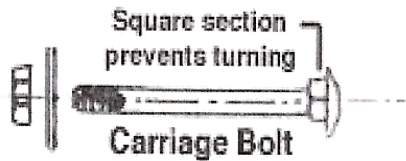
- Wheels must not exceed 10 inches in diameter.
- All wheels may only be equipped with solid rubber tires.
- Car frame is made from new 2-by-4-inch construction lumber.
- The overall length of the car is a maximum of 5 feet; the wheel base a maximum of 4 feet.
- Use roundhead  $\frac{1}{4}$  inch bolts (recommended) or  $\frac{1}{4}$  inch screws to hold the frame.  
**Nails are not to be used because they may work themselves loose.**
- All cars must have a seat with a braced backrest so the Scout can comfortably steer with his feet.
- Steering is done with the feet, which are placed on the front axle, and by the hands holding a rope fastened to the front axle.
- If threaded axles are used, the nuts must be secured with cotter pins or wire.
- Cars must be equipped with an adequate safety belt, securely fastened to the main frame of the car.
- Cars must be equipped with a handbrake with its rubbing surface faced with a rubber material such as a strip of an old tire. This will stop the car when dragged on the ground.
- The two (2X4 inch) blocks fastened ( $\frac{1}{4}$ " to  $\frac{1}{2}$ ") from the centerboard will help limit the turning radius for safety. (Very important to test this before the race!)
- No extra weights, etc. may be placed on the Cub mobile.
- For the Scout's safety, they should wear a bike helmet (or other type of safety helmet), long pants, a long sleeve shirt, and shoes that completely cover the feet.

## How to Build a Cub mobile

- **Supplies and Tools:**

| <b>Quantity</b> | <b>Description</b>                                | <b>Tools you will need</b> |
|-----------------|---|----------------------------|
| 4               | 8" wheels   | Power drill                |
| 1               | 2'X4' 3/8" or 1/2" plywood                        | 3/8" and 5/16" wood bit    |
| 2               | 8' 2X4's  | Wrenches or socket set     |
| 1               | 2"X2" surveyor's stake                            | Screwdriver                |
| 4               | 3/8" X 6" lag screws (for wheels)                 | Tape measurer              |
| 1               | 3/8" X 4" hex bolt (for front axle)               | Wood glue                  |
| 1               | 3/8" X 4" lag screw (for brake)                   | Power or hand saw          |
| 2               | 5/16" X 4" carriage bolts (for rear axle)         |                            |
| 13              | 3/8" washers                                      |                            |
| 1               | 3/8" lock nut                                     |                            |
| 2               | 5/16" washers                                     |                            |
| 2               | 5/16" lock washers                                |                            |
| 2               | 5/16" nuts  |                            |
| 32              | 1#6 X 1 1/2" wood screws                          |                            |
| 4               | 1#6 X 2" wood screws                              |                            |
| 1               | 6-7' 1/4" rope                                    |                            |
| 1               | seat belt (from auto parts store or salvage yard) |                            |
| 1               | 2" X6" piece of rubber (from old tire)            |                            |

7"-10" Dia. Wheels  
Use solid rubber for best results. Plastic dolly wheels cause spinouts.



Use these type fasteners.  
NAILS WILL NOT HOLD

Seat  
15"x20"  
3/8" Plywood

Post - 2"x4"

Seat Back  
8 3/4"x20"  
3/8" Plywood

Seat Belts  
REQUIRED

Wheel

Axle

Lag Screw

Flat Washer

Flat Washer

Frame 2"x4"  
52" Long

Steering  
Bridle  
1/4" nylon rope

Axles  
2"x4"  
28" long

Flat Washer

Drill hole  
Machine Bolt  
1/4"x4"

Frame

2 Flat washers

Front axle

Washer  
Nut

Second nut  
tightened  
against first  
to lock

Safety Blocks  
To limit  
steering  
angle

Use safety  
belts and  
helmets

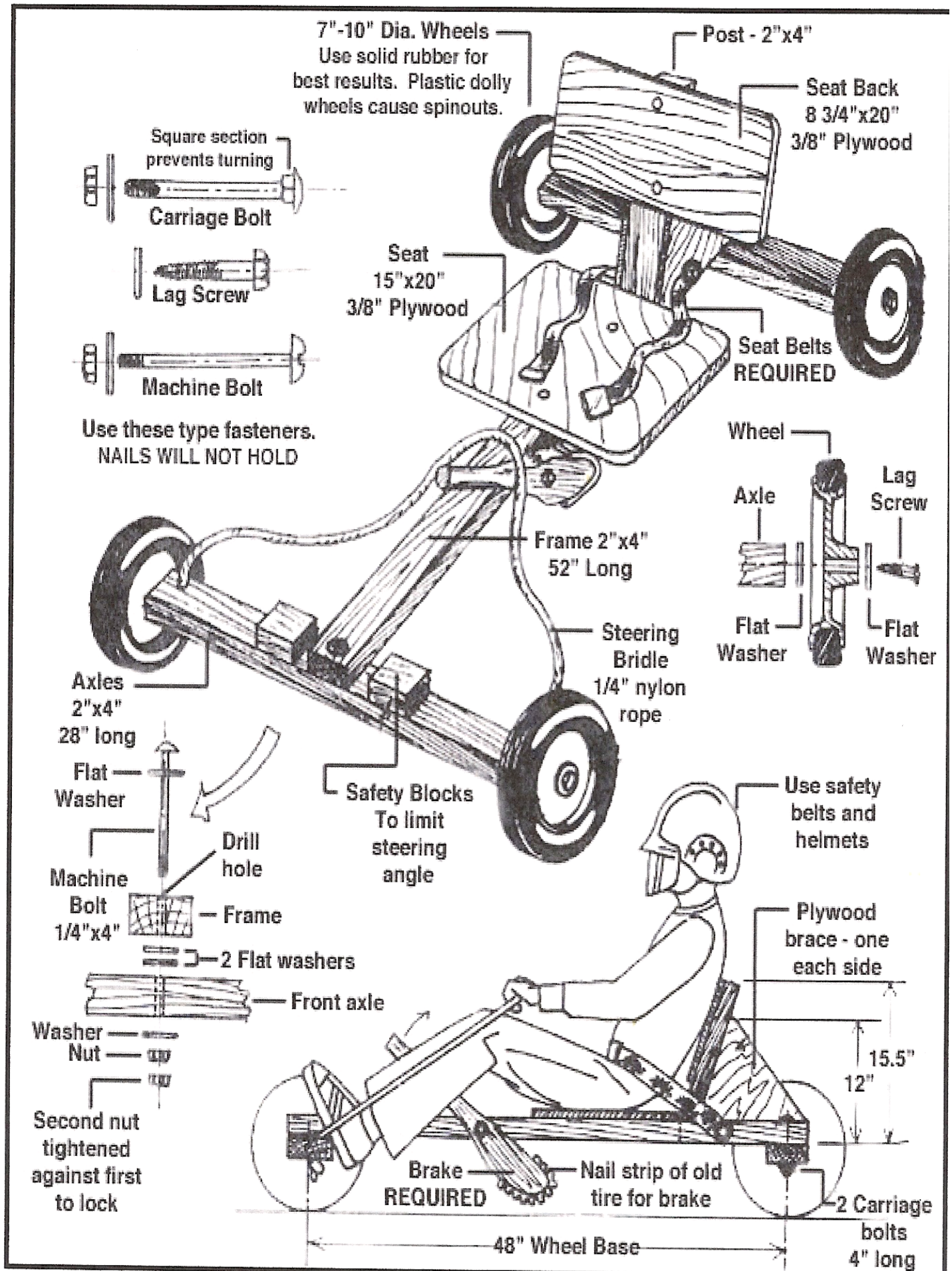
Plywood  
brace - one  
each side

15.5"  
12"

Brake  
REQUIRED  
Nail strip of old  
tire for brake

2 Carriage bolts  
4" long

48" Wheel Base



## Detailed Instructions

If you wish to build the Cub mobile illustrated, these are step by step instructions.  
Have Fun!!

1. Cut (1) 2x4x52 for main frame.
2. Cut (2) 2x4x28 for axles.
3. Make an "X" on each end of each axle, and drill a hole at each "X" intersect, 6" deep using a hand electric drill (5/16" wood bit works well).
4. On front axle 2x4:
  - A. Drill a 5/16" hole on each end near the back for the rope.
  - B. Drill a 3/8" hole at center of 2x4.
  - C. Attach (2) 2x4 blocks to front axle, on either side, 2-1/8" from center hole; use glue and #6 X 2" screws. This will limit steering.
5. At front of main frame 2x4, drill a 3/8" hole (center 1-5/8" from front).
6. Attach front axle to frame using 3/8"x4" hex bolt, 4 washers, and lock nut or 2 nuts. (Tighten enough to allow steering) .
7. Align back axle 2x4 at right angle with back of main frame 2x4, clamp if possible. Drill (2) 5/16" holes through axle and main frame. Attach main frame to back axle using 2 carriage bolts, 2 washers, 2 lock washers, and 2 nuts. If this is to be a permanent attachment, glue also.
8. Cut out seat and back rest from plywood.
9. Cut one 2x4 12-14" in length for back rest support. (Bevel slightly about 5 degrees if possible).
10. Attach back rest support (bevel end down) to main frame using glue and 2 screws (#8 2-1/2") at an angle. Position of this support depends on size of boy, have Scout sit on 2x4 frame to estimate position.
11. Cut out 2 triangular shaped pieces of plywood and attach to either side of backrest support and main frame with glue and screws (#6 1-1/2"). Drilling small pilot holes helps.
12. Attach seat and back rest using glue and screws (#6 1-1/2").
13. Cut 2x2 surveyor's stake to 14-16" at an angle; cover end with rubber using nails, drill a 3/8" hole through stake at location it will meet main frame.
14. Drill hole 5/16" into main frame at point to attach brake. Mount brake using 3/8"x4" lag screw and washer to side of main frame.
15. Drill and attach seat belt with fasteners of choice.
16. Attach 6 – 7' of 1/4" rope to the front axle.
17. Attach wheels using washers and 3/8"x6" lag screws.

This is a Scout-sponsored family event, and we strongly suggest each competitor respect it as such. Also, please respect the Flag Pole Hill Recreational Facility and keep the area clean of trash. Leave no trace!

### **Sportsmanship:**

- Two things our Northern Trail District Cub Mobile Derby 2013 requires each participant to learn are the craft skills necessary to build a Cub mobile, and the rules that must be followed. Even more important though is how we act and behave while participating in the Derby or any other group activity. This is called sportsmanship.
- The first thing to remember about sportsmanship is that everyone's skills are a little different. You may be good at something like singing or drawing, but not as good at something else like basketball or computers. Parents have different skill levels too. This doesn't mean that you are a good person one time and not good another time. You can always be a good person, whether or not you have good Cub mobile-building skills. Remember, you and your friends are individuals first and racers second. This idea is often called having respect for others.
- The second thing to remember is to follow the rules. Without rules there would be no Cub Mobile Derby. You will never know if you are really good at doing something unless you follow the rules. This is often called being honest.
- The third thing to remember about good sportsmanship is that there are winners and losers in every competition. You accept this when you choose to compete. There may be times when you win and feel happy, and times when you lose and feel unhappy. Being a winner is easy, and losing is sometimes hard. If you win, you must not brag or gloat. If you lose, you must not feel jealous or bitter. To be a good sportsman, you must be able to say "I did my best" and be satisfied with the results. You must also be able to appreciate and feel happy for someone else when they run a good race or build a neat Cub mobile.

### **Scouting's Core Values:**

- A well-run Cub mobile Derby speaks to all of the 12 core values:
  - **Citizenship** (The Scout works with the family, and local citizens and businesses are invited to participate.)
  - **Compassion** (Someone will lose, and participants must demonstrate compassion.)
  - **Cooperation** (Participants can help each other in the design process.)
  - **Courage** (Participants need to accept the outcome of the event.)
  - **Faith** (Participants should have faith in themselves to accomplish what God has gifted them with.)
  - **Health and fitness** (Participants should practice shop safety while constructing their Cub mobile.)
  - **Honesty** (Participants should keep to the rules.)
  - **Perseverance** (Participants should finish their Cub mobile and race it.)
  - **Positive attitude** (Participants should keep a positive attitude no matter the challenges or the race outcome.)
  - **Resourcefulness** (Participants start with a minimal design and finish with a working racer.)
  - **Respect** (Participants need to respect other builders/racers, as well as the leaders and authority.)
  - **Responsibility** (Participants must make a plan and work through it to completion.)
- Most importantly ... **HAVE FUN!**

# Racing Procedures

- Registration will start at 7:45 am and will be over at 8:30 am. Please try and have your Cub and car in early to reduce your registration wait time.
- Racing will start at approximately 8:30.
- The derby is run with two cars in separate lanes.
- Cub Scouts will bring their Cub mobiles to the inspection station where it is checked.
- Each Cub driver will receive driver safety instruction and must demonstrate how to steer and brake.
- Cub Drivers then go to the driver registration to get their derby wrist band.
- All drivers must wear protective gear upon reporting to the starting gate such as helmet, long pants, and closed toe shoes.
- When the cars are released by the starter, drivers must remain in their own lanes.
- No pumping or pushing with the feet is permitted.
- After race completion, the boy with help from a member of his pack or den may return his car to the end of the queue for another race. For teams, exchange drivers as desired.
- Be prepared for extreme heat. Bring water and sunscreen for all attendees.
- Other suggested items to bring:
  - Plenty of water
  - Sunscreen
  - Bug repellent
  - Canopy / pop-up for shade; there is very little natural cover in the area
  - Fruits or other snacks for energy
  - Lunch, if you plan stick around for a while
- **Racing procedures are subject to change.** Any changes will available on-site on race day.