

Important Information to Volunteers Planning this Project. March 2013

Several of the activities included in this project mention and picture special building block kits which are no longer available and were not available to the general public in stores. While most of the suggested activities can be accomplished with building block basics from such kits as Lego, Mecanno, Kinn'x and similar sets, there are specific activities which will require axles, beams, pulleys and gears to accomplish the movement and designs. 4-H Ontario has available, for loan, two resource kits of beams, gears and pulley [compatible with Lego bricks only] which would allow about 12 members to complete the activities.

Contact Elizabeth Johnston at 4-H Ontario to arrange loan of these kits.

Summary of activities requiring these extra components such as pulleys, beams, gears or motors-

Meeting One:

Activity #2 - Fishing pole –requires pulleys and string

Meeting Two:

Football Launcher [Digging deeper] requires bushings, axles and pegs

Meeting Three:

Ping Pong Launcher [Digging Deeper]- requires, axles, pulleys, beams, gears, elastics and ping pong balls

Activity #6 Snail car race –can only be accomplished if members have specialized or motorized kits. An alternative to this activity is the Slot car challenge. See attached which uses the weight to propel a car forward by winding down the wheel and axle.

Meeting Four:

Rotating Carousel [Digging Deeper Activity #1] and [Digging Deeper] Carnival Ride Activity #2 Solar powered movement can be accomplished only if members have very specialized kits with solar powered components. Try having the members build a rotating carnival ride of some type using toy people as riders and use gears, pulleys and cranks to create the movement. Discuss how alternate sources of energy could be used to power this ride.

Activity #7 Cable Car Parachute Ride –requires beams, pulleys, axles as well as fishing line/string

Activity #8 Rubber Band Racer – requires beams, axles, wheels, gears

Meeting Five:

Balloon Powered Rocket Car [Digging Deeper]-requires beams, axles, gears, wheels, balloons.

Activity # 9 Sturdy Car Drop Test- WARNING!!! Dropping expensive building components which are attached in a variety of inexperienced ways can lead to damaged components.] If members have added a motor or gear mechanism to their car, DO NOT DROP IT OR DO THIS TEST!!!! The gears, axles and motors as well as the electric connections will be severely damaged!!! My personal advice would be to do this test with alternate building materials such as design a sturdy egg carton using found materials and drop the enclosed egg.

Activity #10 Tractor Pull - this activity can only be accomplished with motorized components and a variety of gear mechanisms. Motors are not included in the 4-H additional components kits.

Meeting Six:

Activity #11 Mountain Rescue - this activity can only be accomplished with motorized components and a variety of gear mechanisms. Motors are not included in the 4-H additional components kits.

Extra Activities

Activity #15 Peak Performance -this activity can only be accomplished with motorized components and a variety of gear mechanisms. Motors are not included in the 4-H additional components kits.

Here are some additional activities which can be accomplished with minimal components, i.e. no motors

Alternate Challenge # A - Zip Line Ride –designing for balance and movement

Design and build a vehicle that will carry one toy person safely along a zip line. The vehicle [aerial car] must travel the full distance of the line without falling off or losing the person. Vehicle must move freely down the full length of the line without assistance after a push start. Successful vehicles must keep the person in a balanced position throughout the trial.

Evaluation: All vehicles that can move freely down the full length of the line without assistance after a push start and also keep the person in a balanced position throughout the trial will be considered successful. This would be a wonderful challenge to have the members judge the balance and efficiency of each machine in completing the task!

Alternate Challenge # B - Land Yacht -Design the fastest land yacht.-Design and Build a land yacht that will travel the farthest across the floor [or table] with nothing but wind power [a table fan] Hint – a

Parts Inventory

- 2 x [1x5 Technic Brick]
- 1 x [1x7 Technic Brick]
- 2 x [8 Pin Technic Axle]
- 2 x [1x10 Technic Beam]
- 1 x [1/2 Pin Technic Connector]
- 2 x [24 Tooth Technic Gear]
- 4 x [20 Tooth Technic Gear]
- 4 x [1x1 Technic Hole]
- 2 x [1x1 Technic Hole]
- 14 x [1/2 Pin Technic Connector]
- 2 x [1x1 Technic Hole]
- 1 x [1x1 Technic Hole]
- 1 x [1x1 Technic Hole]

SLOT CARS

