

Welcome to the 2010 FLL Coaches Workshop

Presented by Cari & Pat Norton
with Andrew & David Norton

Agenda

9:00 am	Welcome
9:10 am	Programming Essentials
10:00 am	Programming with Sensors
11:00 am	Challenge Overview
12 noon	Lunch
1:00 pm	Information for Coaches & Mentors
2:00 pm	Q&A Session
2:50 pm	Closing Remarks
3:00 pm	Good bye!

Note: We plan to break at 10 minutes before each hour.

Programming Essentials

In this hour...

1. The job of the Programmer
2. Creating a PLAN.
3. Creating the CODE.
 - a) NXTG Software Overview
 - b) MOVE block
 - c) Download and Run a Program
 - d) Point & Swing Turns
 - e) Keeping the degrees straight!
 - f) Going a desired distance



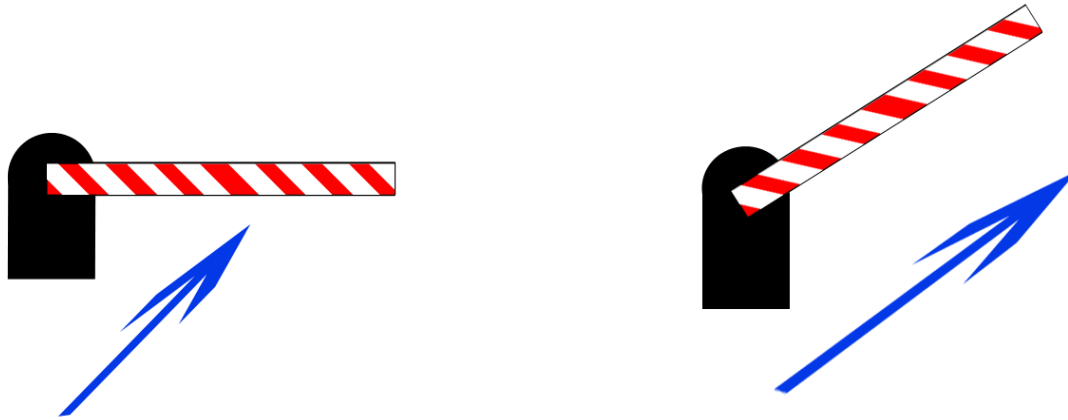
Programming with Sensors

In this hour...

1. Using Sensors
2. Touch Sensor/ Wait for Touch
3. Wait For Time
4. Calculating the Light Sensor's Threshold
5. Light Sensor /Wait for Dark
6. Display & Sound Blocks
7. Troubleshooting Tips
8. Programming Resources

Program Flow- Wait Block

Wait For:

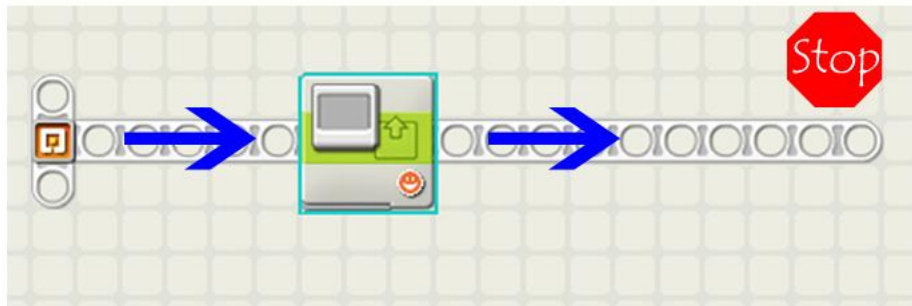


The program flow happens FAST! Sometimes we need to slow it down for things to work according to our plan.

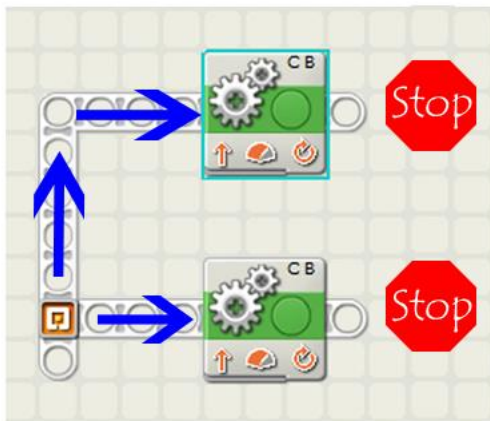
The Wait For Block acts like a gate. It stops the program flow until the specified condition is met. When the condition is met, the program will proceed to the next block on the sequence beam.

Program Flow – Sequence Beam

Sequence Beam: Flow is L to R along the sequence beam.



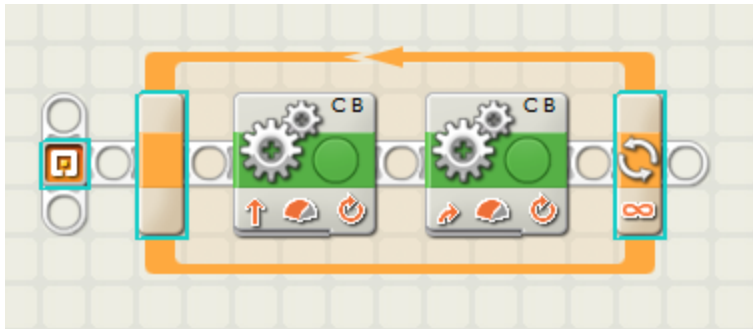
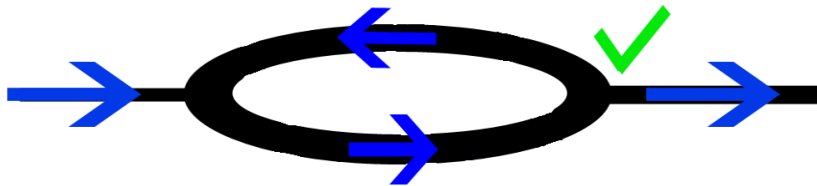
The program stops when it reaches the end of the sequence beam.



For two actions simultaneously, such as a robot moving forward and moving a motorized arm, create a branch.

Program Flow – Loop Block

Loop:



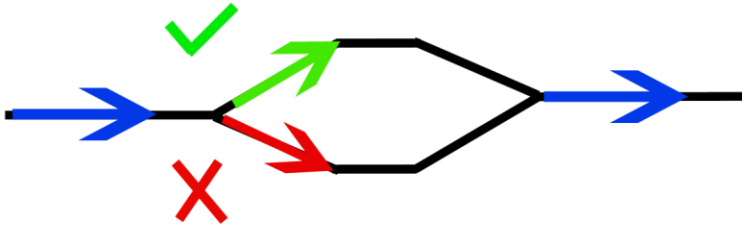
The Loop Block repeats the blocks that are inside of it.

The flow will exit the loop when the specified condition is met. The condition is checked at the end of the loop, so the blocks inside will always be executed at least once.

If your robot does the same thing over and over, using this block will make your program shorter.

Program Flow – Switch Block

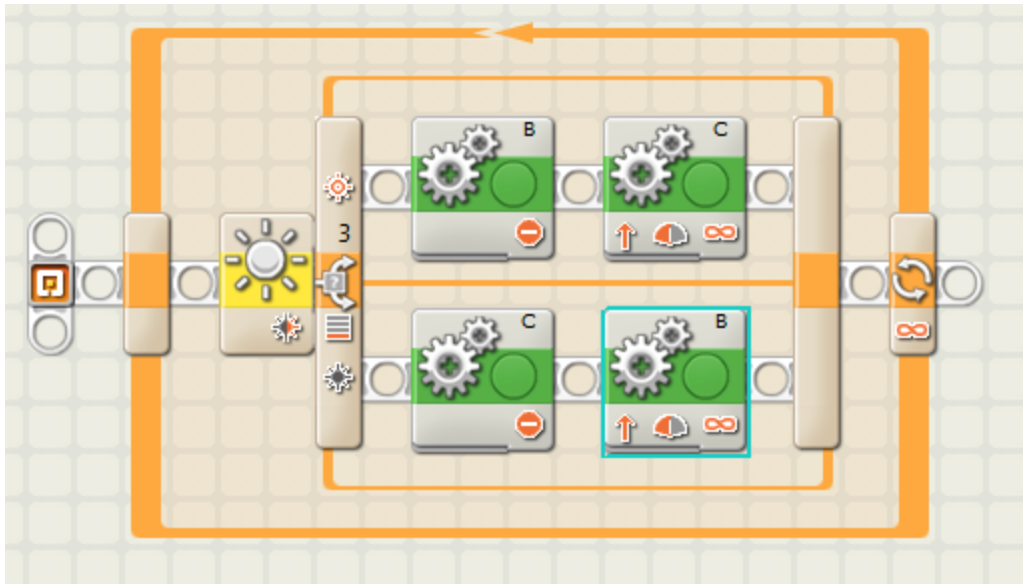
Switch:



A switch is an IF THEN statement. If the condition is true then take the upper path, otherwise do the lower path.

The condition is checked at the beginning.

This switch is inside (or nested within) a loop.



Challenge Overview

In this hour...

1. FIRST LEGO LEAGUE
2. The [Body Forward Challenge](#)
 - a) Project
 - b) Robot Game – Field Set Up
 - c) Robot Game - Rules
 - d) Robot Game – Missions
3. Suggested Mission Activities



FIRST LEGO LEAGUE!



For Inspiration and Recognition of Science and Technology

Science and Technology Competition for 9-14 year olds

A Fast paced and Fun Learning Experience

Challenge / Teamwork /Core Values/ Tournament

2010 Challenge



Through the 2010 Body Forward™ Challenge, FLL teams will explore the cutting-edge world of Biomedical Engineering to discover innovative ways to repair injuries, overcome genetic predispositions, and maximize the body's potential, with the intended purpose of leading happier and healthier lives.

What's in the Challenge Document?

- Project Description
- Field Set Up
- Rules
- Missions



Project

This section provides...

1. Questions to get you started thinking
2. Steps to be done (Research, Problem Identification, Innovative Solution, Sharing What You've Learned, Presenting)
3. A Checklist for the Tournament
4. Where to find additional information (Handbook, Rubric, Website, **FAQ**/Email)

Field Set Up

This section tells you how to...

1. Build the table
2. Set up the Mission Models
3. Care for and Maintain the Table
4. Position the Mat
5. Find Mission Model building instructions that come on a CD with the LEGO pieces.

Rules



The Rules section includes...

- **Definitions of terms**

The rules define many important terms. These are words that are important and that you will see and hear often.

- **Participation requirements**

Addresses team size and ages of members. Also how many can be at the table during the match.

- **Allowed Equipment & Storage**

It is very important to know what you can use in building your robot and its attachments. For example, you can only use LEGO elements, and only certain sensors and motors. The rules also tell you about storing your robot's accessories during the match.

More about Rules

- **Robot Starting Position**

During the competition, it is of essence to know how, when, and where you can start your robot.

- **Handling the robot**

Since the robot game is primarily autonomous, it is important to know when your team is allowed to touch the robot. This is one of the most important sections of the rules, so be sure to read it!

- **Interference on board**

Whether it is from a team member, ref, or competing robot, interference can significantly change your robot's score. The rules specify how to undo accidental changes.

- **Benefit of the doubt**

If a team member raises significant doubt in the ref's mind about an issue, the ruling should favor the team.

Rules - (we're almost done)

- **Disclaimer for table condition**

The rules also have a mini disclaimer for the robot table. Basically, the table could be warped, have bumps, etc. and that is to be expected. However, a robust robot will be able to cope with such conditions

- **Precedence of ruling documents**

Occasionally the Challenge documents conflict with each other. The rules rank the authority of each source. Rulings > Mission & Field Set UP > Rules

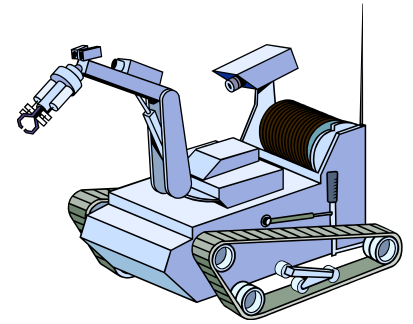
- **Game support**

In case you have questions about the robot game, the rules give contact information for the game designer. Based on these questions, **these rules could change**. Check Robot Game Rulings often for changes.

- **Summary of Changes for 2010**

See bottom of Rules document for summary of significant changes from prior years.

The Missions



Objective of the game is to score as many points as you can (400 possible) by completing the **missions** described in the Challenge document.

There is not an official [video](#) this year, but there is an unofficial one. (See Our YouTube Channel)

Unofficial Score Sheets are sometimes a helpful summary. (See [our website](#))

Activities

- Mission Matching Game
- Field Set Up – see how fast you can set up the board
- Perfect Score Set Up – move pieces to scoring locations. Time yourself to see how fast. Others watching can check to see if you missed something.
- Try activating the Mission Models by hand. How many different ways can you do it? Do problems happen when you do it too fast? Too hard?

More Ideas

- Laminate an image of the field and the score sheet and use wet erase markers to reuse.
- Analyze missions looking for patterns that will help you group them efficiently (similar attachments?, location on the board?)
- Consider budgeting your time. You have 150 seconds. How will you allocate it?

Information for Coaches

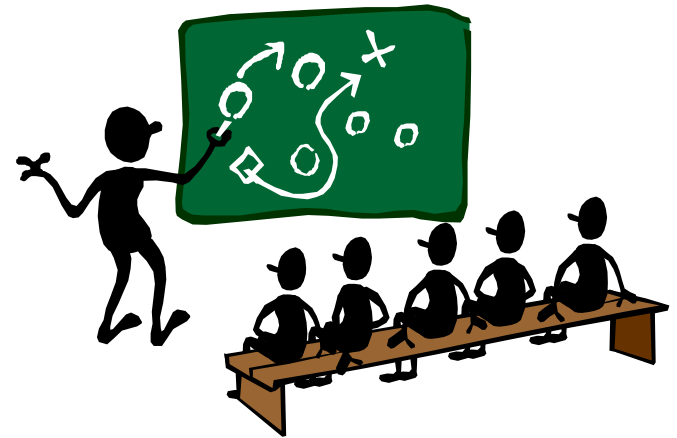
In this hour...

- Coach Responsibilities
 - The Big Picture: FLL Culture
 - Registrations: Team & Tournament
 - Information, Help & Resources
 - Team Management
 - Communication, Roles, Organization, Interpersonal
 - Tournament Day
 - What to Expect – Tips & Reminders
 - Judging Sessions

Coaching



- Coaching Framework- “The Big Picture”
- 2010 FLL Season Schedule
- The Tournament
- Coach Responsibilities
- Team Management Advice
- Tournament Day



Coaching Framework

The “Big Picture”



Vision of Tournament Day

- What is my understanding of Tournament Day?
- What is the my expectation and the team's expectation of Tournament Day?
- How will we measure success on Tournament Day?



FLL Core Values and Coaches' Promise

- FLL Core Values (in handbook)
 - Determines the FLL Culture
 - Enforce “Kids do the work”
 - Model and teach “Gracious Professionalism”
- FLL Coaches Promise (in handbook)
 - Reinforces the FLL Core Values



Official FLL Info

- FLL Coaches' Handbook
 - Great Resource – Improves Every Year
- FLL Challenge Documents (on web)
- FLL Judging Rubrics (in handbook)
 - Criteria –What the judges are looking for



Official FLL Info (cont.)

- FIRST Website
- Coach Calls
- Coaches Meeting @ Tournament
- Email – Read it! Notification of Changes, News, etc.



“Unofficial” Info Sources

- Forums / List Serve
 - Don’t forget Archives
- Websites & Team blogs
- Books
- Coaches Workshop
- Network of Other Coaches & Teams
- YouTube
- www.robodesigners.com



Team Specific Info

- Team goals
- Resources
 - Experience / Time /Money
 - Help
 - Skills
 - Team Interest or Motivation
 - Play to the team strengths

Team Goals

- Coach
 - Learn for next year?
 - Recruit more parent/mentor helpers?
 - Qualify for state tournament?
 - Be Realistic – so many missions, so little time
- Team
 - Complete three missions?
 - New team goals different than older team
 - Feeder team – older helping younger?



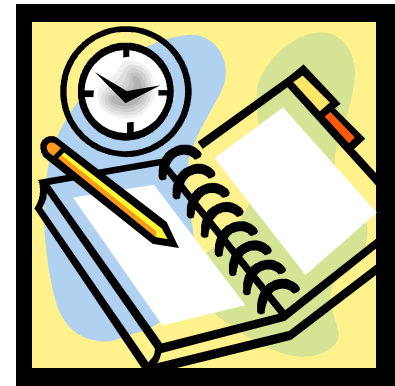
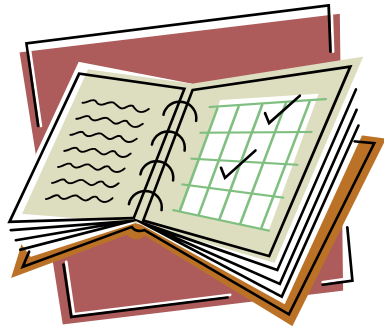
To Do List - Tasks

- Based on the four Tournament events
 - Robot Game
 - Project Judging
 - Teamwork Judging
 - Technical Design Judging



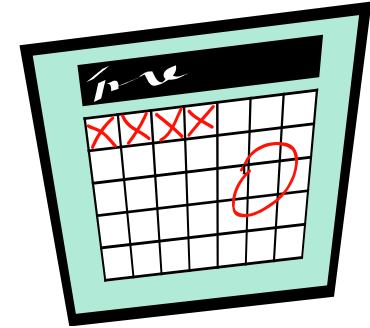
Tasks on Calendar

- Tasks on the calendar will determine the team's schedule.
- Sample schedules in the Coaches' Handbook.



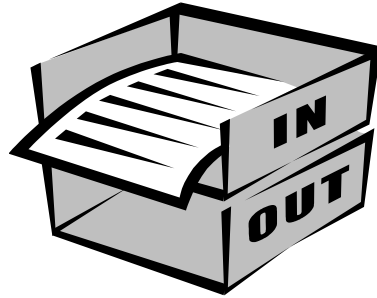
FLL Schedule

- May-Sept – Team Registration
- August – Field Set Up Kits Ship
- Sept 3 – Challenge Released
- Sept 11 – Coaches Workshop
- Oct 1-15–Regional Tourney Registration
- Nov 6 – Lynchburg Regional Tourney
- Dec 4 & 5 – State Tourney Harrisonburg
- April 2011 – World Festival, St Louis



Coaches Responsibilities - Registrations

- Team Registration
- Regional Tournament Registration
- State Tournament Registration



Team Registration

- Register online at FIRST-Cost \$200
- Team Number is your primary Identity
 - Write it on your forms, T-Shirts, gear, etc.
- Buy Field Kit - \$70
- Buy Robot & Software ~\$400
- Build Table ~\$75



Regional Tournament Registration

- Register Oct 1-15
 - www.vadcfll.org
 - 3 choices of location
 - Division 1 or 2 Team
- At Regional Tournament
 - Pay Entry Fee - Cost \$50
 - Submit ALL Consent Forms – 1pp for team members, coaches, mentors
 - Submit Team Introduction Page (4 copies)
 - Attend Coaches Meeting
 - Follow Tournament Schedule

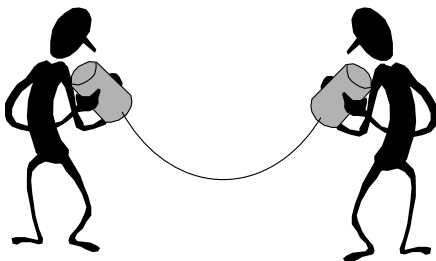
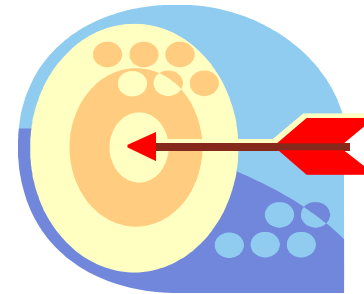
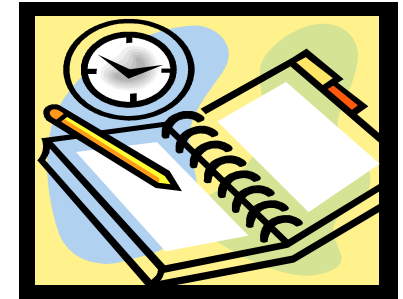
State Tournament

- Top Finishing Regional Teams (~100)
- December 4-5 at JMU – Harrisonburg
- Overnight Stay – hotel required
- Entry Fee Cost \$100
- Grand Winner qualifies for World Tournament is St. Louis, MO (if Virginia wins lottery)



Coaches Responsibilities

- Team Project Management
 - Schedule - Manage Time Line
 - Scope/Quality - Set Team Goals
 - Cost - Manage \$
 - Communicate & Facilitate



Team Meeting Management

Communication

- Communicate plan & expectations of work to be done –with parents, too.
- Discuss engineering concepts and principles
- Guide Team with questions – goal is to learn and prepare for tournament
- Remind Team of upcoming schedule items
- Review team's knowledge of concepts prior to tourney (repetition eventually sticks)
- Teach concepts with something familiar- make a pizza to show division of labor

Team Meeting Management Roles

- Determine roles – assigned or chosen
 - Programmer, builder, driver, documenter
 - Working in pairs can help
 - Try rotating roles – popsicle stick assignment
- **IMPORTANT** - Review Rules, Challenge Documents, and Robot Game Ruling frequently – things change! A role for the team “lawyer”?

Team Meeting Management Organization

- Provide consistency and order to meeting
 - Goal=>Work=>Feedback=>Status=>Next Time
- Break down work into smaller pieces
- Divide meeting time between Robot & Project
 - Prevents neglecting one for the other
 - Kids tend to want to focus on robot
- Keep kids busy with varied activities
- Remember to Document – take pictures!

Team Meeting Management

Interpersonal items

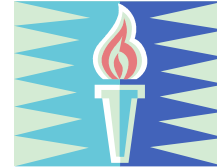
- Seek help from adults, parents, mentors, sponsors
- Set boundaries for team
 - Group decision making
 - Personality conflicts

The Tournament

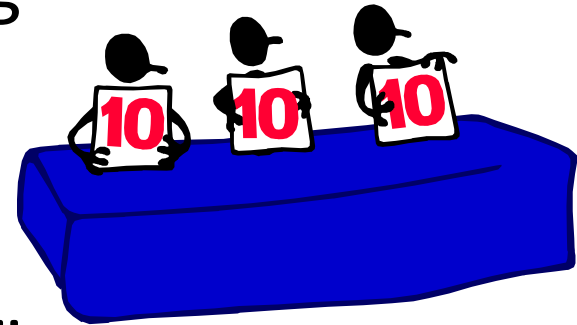
- Four Components
 - Robot Performance
 - Project Presentation Judging
 - Technical Judging
 - Not in Challenge Document
 - Teamwork Judging
 - Not in Challenge Document



Tournament Day Events



- Opening Ceremonies
- Project Presentation Judging
- Teamwork Judging
- Technical Design Judging
- Robot Performance “Game”
- Awards Ceremonies



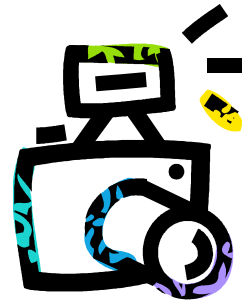
Tourney Day Tips & Reminders

- Schedule (Received a few days earlier)
 - Plan for lunch, practice table, etc.
 - Post schedule at Team Table
- 3 Judging Events and Robot Performance are equally weighted
- Robot table runs – 1 “practice”, 3 “real”
- Where’s Johnny?—know location of team members



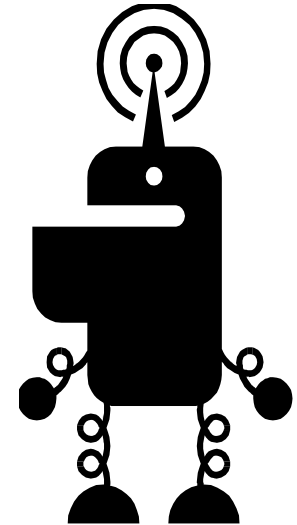
Tourney Day Tips & Reminders

- Quiet in the judging hallways
- Line up ahead of time
- No Blue Tooth
- No flash photography
- Bring robot “garage” – aka box



Tourney Day - Pit Area

- Team's home for the day
- Table Top Displays – Posters, etc.
- Practice Tables
 - Sign up – Fun to watch other teams
- Swap trinkets
- Storage box below - snacks, jackets, etc.

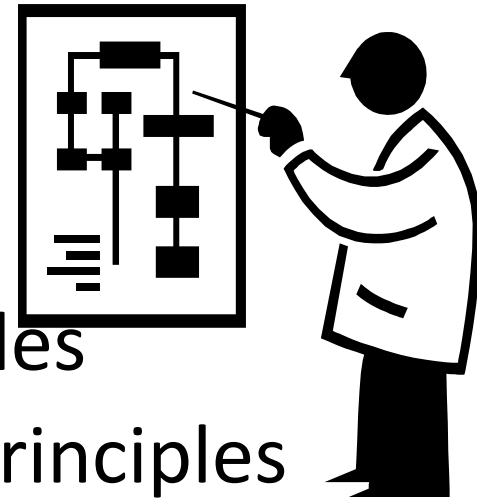


Tourney Day – Some Things to Bring

- 1st Year Teams – Definitely attend!
- Healthy snacks, drinks, lunches (Pixie Stix = bad)
- Trinkets for other teams (stickers, etc)
- “Wait time” things—games, see practices
- Team T-shirts to identify/locate team
- Market your team- be memorable - handouts?
- See handbook for checklists

Tourney Day - Technical Design

- “Sell” your robot
- Highlight features, benefits
- Communicate design principles
- Show application of design principles
- Show and discuss NXT programs
- Demonstrate robot mission(s)
- See Rubrics
- Not in Challenge Document



Tourney Day– Project Presentation

- 1st Year Team – Don't neglect project since all parts are equally weighted
- Talked to an expert or took a field trip?
- Information sources?
- Identify problem or need
 - Personal connection is a plus
- Create solution and presentation
- Share learnings w/community
- Full team participation
- Team sets up & breaks down
- See examples on YouTube



Tourney Day – Teamwork Judging

- Team task to solve – it's a SECRET!
- Evaluates how the team works together
- Judges also ask questions
 - Gracious Professionalism
 - Roles & decision making during season
 - Overcoming obstacles during season
- Examples on YouTube?
- Not in the Challenge Document



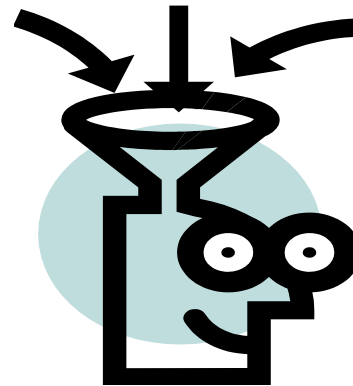
Tourney – Robot Performance “Game”



- Charge your batteries
- Practice driving - one driver or many?
- Kids talk with refs
- Kids sign off score sheet – be prepared
 - Do not touch board until scoring is done
- Only your best of the three matches counts
- Scores are posted – don’t get discouraged if your score does not match your best practice score!
- Sign up for Practice Table

Tournament Day – Last, but not least....

- Appreciate the VOLUNTEERS who run the tournament
 - Do be cooperative
 - Don't complain
- The goal is for the kids:
 - To learn something new
 - Have a pleasant experience learning about science, technology and problem solving



Parents, Coaches & Mentors

