

# Engineering Challenge

Teams have 30 minutes to plan, design, build, and test an attachment for Dash so that he can complete the mission. Students will be given a box of materials to create their attachment. The type and amount of materials will be the same for each team.

- Dash starts in cell A1 (*or bottom left corner for standard mat*) then goes out to rescue people and animals from a forest fire.
- The animals must be herded to cell A8 (*or bottom right corner for standard mat*) and the people must be rescued to cell D8 (*or top right corner for standard mat*).
- Teams can test their designs with an animal using the GO app on slow speed, but they cannot begin coding their robot for programming missions.
- Judges must ensure that the animals and people are not placed on the mat until the beginning of the programming mission.
  - 4 animals. One in the center of B4, D4, D6, and B6 (*will outline these squares in tape on the standard mats*).
  - 4 people. One in the center of B2, D2, D8, and B8 (*will outline these squares in tape on the standard mats*).

## Standard Materials List (Max of 20 teams)

- [Plastic people](#) - \$30 for 48 pieces
- [Plastic animals](#) - \$11 for 54 pieces
- Cardboard
- Tape
- Craft sticks (large)
- Small pieces of cardstock
- Bins to hold each team's materials (20 dollar store bins)

# Programming Challenge

*Teams have 30 minutes to create a program for Dash. It is the team's responsibility to let the judge know when they are ready to be scored. The judge will record the times for each team to use a tie-breaker, if necessary.*

- Teams can earn 5 points animal/person that is rescued in the correct location.
- Teams can earn 10 bonus points if they code their robot to collect all of the animals OR people in one program.
- Teams can also earn 5 bonus points if they can code their robot to play the siren sound upon completion of their mission.
- Dash is allowed to go off of the mat but the people and animals cannot leave the mat. They must be placed in their assigned location at the end of the competition. Points will not count if the animal or person is off the mat.
- Teams will need to reset Dash if he touches the fire during their rescue. The points from that rescue will not count and the mat will need to be reset.
- If there is a tie, we will gather the teams together for a championship round.
  - Tie Breaker Challenge: Teams must code their robot to drive through each cell on the mat (make sure the mats are the same size before they start). Place standings will depend on time. The team that finishes first would get first place and so on.