**Move Until Touch/Release** **100 Pts.**

**Basic 75 pts. 75% = C**

**Challenge 1 15 pts. 80 %= B-**

**Challenge 2 10 pts. 100% = A**

**Challenge 3 ? pts 101-108**

**Team Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Team Members’ Names\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Date**

**BASIC**

**VIEW** video in Connect 1: “Autonomous Vacuum Cleaner”

**USE** Connect 2 to construct your robot according to the directions in VT. ***(Student Sign) (Teacher Sign)***

**READ** Construct 3, “Lesson Overview,” and answer questions 3.1 and 3.2

3.1\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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3.2\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**READ** Construct 4, “Move Until Touch,” *Program Forward Until Touch*, and answer question 4.1and 4.2

4.1\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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4.2\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**DEMONSTRATE** “Move Until Touch,” first to a fellow classmate and then to a teacher.

**READ**, **REVIEW AND** **STUDY** Construct 5, “Program Review,” *Forward Until Touch Program*

**READ** Contemplate 6, “Move Until Release,” *Forward Until Release,* and answer question 6.1

6.1 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**DEMONSTRATE** “Move Until Release,” first to a fellow classmate and then to a teacher.

**READ**, **REVIEW AND** **STUDY** Contemplate 7, “Touch Sensors,”

**READ** Continue 8, “Vacuum Challenge.” (Your “room” will be half of one of the large tables.)

**DEMONSTRATE** “Vacuum Challenge,” first to a fellow classmate and then to a teacher.

\_\_\_\_\_\_\_\_\_\_\_**75 Points**

**edge**

**edge**

**edge**

**edge**

**edge**

**edge**

W

P

W

P

**BUMPER CHALLENGE: 15 Points**

**Each day, place a date beside the sentence below that you worked on.**

*Board Setup*:

Using the same area as your Vacuum Challenge, begin with an unmarked whiteboard inside your table. At the center on each side of the whiteboard, label it with the true room directions, north, south, east, and west. Then, use a marker to construct a line from the NE corner to the SW corner and a second line from the NW corner to the SE corner. Use the intersection of your two lines as the center point from which to construct a circle with a 7” radius. (3 points) (*It is highly suggested that you and your partner create a dimensional sketch of the required demonstration board prior to beginning the layout*. (3 points)

*Demonstration:*

Begin with the rear of your robot against the east wall. Your robot should move straight forward to the center of the circle, complete a 360º point turn without leaving the circle, and then continue toward the west wall. (3 points)

After striking the west wall, move in reverse to the center of the circle and use a 270º swing-turn to face the south wall. (3 points)

Move to the south wall, and, after striking that wall, complete a 180º point turn. (3 points)

Go straight to the north wall, stopping for three seconds in the center circle and end the run by stopping after striking the north wall. (3 points)

**KNOCK-OFF CHALLENGES 10 Points**

*Board Setup*:

As in Challenge 1, label your whiteboard with the true room directions, north, south, east, and west. At the center of each side of your whiteboard, place a square piece of blue tape: 4” on-center from the edge of the east side, 6” oc from the edge of the south side, 8” oc from the edge of the west side and 9” oc from the edge of the north side. Create a 5 ½” radius circle in the center of your whiteboard. Cover each piece of tape with a block of wood standing on end. (*It is highly suggested that you and your partner create a dimensional sketch of the required demonstration board prior to beginning the layout*. 1 point)

*Demonstration*:

Begin with your robot in the center of your circle. Your robot must try to knock all four of the wood blocks completely off the board. Each time one is knocked off, the robot must return to the center of the circle before seeking the next wood piece. (4 possible points)

**ADVANCED BONUS CHALLENGE 1 – 8 Points**

Construct a 63” circumference circle that is drawn in the center of your whiteboard. (Hint: *Begin with the formula C=πd and solve for d*.) Place a block of wood touching the circumference of the circle at each of these directional points: north, south, east, west, northeast, northwest, southeast and southwest. Begin with your robot inside the circle. How many blocks of wood can you move off the circumference line in one minute without touching your robot? (When a block is no longer touching the circumference of the circle, remove the block from the whiteboard). (1 bonus point for each block picked up in one minute on demo day)