

Worksheet: Mobil Robot Chassis

Name: _____

Date: _____

1. The size of a Lego brick or beam is measured by what?
2. The size of a gear is measured by what?
3. The difference between a brick and a beam is?
 - a. A brick always has holes in the side.
 - b. A beam always has holes in the side.
 - c. A beam is always longer than a brick.
 - d. A brick is always one stud (bump) wide.
4. Axles are measured by:
 - a. Their length in centimeters (A #12 axle is 12 centimeters long)
 - b. Their length in inches (A #6 axle is 6 inches long)
 - c. Their length in studs (A#4 axle is the same length as a beam that is 4 studs long)
 - d. Their diameter (A #2 axle is 2 millimeters in diameter)
5. To increase the speed of a robot:
 - a. Increase the wheel circumference
 - b. Decrease the wheel diameter
 - c. Increase the wheel width
 - d. Use treads instead of wheels
6. Port #1 on the RCX:
 - a. Is the default port for the timer
 - b. Is the default port for all outputs
 - c. Can accept up to two motors piggy-backed on one another
 - d. Can accept any type of sensor
7. Port A on the RCX:
 - a. Is the default port for all inputs
 - b. Can accept any type of sensor
 - c. Is the default port for all outputs

- d. Is the port for motor A in the program
8. How many separate programs can be stored in the RCX?
 9. To download a program from the IR Tower to the RCX:
 - a. All sensors and motors must be in their proper location
 - b. The RCX must be in the RUN condition
 - c. The RCX must be in the On condition
 - d. The view screen must show a default parameter
 10. The only type of gear that is one-way (motion can only be transferred in one direction) is:
 - a. Spur gear
 - b. Bevel gear
 - c. Worm gear
 - d. Differential gear

Solutions: Mobil Robot Chassis

1. The size of a Lego brick or beam is measured by the number of studs (or bumps) in the width of the brick or beam by the number of studs (or bumps) in the length of a brick or beam. If a brick is 2 studs wide and 6 studs long, it is a 2x6 brick.
2. The size of a gear is measured by the number of teeth that it has.
3. b. - The difference between a brick and a beam is that a beam always has holes in its side.
4. c. - Axles are measured by their length in studs. A #4 axle is the same length as a beam or brick that is 4 studs long.
5. To increase the speed of a robot, increase the wheel circumference. Assuming that the rotational speed (rpm) of the wheel is constant, the larger the diameter or circumference, the greater the speed.
6. d. - Port 1 on the RCX can accept any type of sensor. The timer is internal to the RCX and all other answers relate to motors or outputs, which are connected on the lettered ports, A, B, or C.
7. d. - Port A on the RCX is the port for motor A in the program.
8. Up to five (5) separate programs can be stored in the RCX. You can see which program is running, by looking at the right side of the view screen on the RCX.
9. To download a program from the IR Tower to the RCX, the RCX must be in the ON condition. It must also be facing in the right direction so the signal can get from the IR Tower to the RCX.
10. c - The only type of gear that is one way is the worm gear. The worm gear must be used to turn a spur gear. One revolution of the worm will cause the spur to rotate one tooth. Movement of the spur gear will not cause any rotation of the worm gear. Worm gears are used because of their high gear ratio (If the worm were turning a 40 tooth spur gear, the gear ratio would be 40:1.) and because they

can be used to keep a device from inadvertently moving in a reverse direction (since the spur gear can not turn a worm gear).