



## Junior Robotics – Grades 6 + 7

Welcome to your Conquesta Olympiad. When you have decided which of the answers is correct, scratch out the letter in the matching square on your answer sheet. Example:- If the answer to question 4 is c, then scratch out the letter c in the square containing c next to the number 4 (see example 1 below). If you've made a mistake and b should have been the answer, neatly cross out the mistake and then scratch out b (see example 2 below).

Example 1:- 4. a b ~~c~~ d

Example 2:- 4. a ~~b~~ ~~c~~ d

*As this paper has been printed in greyscale, the colours of the panels on the icons have been indicated in italics, with arrows pointing to the relevant panels.*

### BUILDING CHASSIS, INVENTORY, BEAMS, PARTS

1. To attach a wheel to a motor, you need to use a / an .....
- (a) connector
  - (b) axle
  - (c) gear
  - (d) tyre

2. A beam is measured by .....
- (a) counting the number of holes.
  - (b) looking at the colour.
  - (c) guess work.
  - (d) None of the above. It cannot be measured.

### BUILDING ULTRASONIC

3. The ultrasonic sensor must be attached to the ..... of the robot to ensure that it can detect obstacles ahead.
- (a) underside
  - (b) side
  - (c) front
  - (d) back



4. The ultrasonic sensor uses ..... to detect objects.
- (a) transmitters and receivers
  - (b) the colour spectrum
  - (c) colour sensing
  - (d) noise

### BUILDING PASSIVE ATTACHMENT



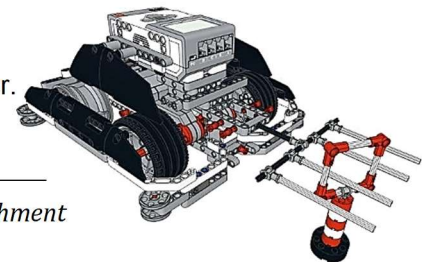
5. This passive attachment is called a .....
- (a) plough
  - (b) fork
  - (c) sweeper
  - (d) carabineer



6. This passive attachment is a ..... and is used to gather items.
- (a) carabineer
  - (b) fork
  - (c) sweeper
  - (d) plough

### PROGRAMMING PASSIVE ATTACHMENT

7. A passive attachment must be attached to .....
- (a) the robot.
  - (b) a large motor.
  - (c) a medium motor.
  - (d) a small motor.



*A fork passive attachment is used.*

8. The power setting for the robot to approach an obstacle should be .....
- (a) 100
  - (b) 30
  - (c) 0
  - (d) 200

### BUILDING SENSOR TOUCH

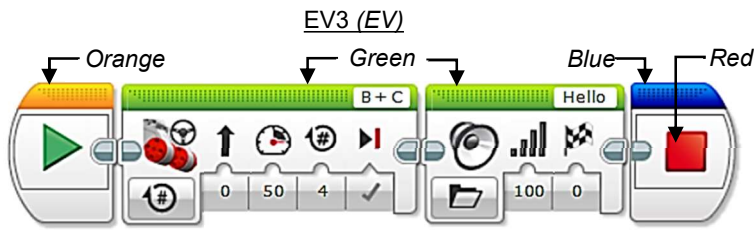
9. To ensure that the robot does not collide with an obstacle in front of the robot, the touch sensor should be attached .....
- (a) at the front of the robot.
  - (b) on the side of the robot.
  - (c) under the robot.
  - (d) at the back of the robot.



10. To use a touch sensor to start the robot movement, you need to attach the touch sensor .....
- (a) underneath the robot.
  - (b) in front of the robot.
  - (c) on top of the robot facing upwards.
  - (d) on the side of the robot facing downwards.

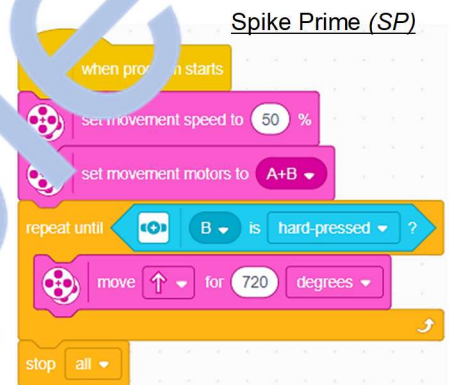
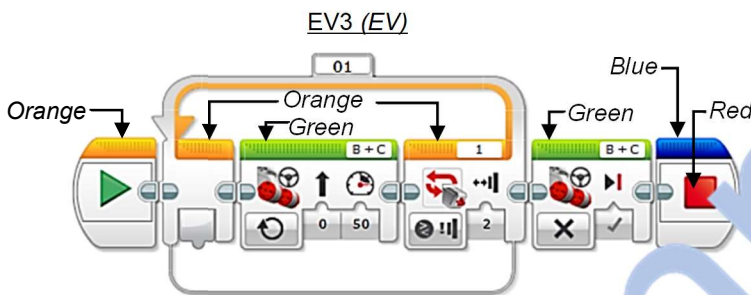
As schools are moving from EV3 Lab programming (icon-based) to EV3 Classroom / Spike Prime (scratch-based), the team has included diagrams for both coding options.

PROGRAMMING MOVE, WAIT, START, SOUND

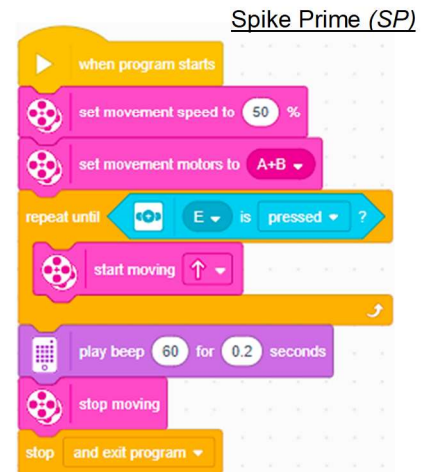
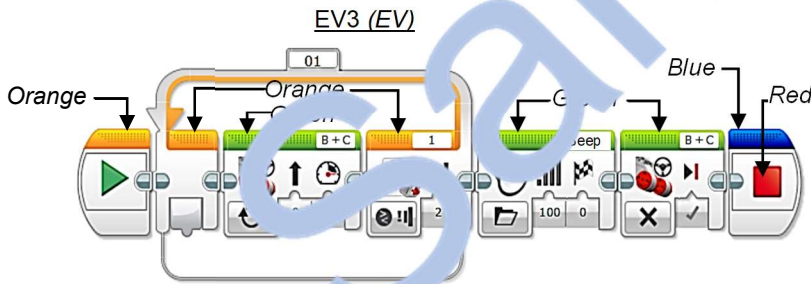


11. The motors are attached to port .....  
 (a) B and C (EV3) / A and B (SP)      (b) 50 (EV3) / Only A (SP)  
 (c) 4 (EV3) / Only B (SP)              (d) 100 (EV3) / None (SP)
12. The power setting of the motors is .....  
 (a) 100 (EV3) or 720 (SP)              (b) 0 (EV3) or 2 (SP)  
 (c) 50 (EV3) or 50 (SP)                (d) 4 (EV3) or 1 (SP)

PROGRAMMING TOUCH/FORCE SENSOR & LOOP

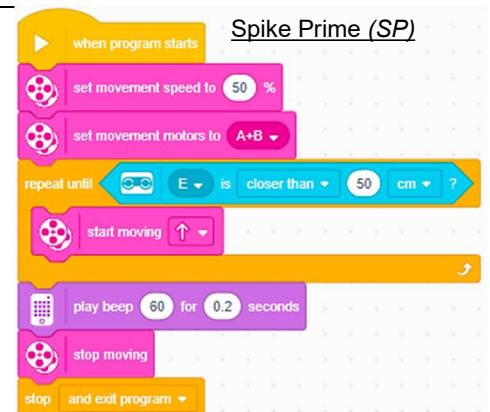
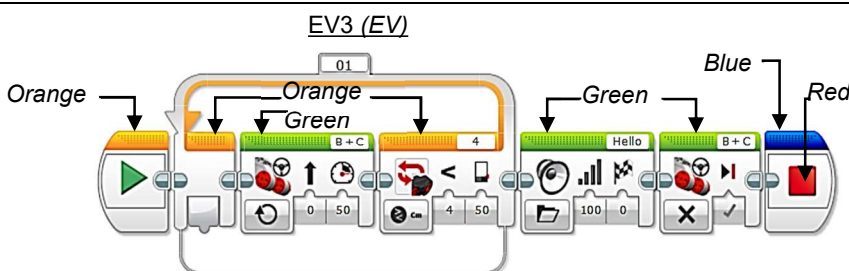


13. When the touch sensor is bumped (EV3) / hard-pressed (SP), the robot will .....  
 (a) turn around      (b) slow down      (c) go faster      (d) stop



14. The robot will 'beep', .....  
 (a) after the touch sensor has been bumped (EV3) / pressed (SP).  
 (b) after the robot has stopped.  
 (c) after the touch sensor has been released (EV3) / unplugged (SP).  
 (d) when the robot reaches a speed of 100 (EV3) / 50 (SP).

PROGRAMMING ULTRA-SONIC & SWITCH



15. The robot will stop when the obstacle is detected ..... away.  
 (a) 4 cm                      (b) 4 m                      (c) 50 cm                      (d) 4 inches