

Road Runner 1.0 Beginner's Cheat Sheet

Key Terms

- **Pose2d** → Robot's position & heading: (x, y, headingRadians)
- **Action** → Something the robot does (move, turn, or use a mechanism)
- **TrajectoryActionBuilder (TAB)** → Builds movement paths
- **Vector2d** → A point on the field (X/Y only)

Basic Structure

```
// 1. Define start pose
Pose2d startPose = new Pose2d(0, 0, 0);

// 2. Build movement
TrajectoryActionBuilder tab = drive.actionBuilder(startPose)
    .strafeTo(new Vector2d(24, 0))
    .turn(Math.toRadians(90));

// 3. Build and run
Action move = tab.build();
Actions.runBlocking(move);
```

Common Movement Methods

| Method | Purpose |
|-----------------------------------------------------|--------------------------|
| <code>.strafeTo(new Vector2d(x, y))</code> | Move sideways to a point |
| <code>.lineTo(new Vector2d(x, y))</code> | Move straight to a point |
| <code>.splineTo(new Vector2d(x, y), heading)</code> | Smooth curve to a point |
| <code>.turn(radians)</code> | Rotate robot in place |
| <code>.waitSeconds(time)</code> | Pause for a set time |

Mechanism Actions (Example: Claw Servo)

```
public Action clawAction(boolean open) {
    return packet -> {
        if (open) {
            clawServo.setPosition(1.0); // open
        } else {
            clawServo.setPosition(0.0); // close
        }
        return false; // done immediately
    };
}

// Open the claw
Actions.runBlocking(clawAction(true));
```

Sequences

```
Action auto = new SequentialAction(
    drive.actionBuilder(startPose)
        .strafeTo(new Vector2d(24, 0))
        .build(),
    clawAction(true),
    drive.actionBuilder(new Pose2d(24, 0, 0))
        .turn(Math.toRadians(90))
        .build()
);

Actions.runBlocking(auto);
```

Quick Tips

- Use `Math.toRadians(degrees)` for angles
- Build small parts first, then combine
- Keep mechanism code separate from driving code
- You don't need to memorize everything – check this sheet or the docs