Torque requirement

In[6]:=
```
RobotWeight = UnitConvert[Quantity[15, "lb"], "oz"]
```

Out[6]=
```
240 oz
```

In[12]:=
```
Rwheel = Quantity[10, "in"]
```

Out[12]=
```
10 in
```

In[13]:=
```
Treq = RobotWeight * Rwheel
```

Out[13]=
```
2400 oz in
```

With two wheels at minimum, we can divide load in half

In[14]:=
```
TreqWheel = Treq / 2
```

Out[14]=
```
1200 oz in
```

Motor option 1: 118 RPM @ 958.2 oz-in Maximum and 20Amp Maximum and 6V-12V Maximum

We can probably run for 416 oz-in load @ ~72 RPM

In[15]:=
```
Cwheel = Rwheel * 2 Pi
```

Out[15]=
```
20 π in
```

3:1 Reduction

In[34]:=
```
RedSpeed = Quantity[N[72/3], "Revolutions"/"Minutes"]
```

Out[34]=
```
24. rev/min
```

In[39]:=
```
UnitConvert[N[(Cwheel * RedSpeed)], "inch * revolution per second"]
```

Out[39]=
```
25.1327 in rev/s
```

In[40]:=
```
UnitConvert[UnitConvert[N[(Cwheel * RedSpeed)], "inch * revolution per second"],
 "feet * revolutions per second"]
```

Out[40]=
```
2.0944 ft rev/s
```

Which can provide a maximum torque at 72 RPM and base Torque of 416 oz-in load of

In[41]:=
```
Tmax = Quantity[416 * 3, "ounce inch"]
```

Out[41]=
```
1248 in ozf
```