

DESAFIO 1

Vocês deverão transformar o Robô Trator em um caminhão que transporta algum produto produzido em sua cidade. Vocês podem usar as engrenagens e as polias como rodas nesse desafio. Apresentem o resultado para os colegas.

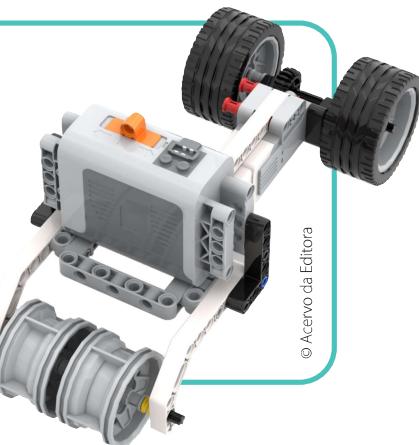
ROLO COMPRESSOR

Durante o desafio incentive-os a trocar ideias com os colegas do grupo e a testar hipóteses, pois isso faz parte do processo de aprendizagem. As engrenagens e as polias podem ser utilizadas como rodas, caso seja necessário.

MÃO NA MASSA 2

Nesse capítulo, estudamos sobre as rodas e os eixos e sua importância na transmissão do movimento. Os rolos compressores são máquinas pesadas usadas na construção civil para compactar solo, asfalto ou outros materiais durante o processo de pavimentação. Eles consistem em um tambor pesado que pode ser liso ou com saliências, montado entre dois eixos. Organizem-se em equipe para montar um Robô Rolo compressor.

Robô Rolo Compressor



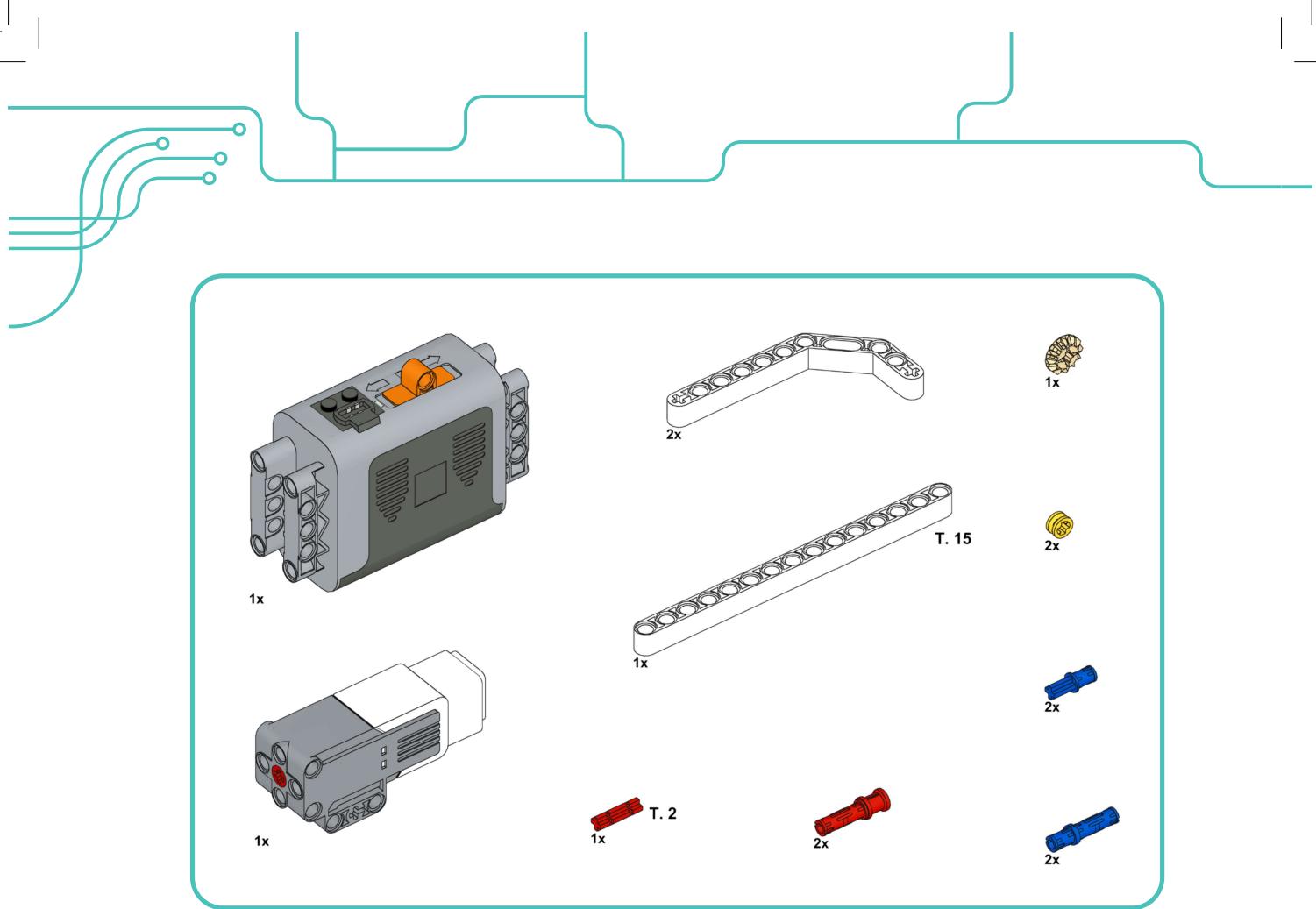
© Acervo da Editora

MANUAL PASSO A PASSO 2

MONTAGEM

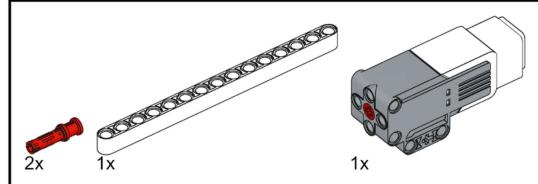
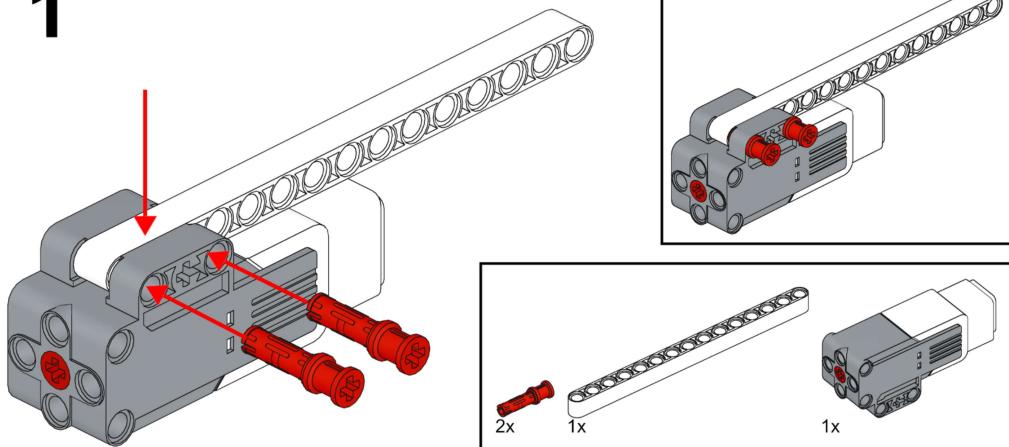
Antes de começar, faça um checklist das peças de que precisará para montar seu Robô rolo compressor.





A seguir, acompanhe o passo a passo da montagem do Robô rolo compressor.

1

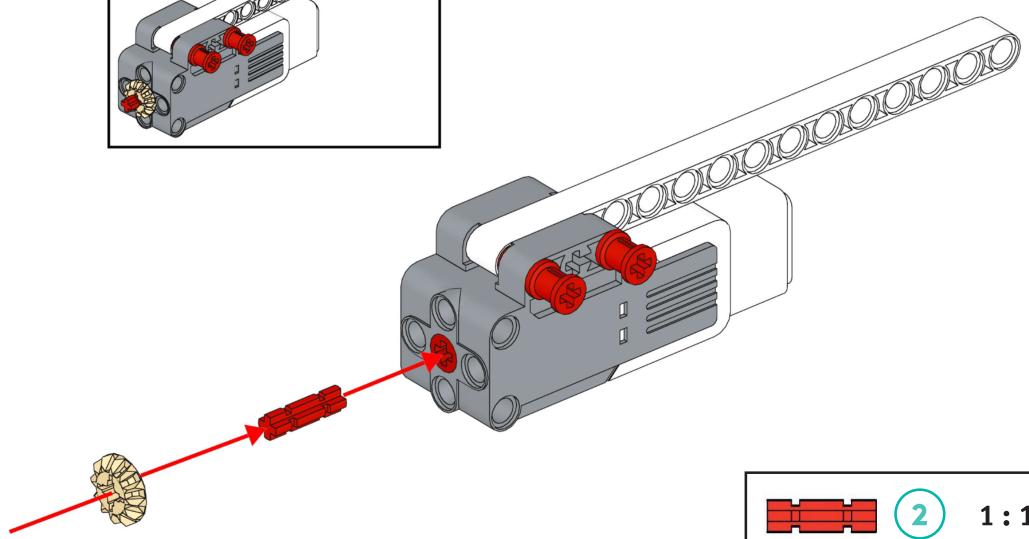
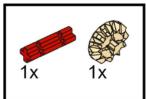
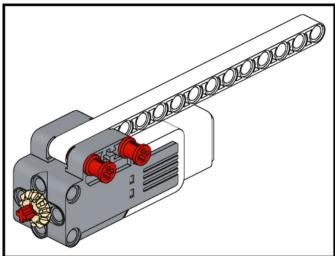


15 1 : 1

208

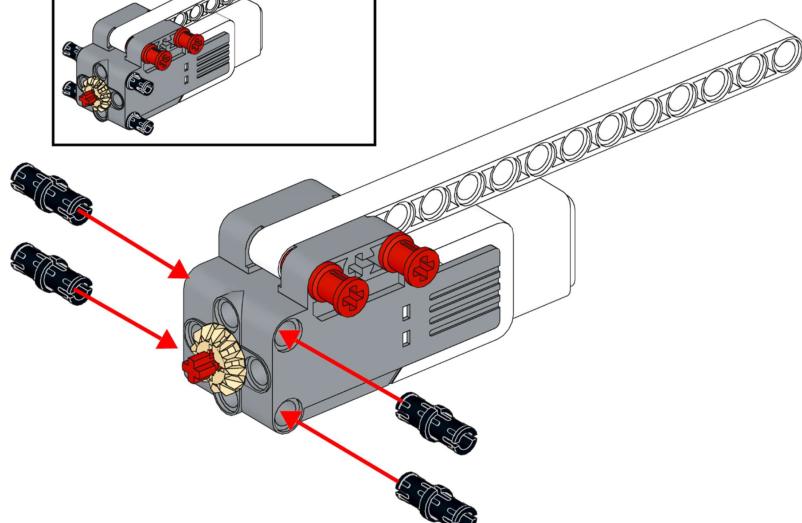
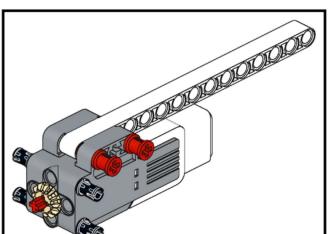
ROBÓTICA NA PRÁTICA

2

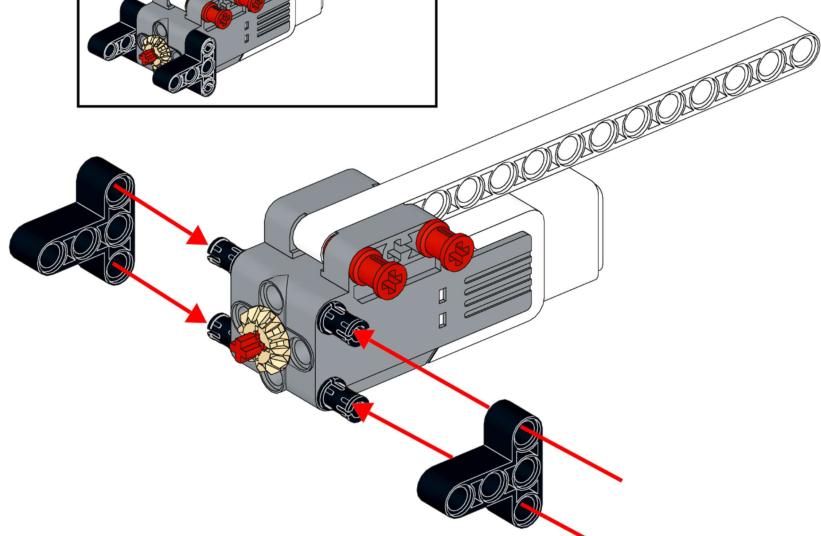
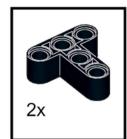
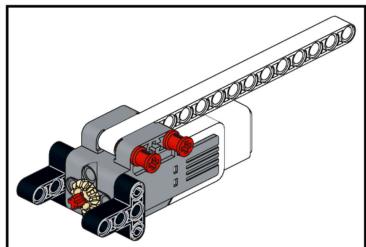


 2 1 : 1

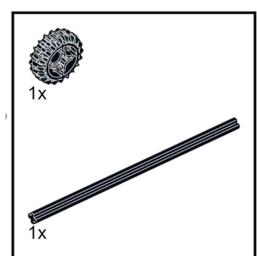
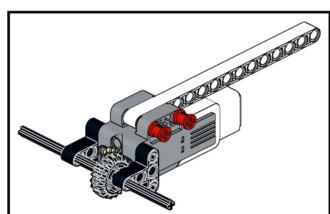
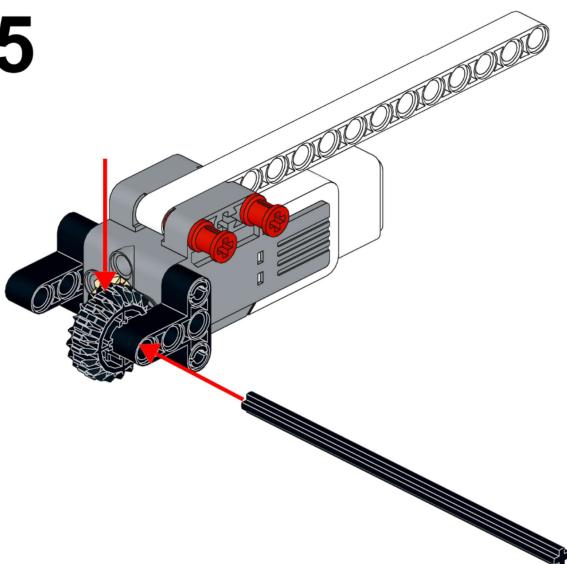
3



4



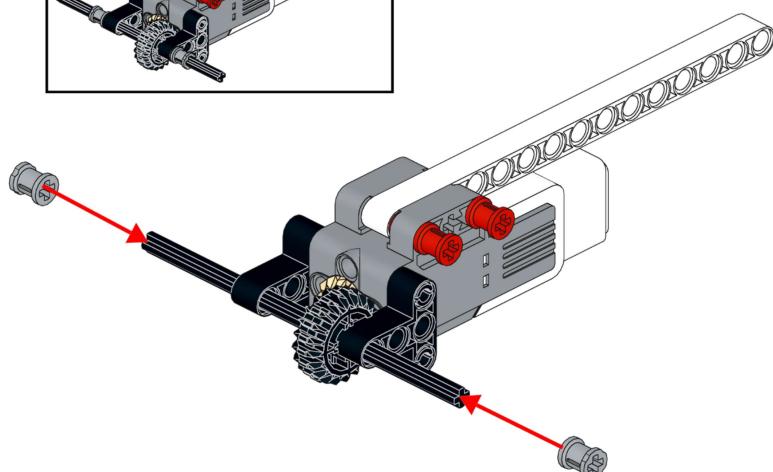
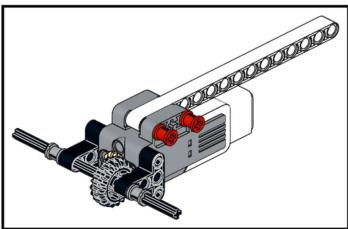
5



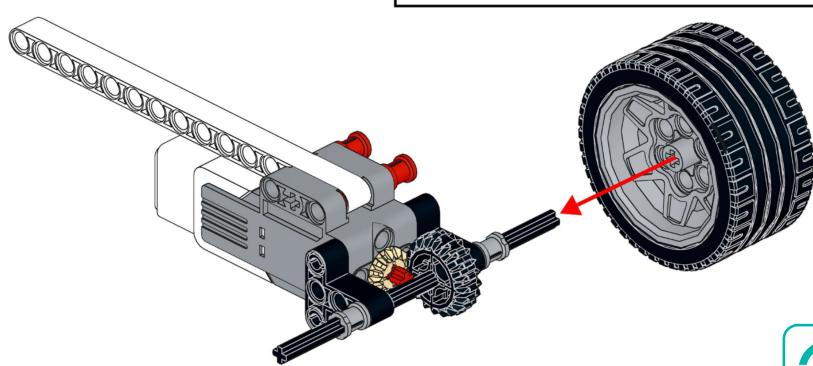
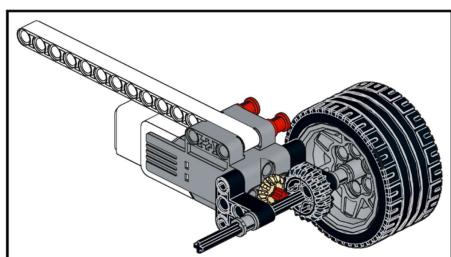
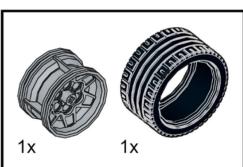
210

ROBÓTICA NA PRÁTICA

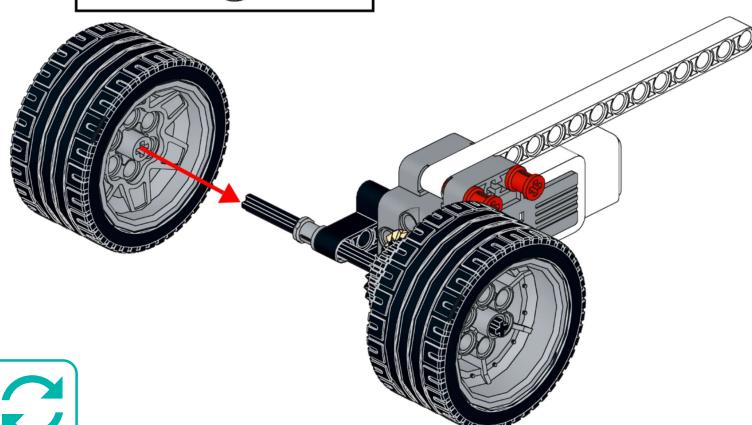
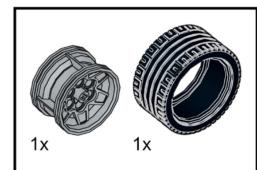
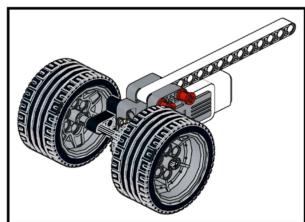
6



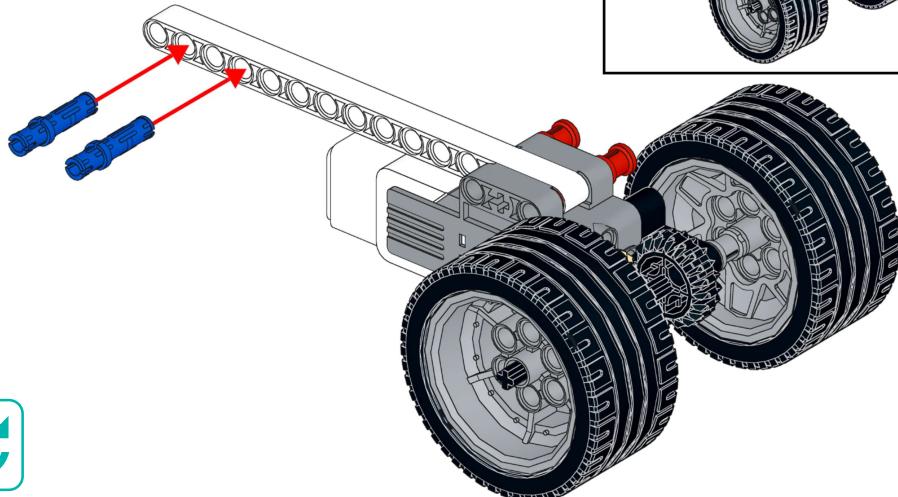
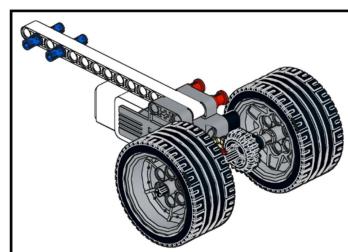
7



8



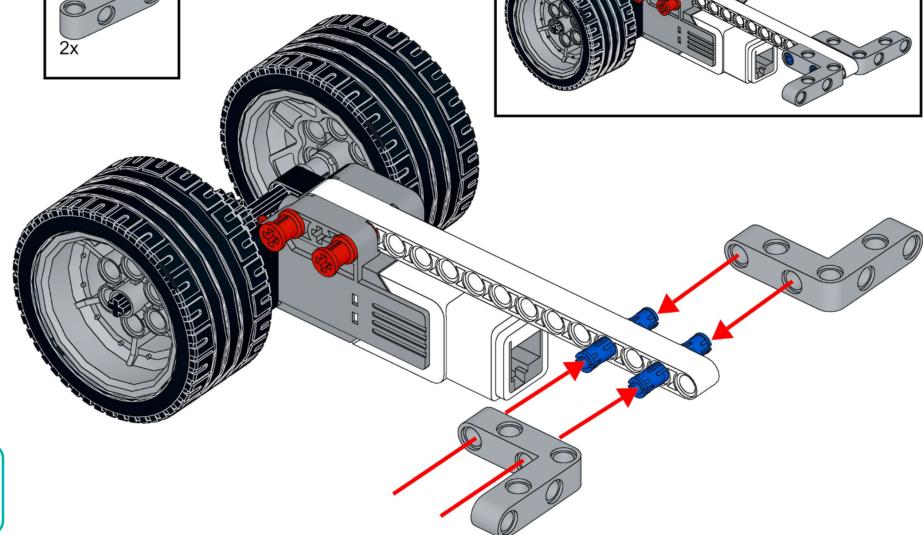
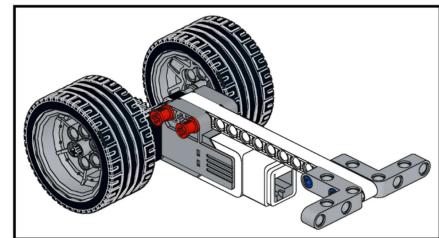
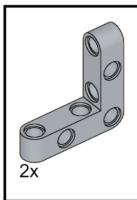
9



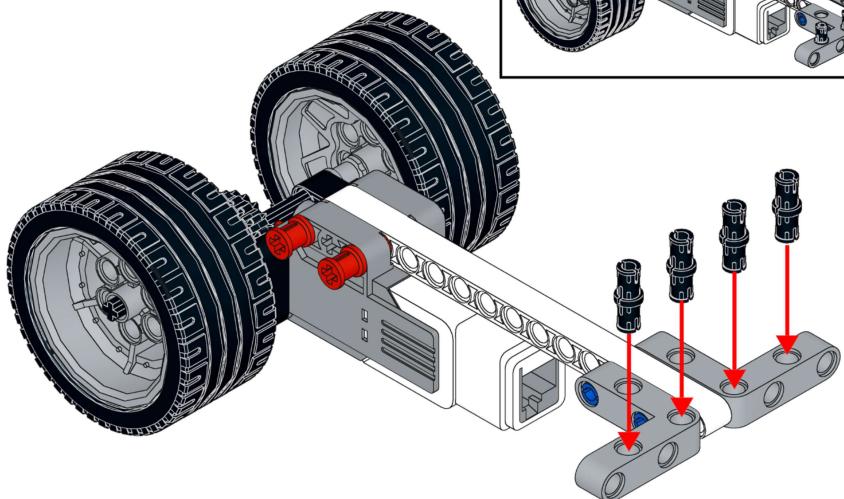
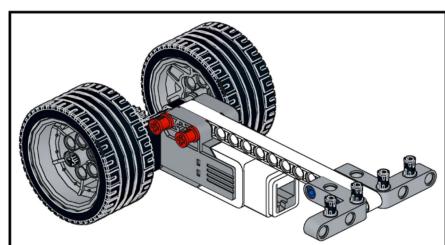
212

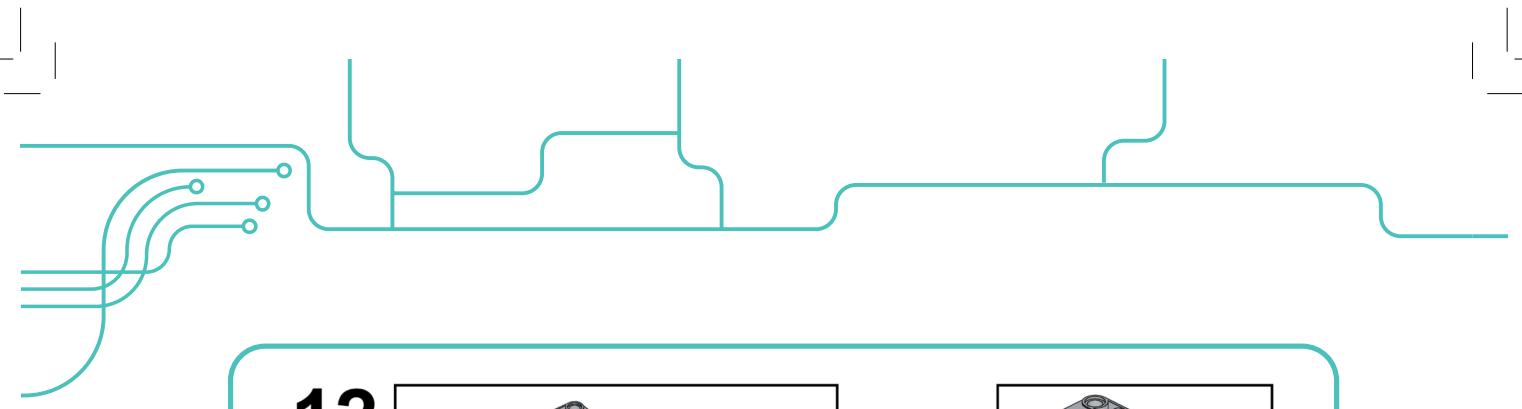
ROBÓTICA NA PRÁTICA

10

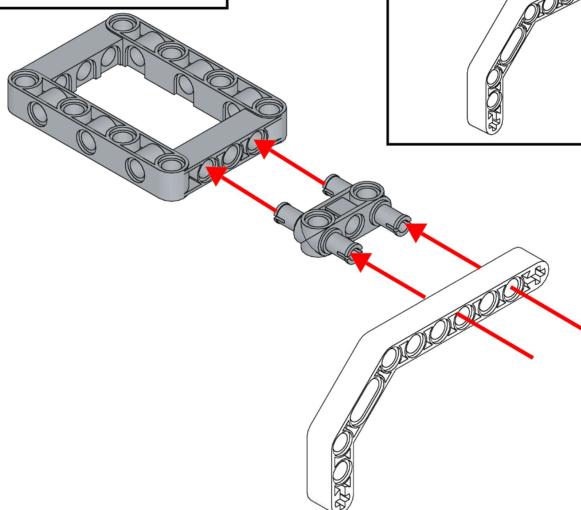
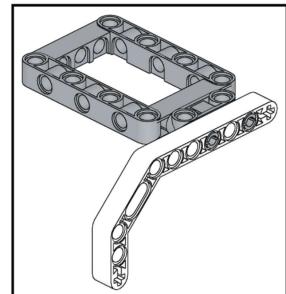
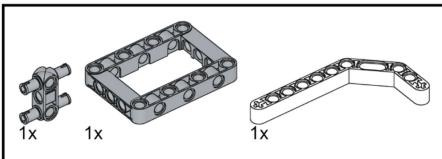


11

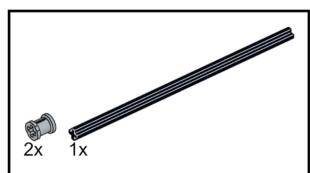
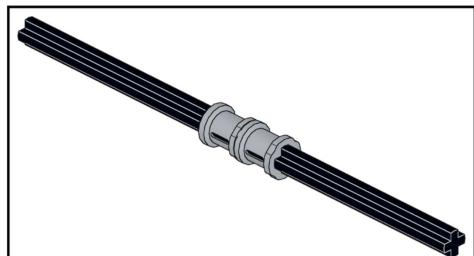




12



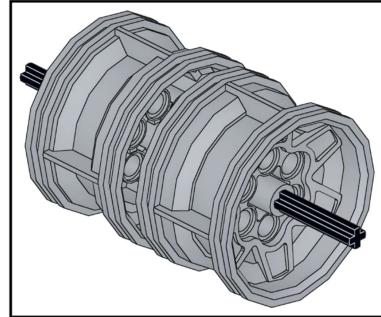
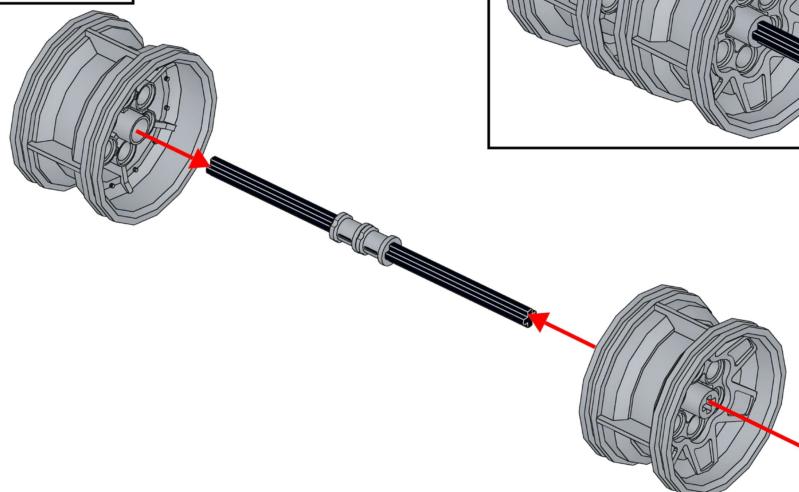
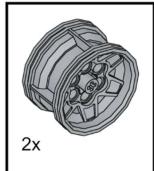
13



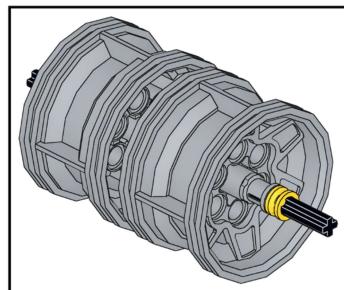
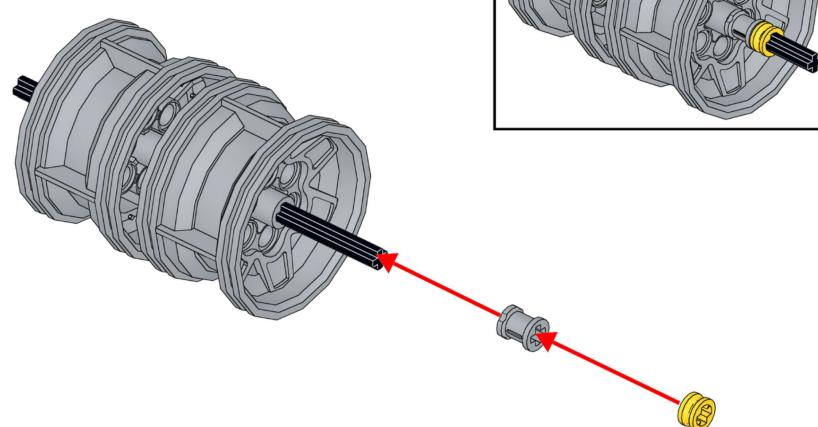
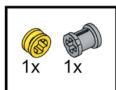
214

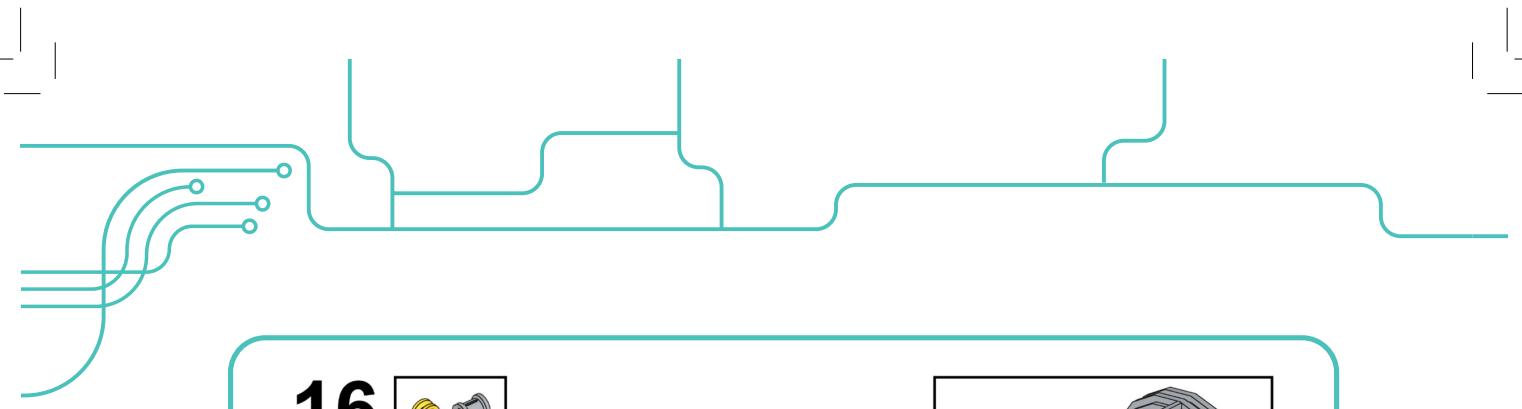
ROBÓTICA NA PRÁTICA

14

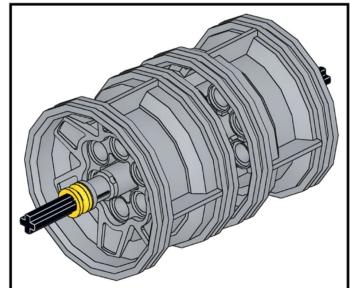
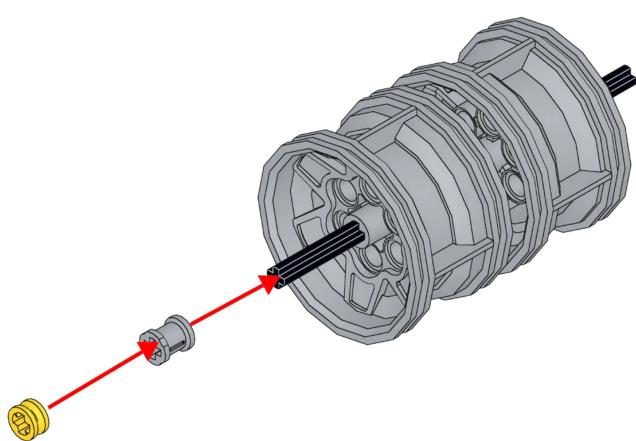
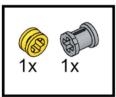


15

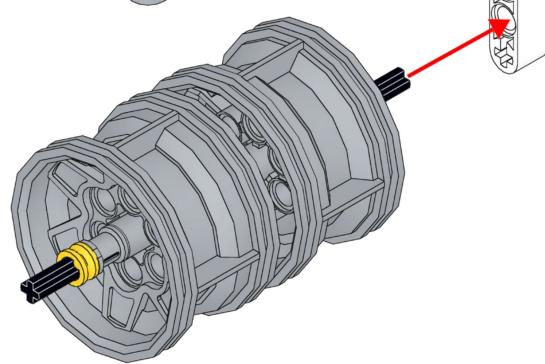
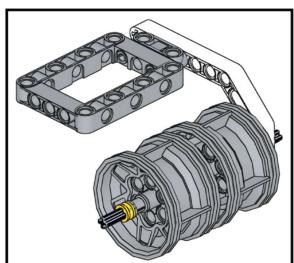
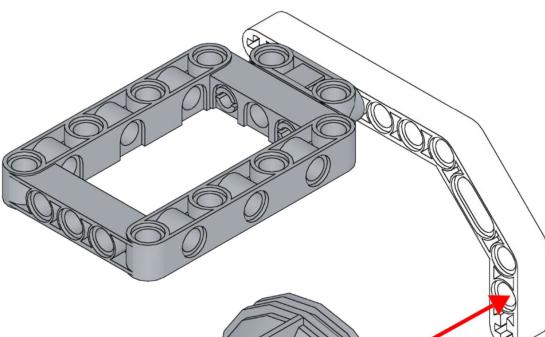




16



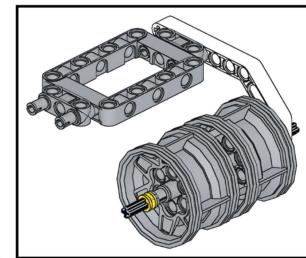
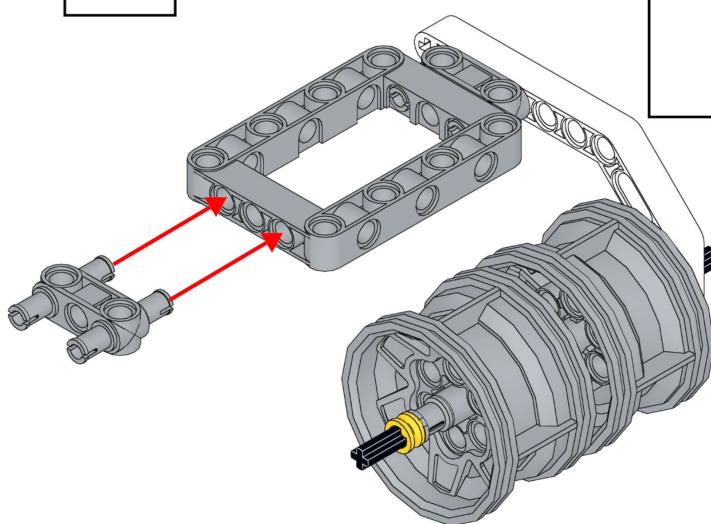
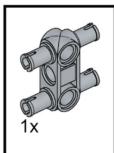
17



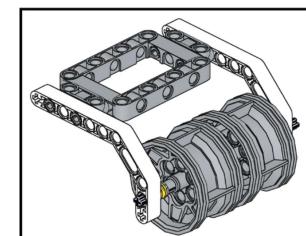
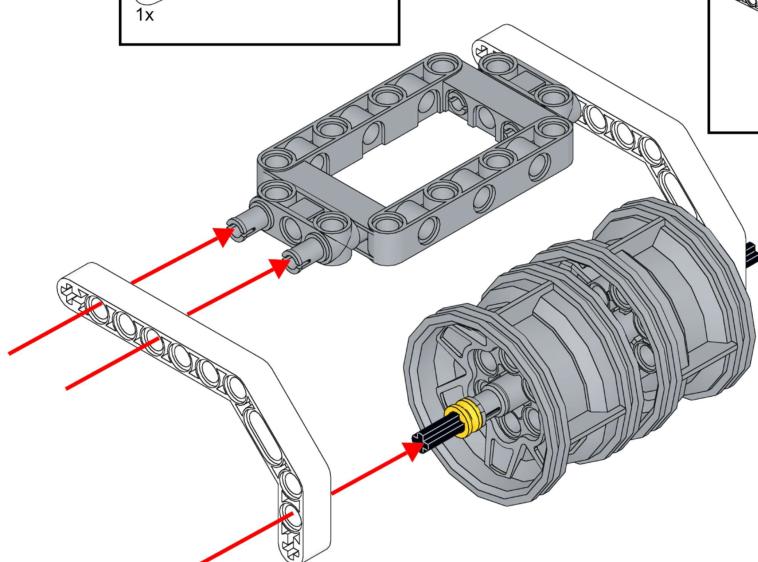
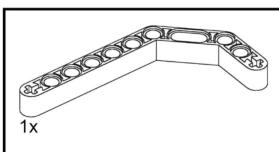
216

ROBÓTICA NA PRÁTICA

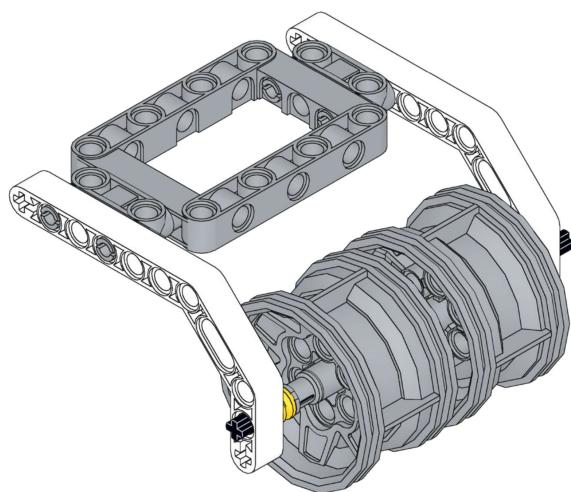
18



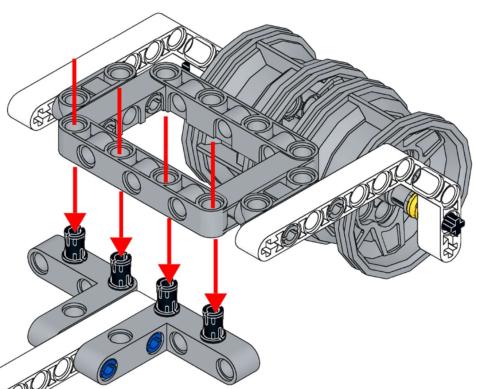
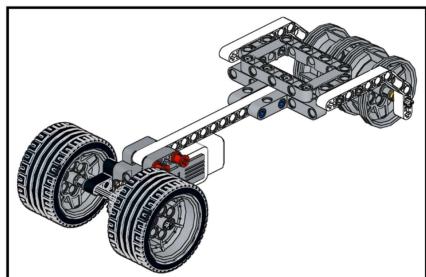
19



20



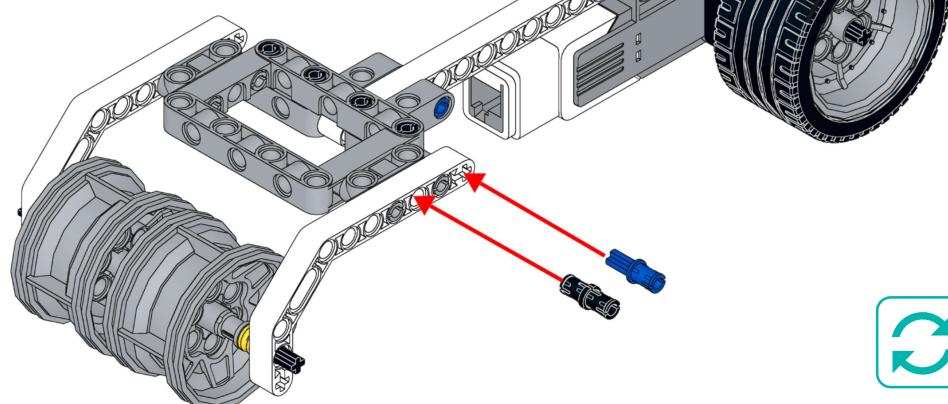
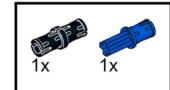
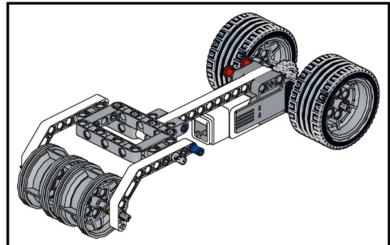
21



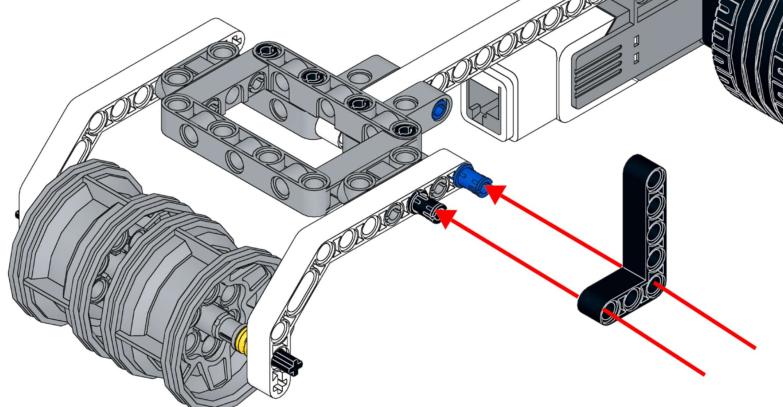
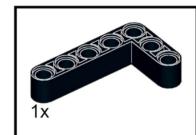
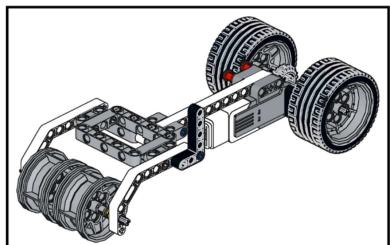
218

ROBÓTICA NA PRÁTICA

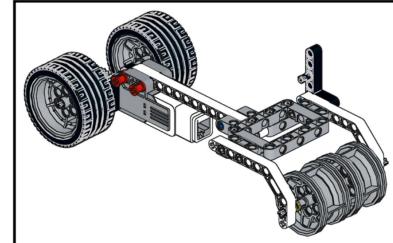
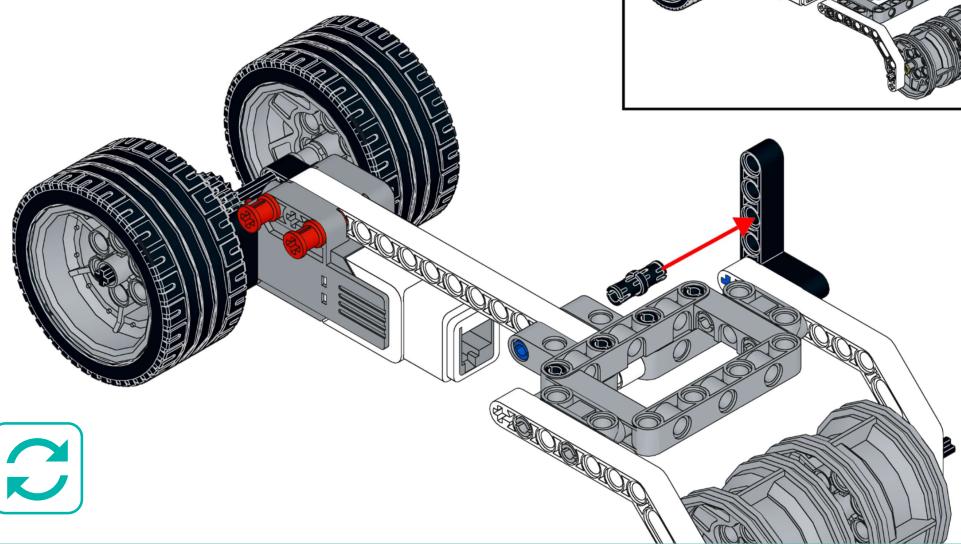
22



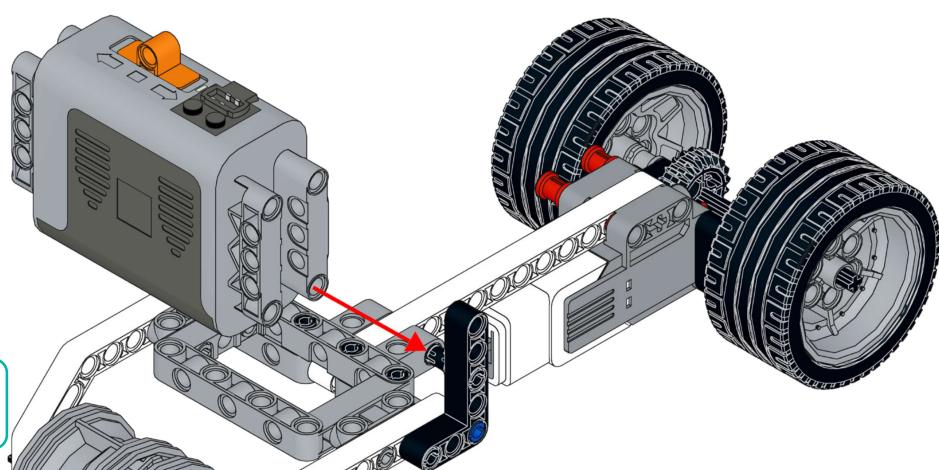
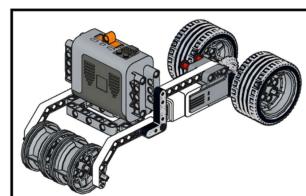
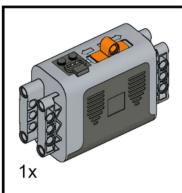
23



24



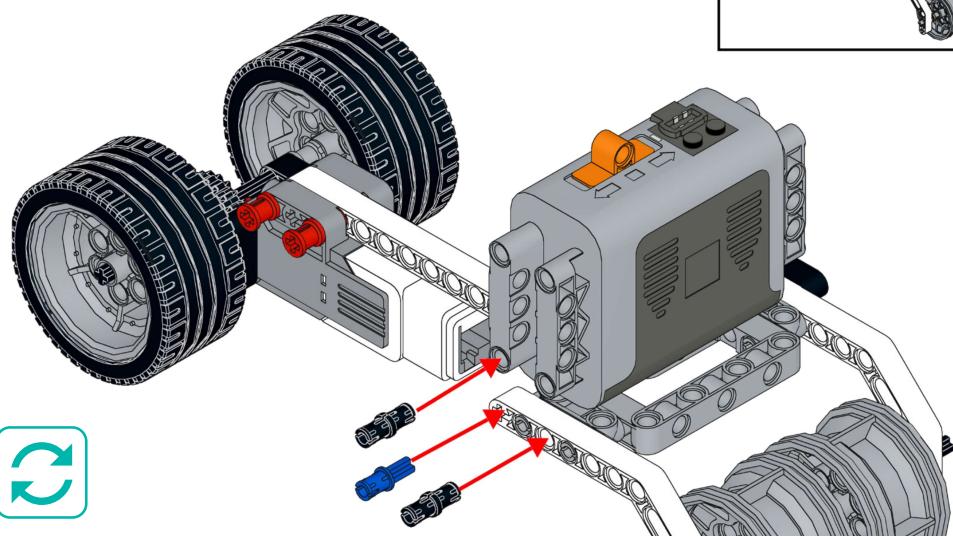
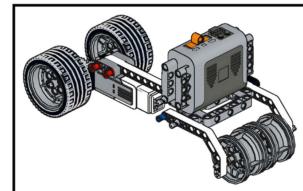
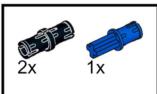
25



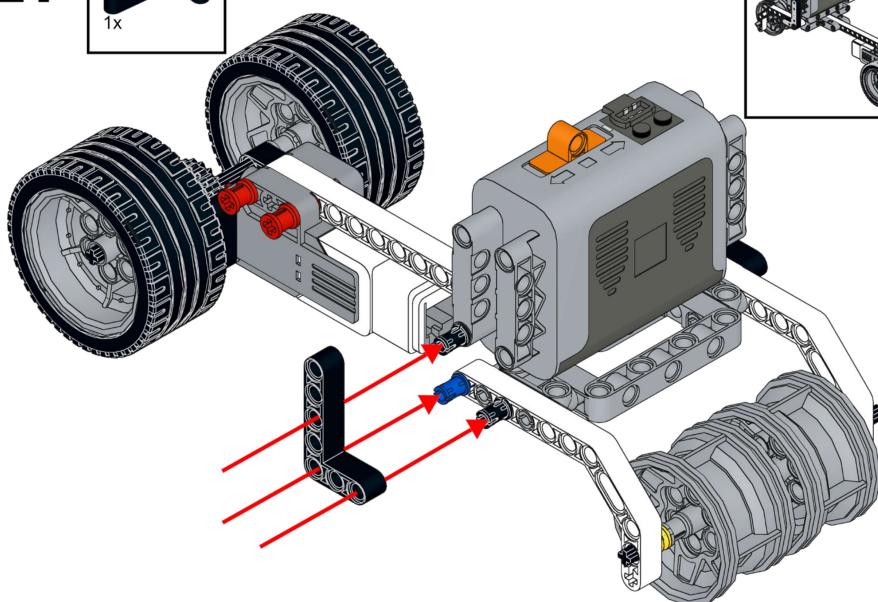
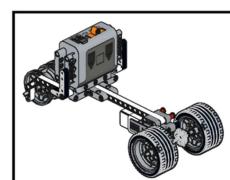
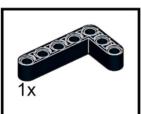
220

ROBÓTICA NA PRÁTICA

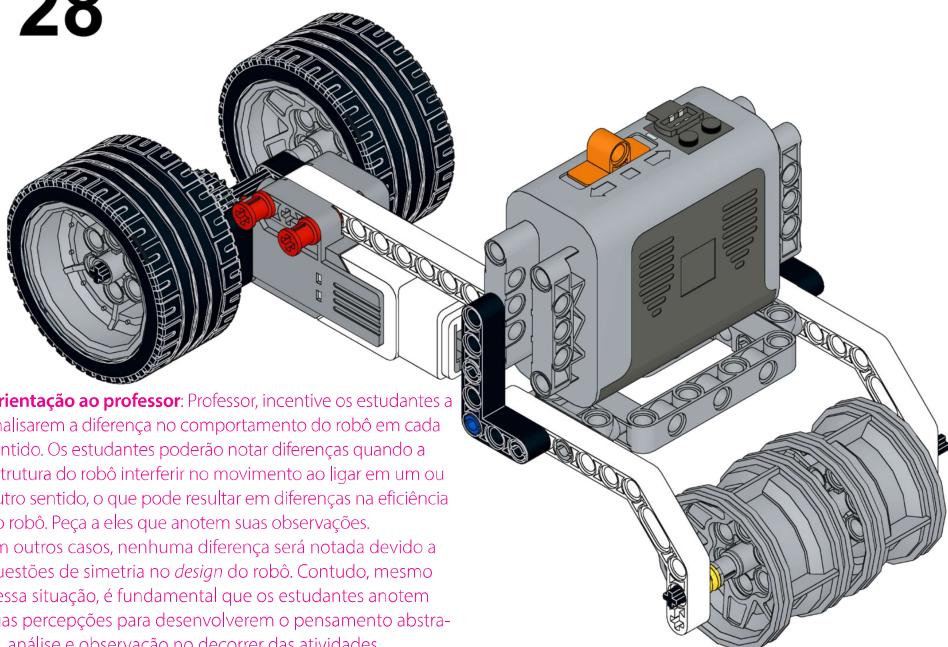
26



27



28



Orientação ao professor: Professor, incentive os estudantes a analisarem a diferença no comportamento do robô em cada sentido. Os estudantes poderão notar diferenças quando a estrutura do robô interferir no movimento ao ligar em um ou outro sentido, o que pode resultar em diferenças na eficiência do robô. Peça a eles que anotem suas observações. Em outros casos, nenhuma diferença será notada devido a questões de simetria no *design* do robô. Contudo, mesmo nessa situação, é fundamental que os estudantes anotem suas percepções para desenvolverem o pensamento abstrato, análise e observação no decorrer das atividades.

PROGRAMAÇÃO 2

Seu robô é composto por um motor que pode girar no sentido horário e anti-horário. Para controlar esse movimento, utilize a chave seletora, que tem 3 posições: 1, 2 e 3.



Posicione a chave em cada uma dessas posições e observe o que acontece. Divirta-se enquanto testa e descobre como seu robô funciona. Compartilhe seus resultados com o professor e colegas, anotando no seu caderno os mais importantes.

DESAFIO 2

Altere a estrutura do robô utilizando um sistema de redução de engrenagens para que o rolo compressor ande bem devagar a fim de que possa compactar o solo com mais eficiência. Para isso, modifique o eixo do robô e experimente engrenagens de tamanhos diferentes. Deveremos colocar engrenagens maiores ou menores?

Professor(a), incentive os estudantes a modificarem o eixo dos robôs para que caiba um sistema de engrenagens, de modo que as menores estejam conectadas ao motor, e as maiores, às rodas. Dessa forma, o robô reduzirá a velocidade, simulando um Rolo Compressor real.

222

ROBÓTICA NA PRÁTICA