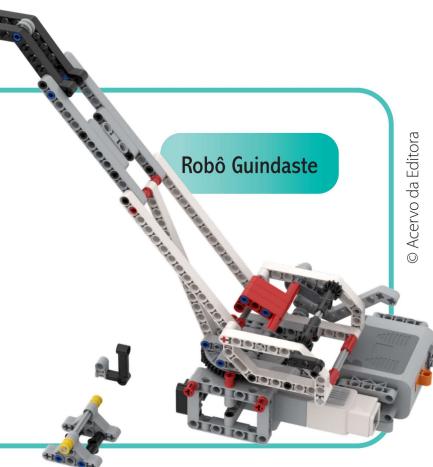


## GUINDASTE



Agora que vocês já conhecem o funcionamento das polias e sua aplicação no caminhão reboque, utilizaremos esses conhecimentos para montar um guindaste. Ele deverá suspender um objeto utilizando uma manivela mecânica e girar sua base em 360 graus utilizando o motor médio. Para isso, organizem-se em grupos e utilizem uma cordinha para representar o cabo de aço do guindaste. Observe com atenção qual é o papel da polia nessa montagem.

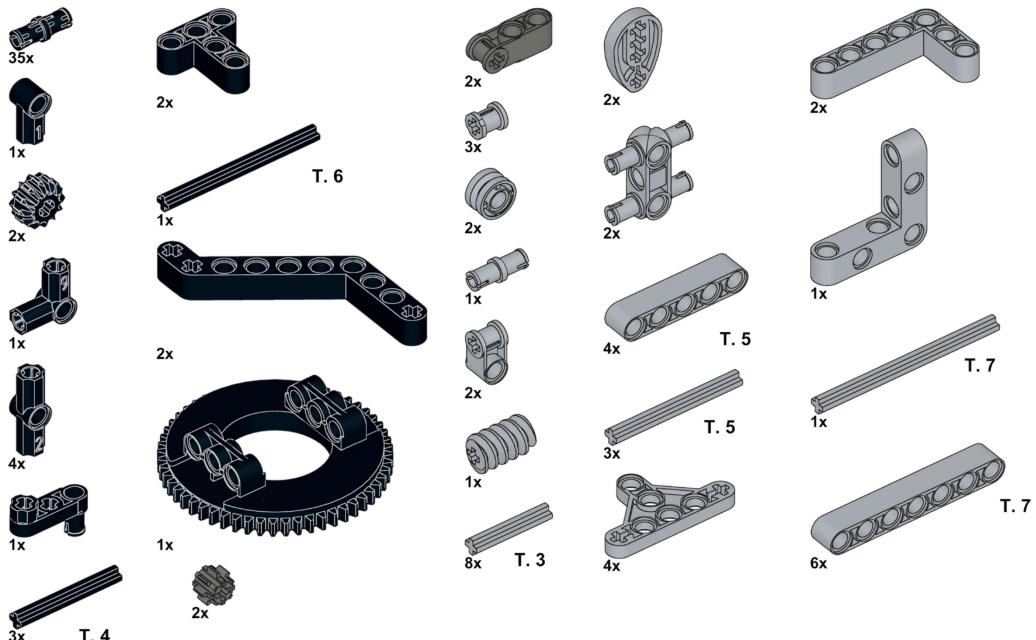


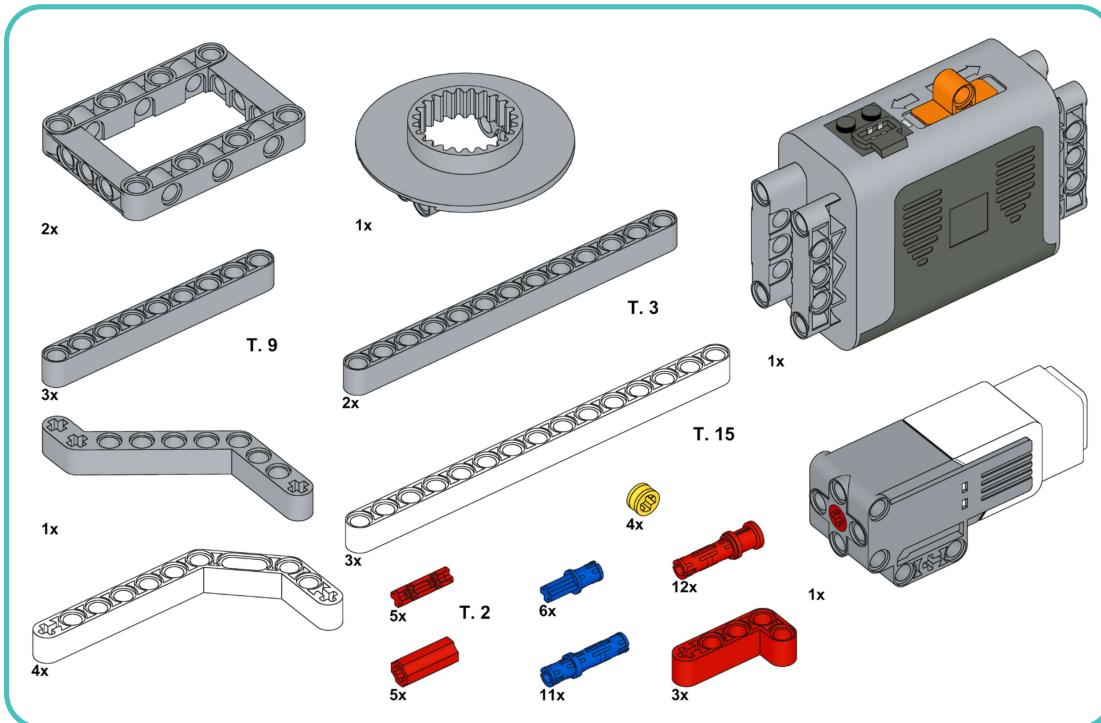
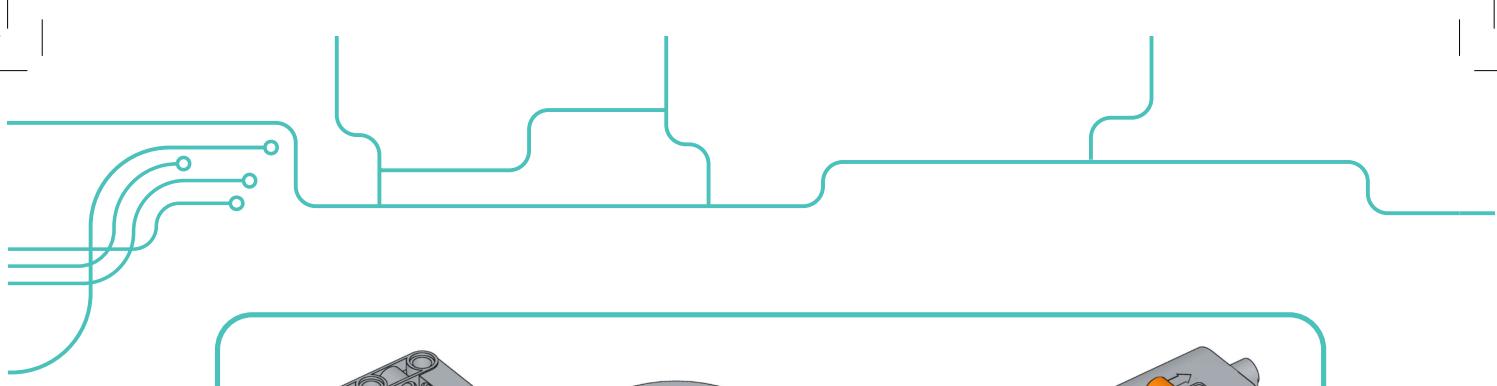
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## MONTAGEM

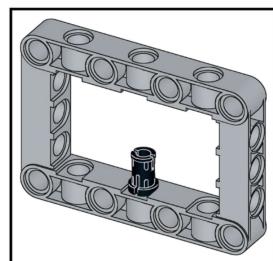
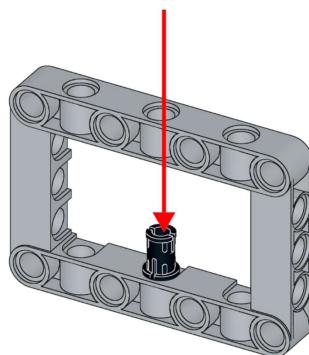
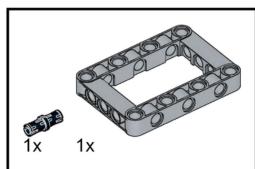
Antes de começar, faça um checklist das peças necessárias para montar seu guindaste.



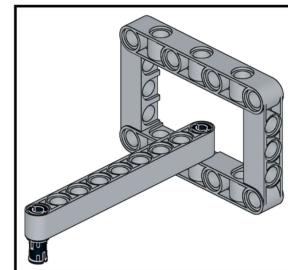
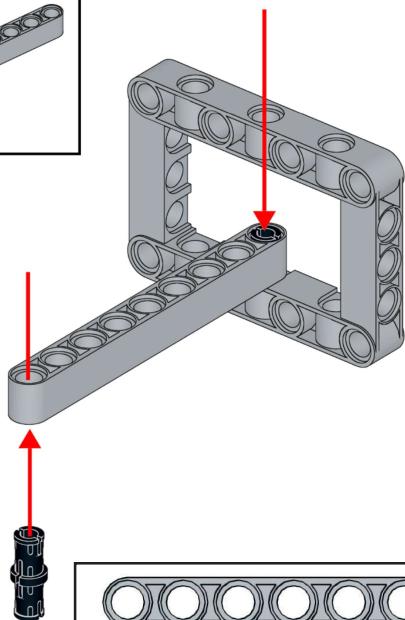
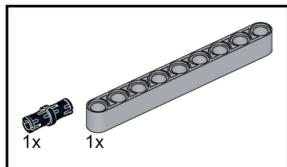


A seguir, acompanhe o passo a passo da montagem do guindaste.

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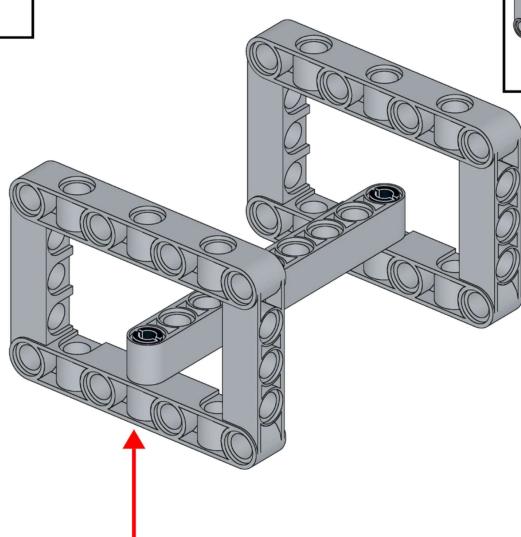
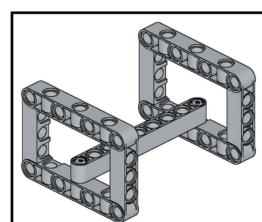
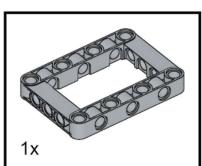


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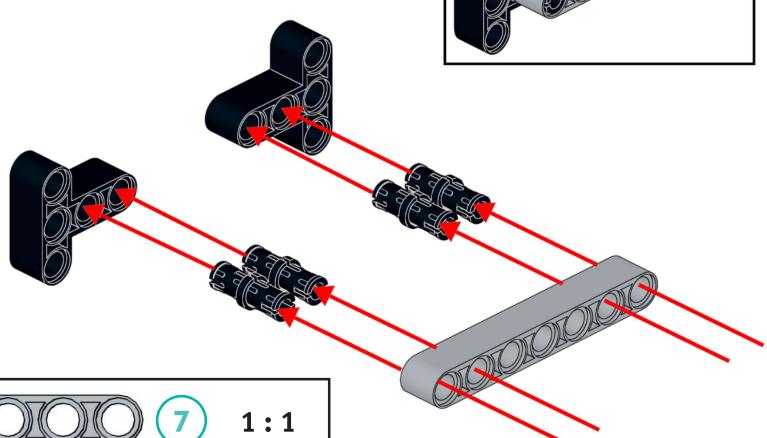
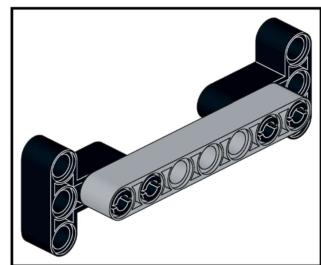
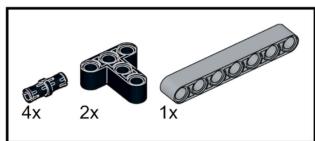


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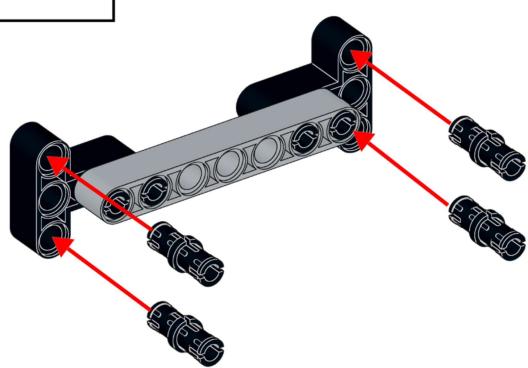
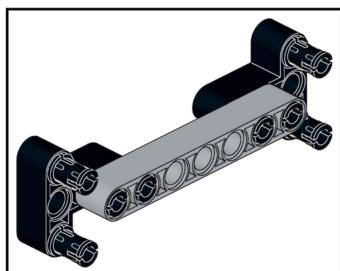
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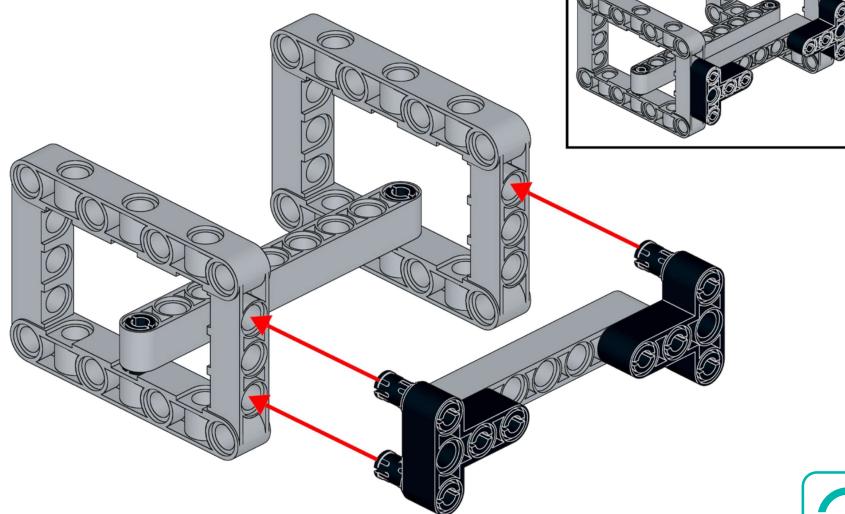
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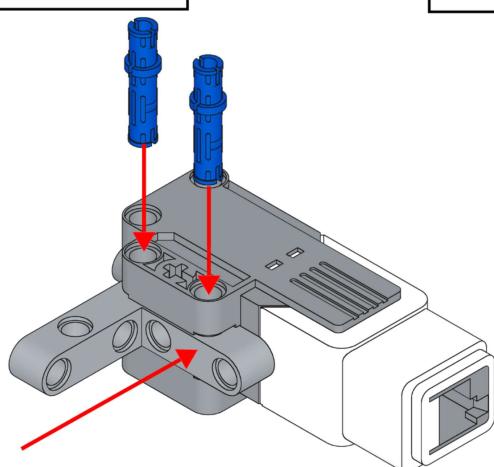
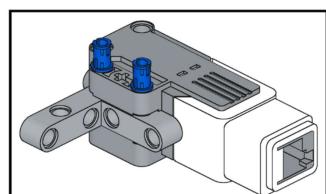
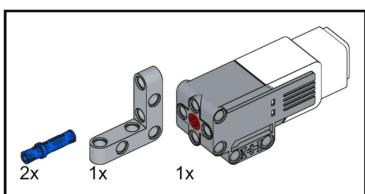
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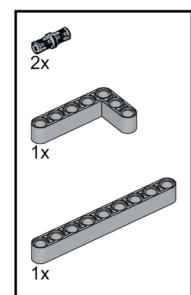
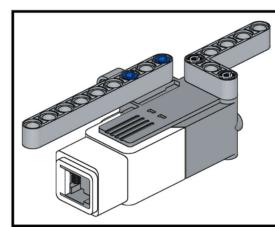
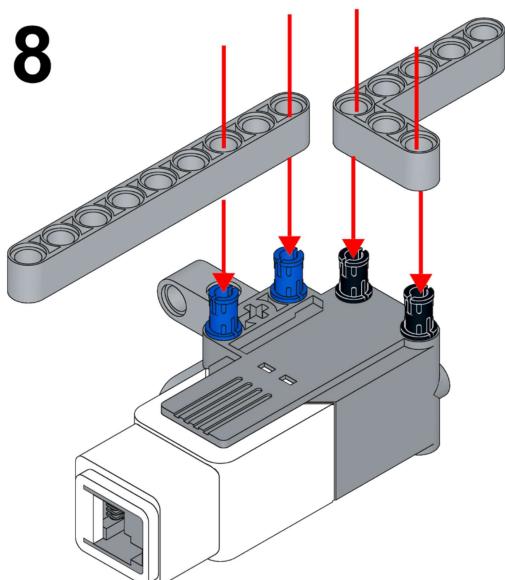
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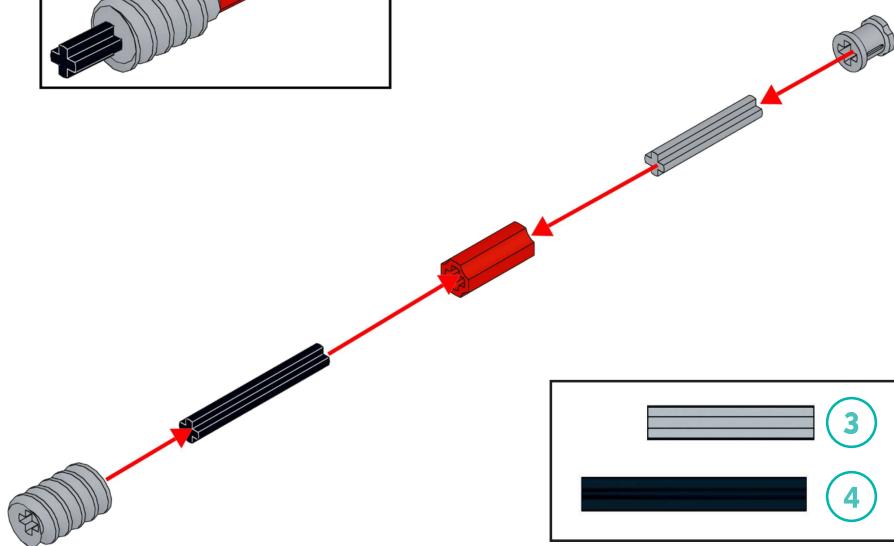
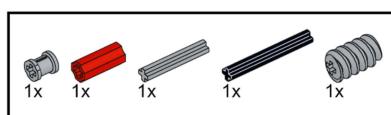
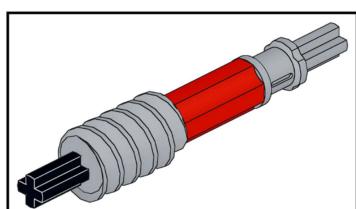
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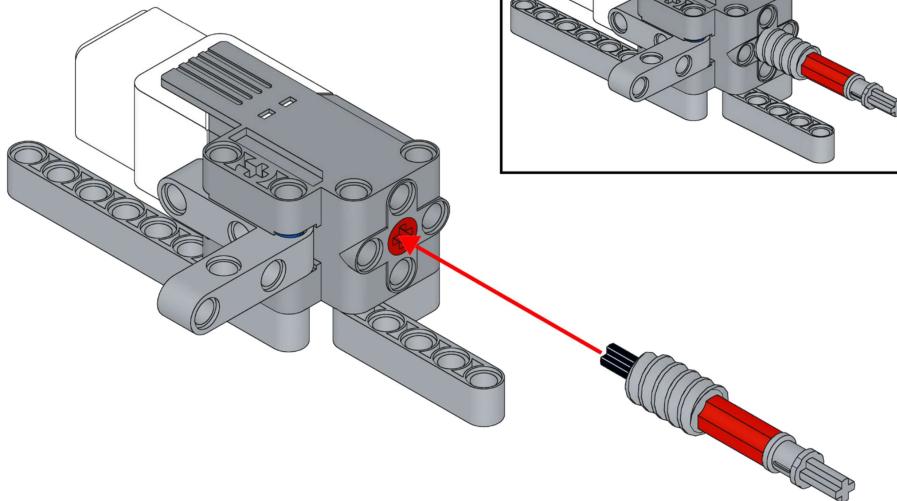


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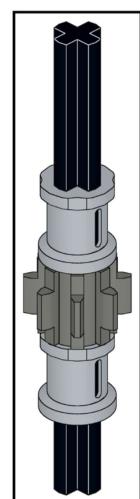
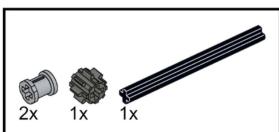
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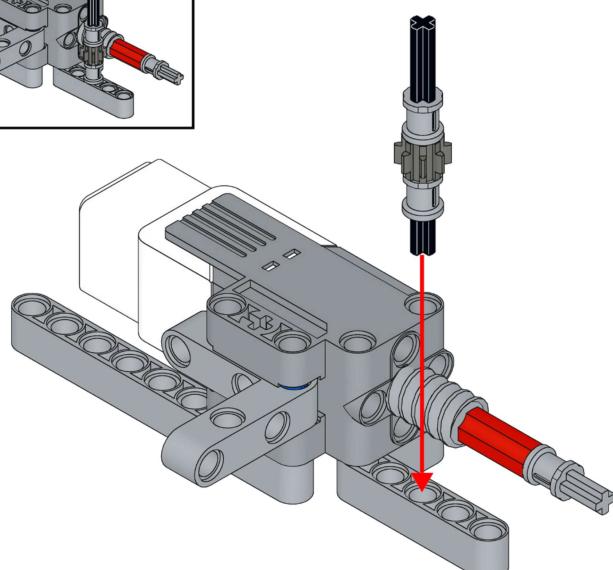
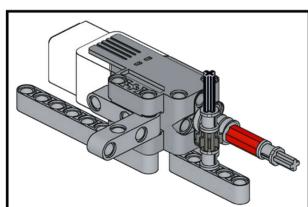
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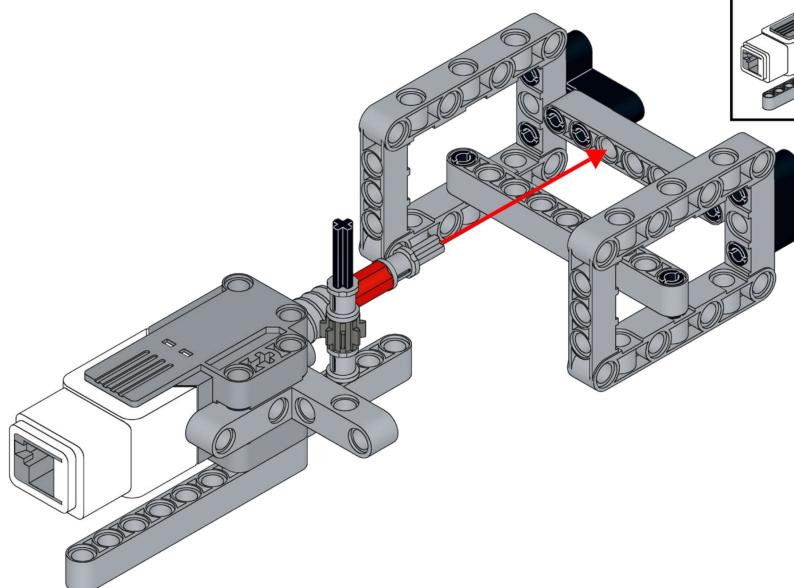
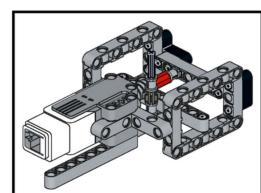
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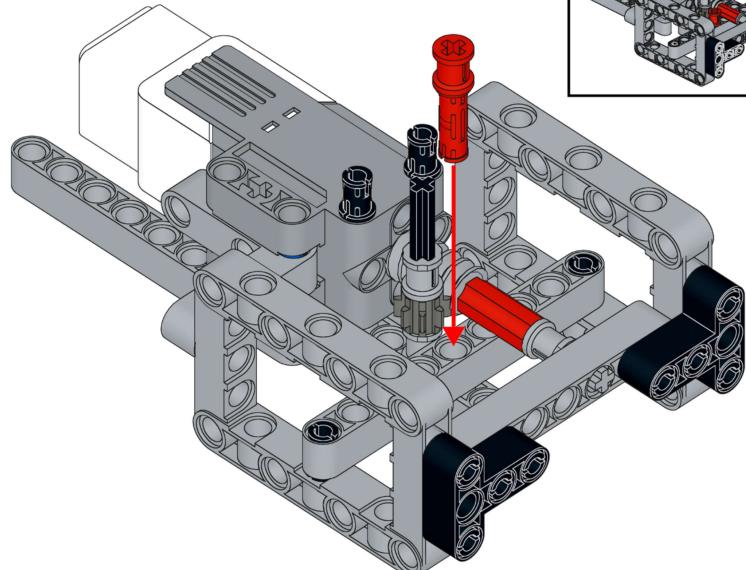
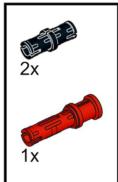
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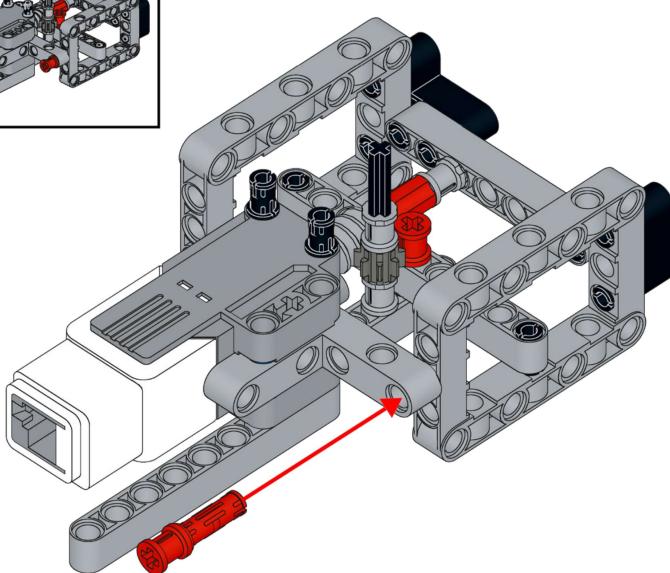
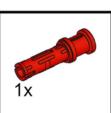
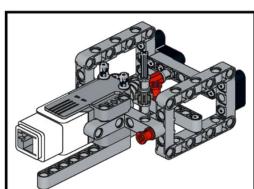
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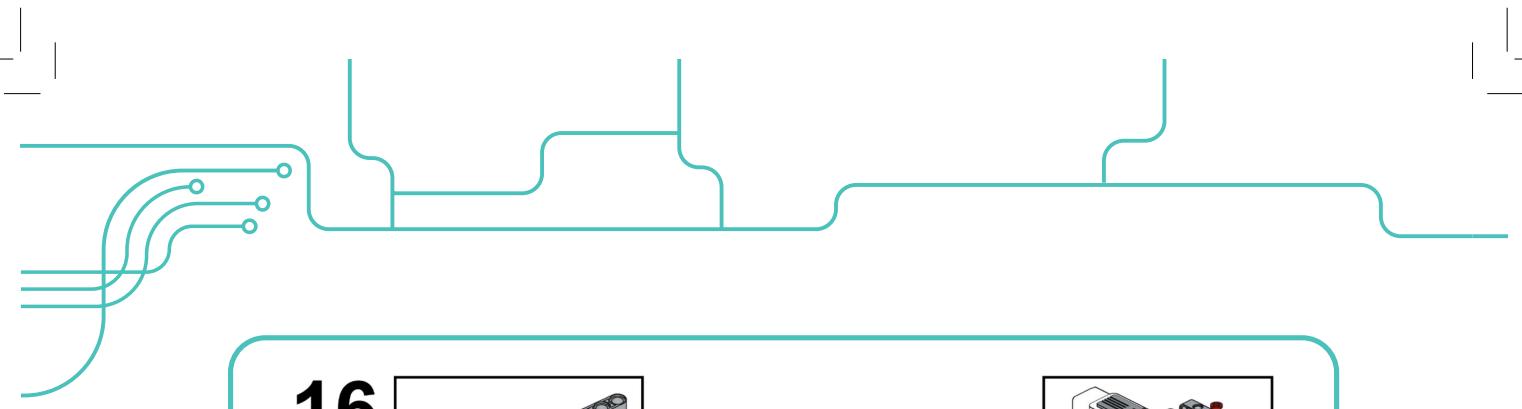
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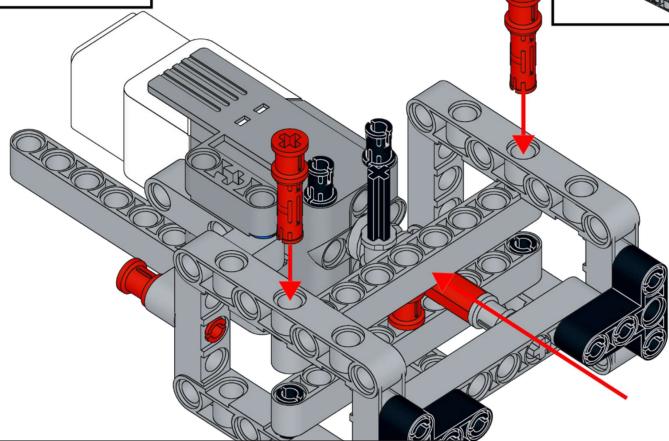
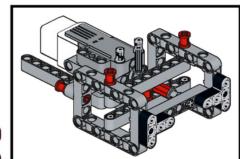
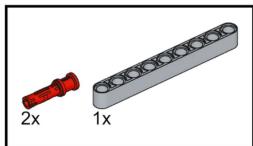


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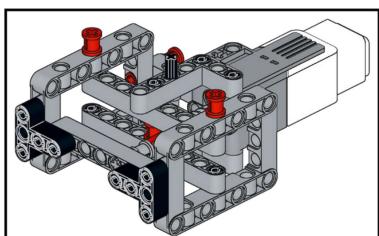
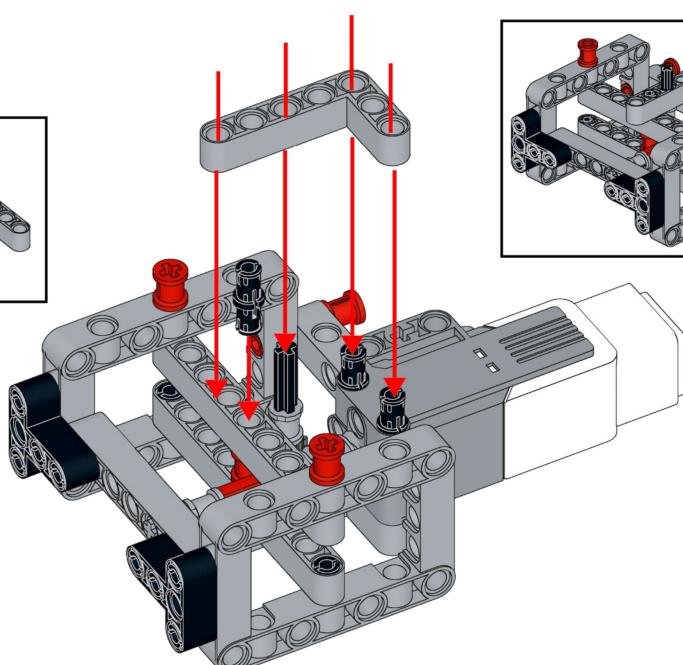
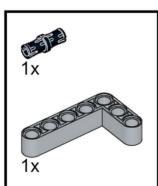


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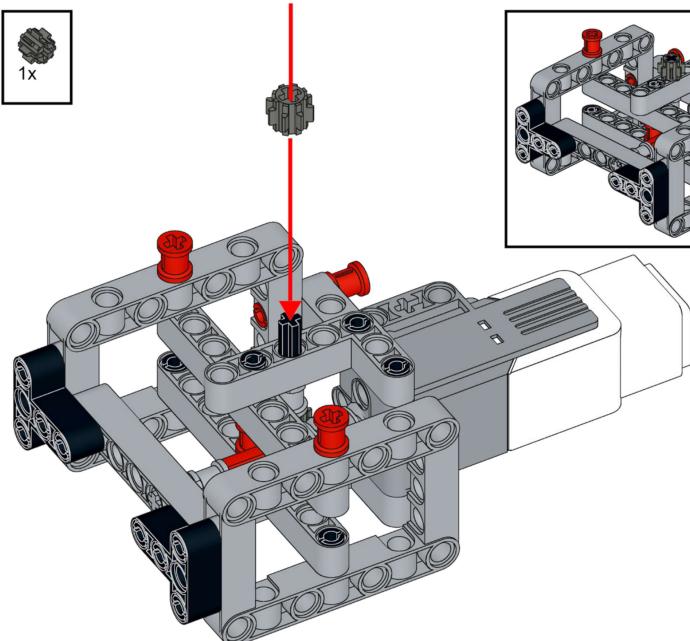
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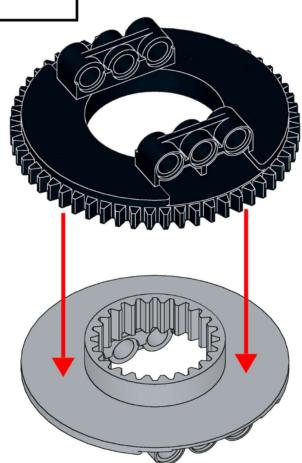
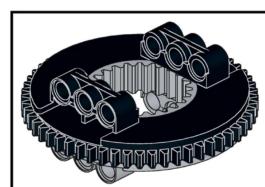
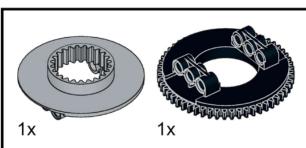
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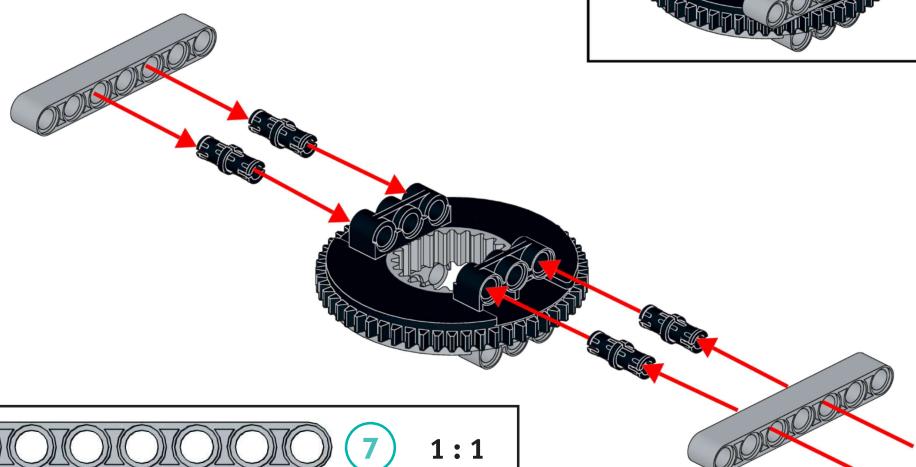
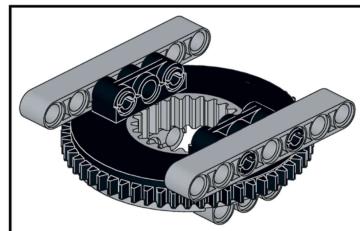
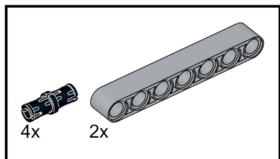
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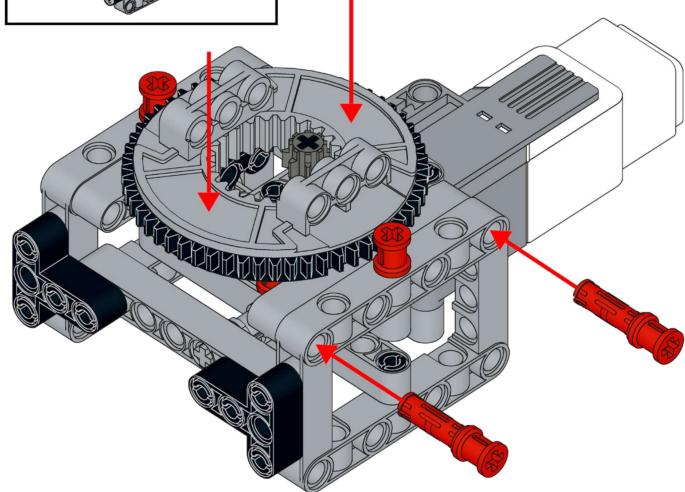
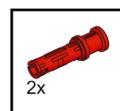
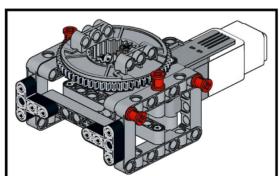
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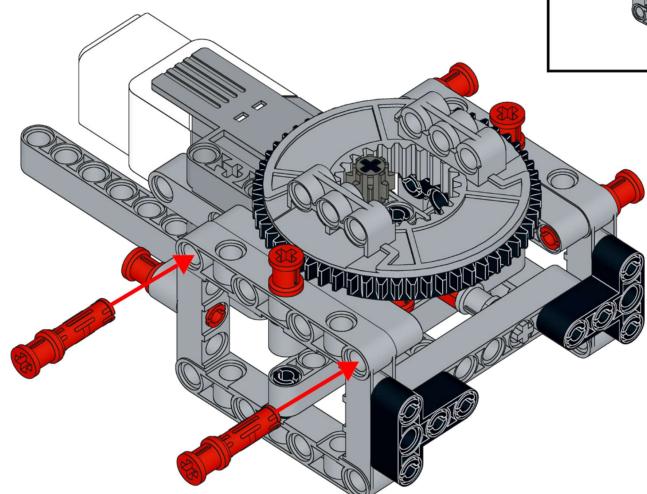
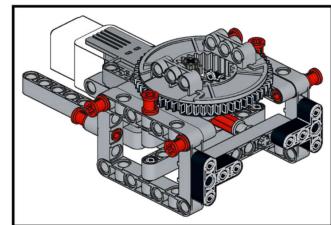
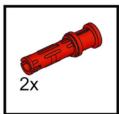
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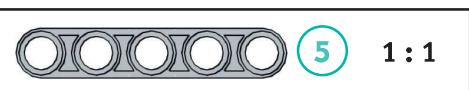
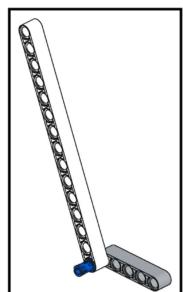
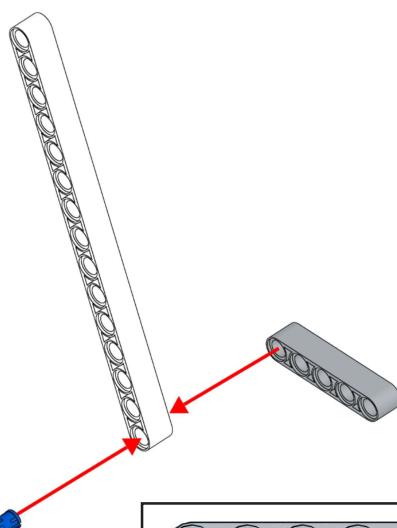
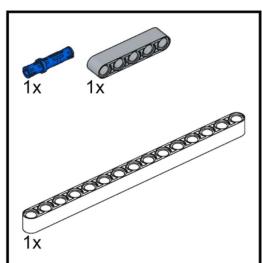
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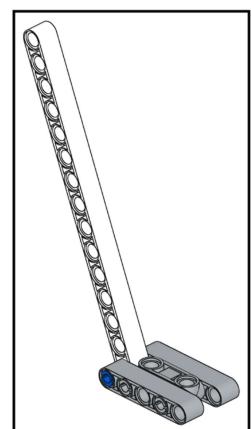
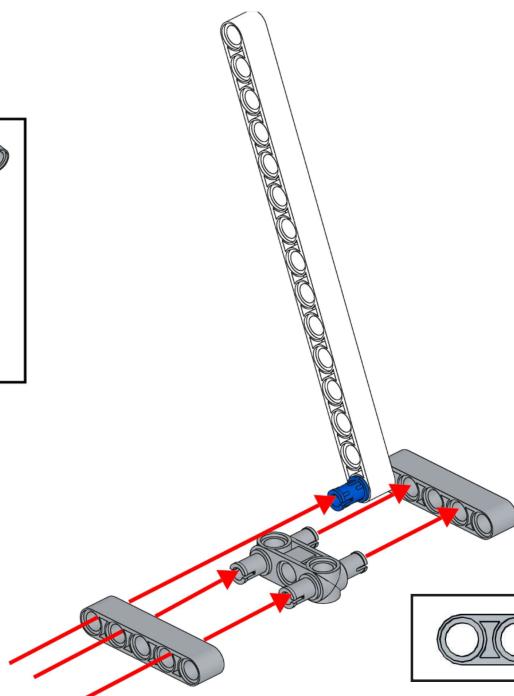
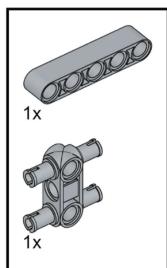
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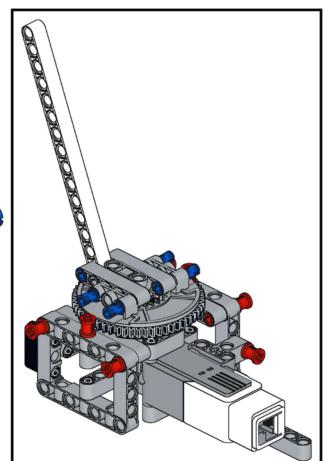
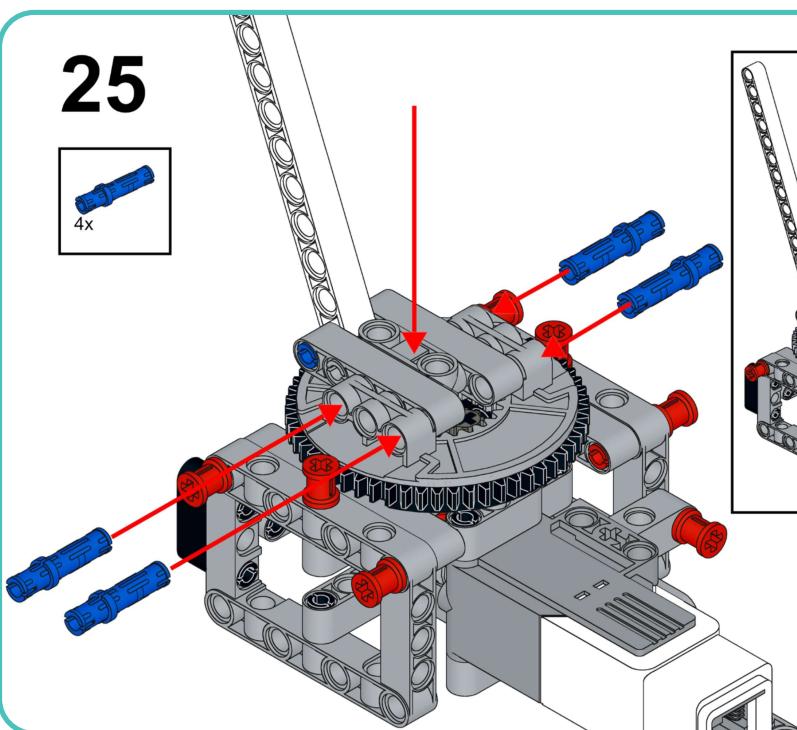


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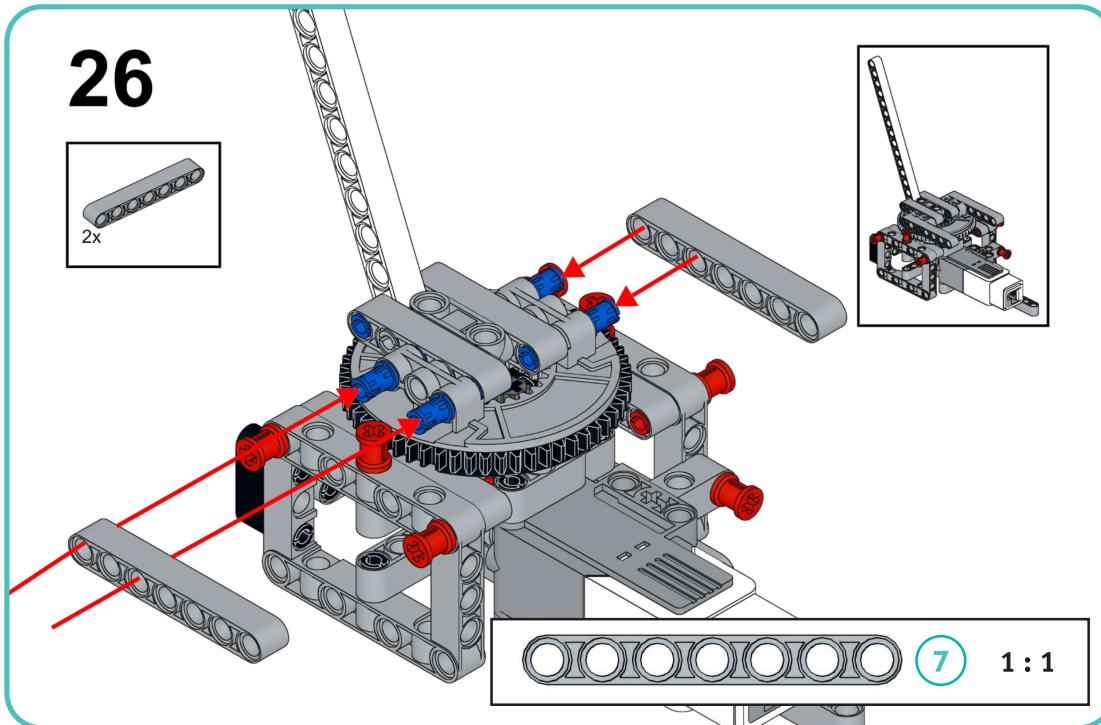
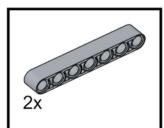
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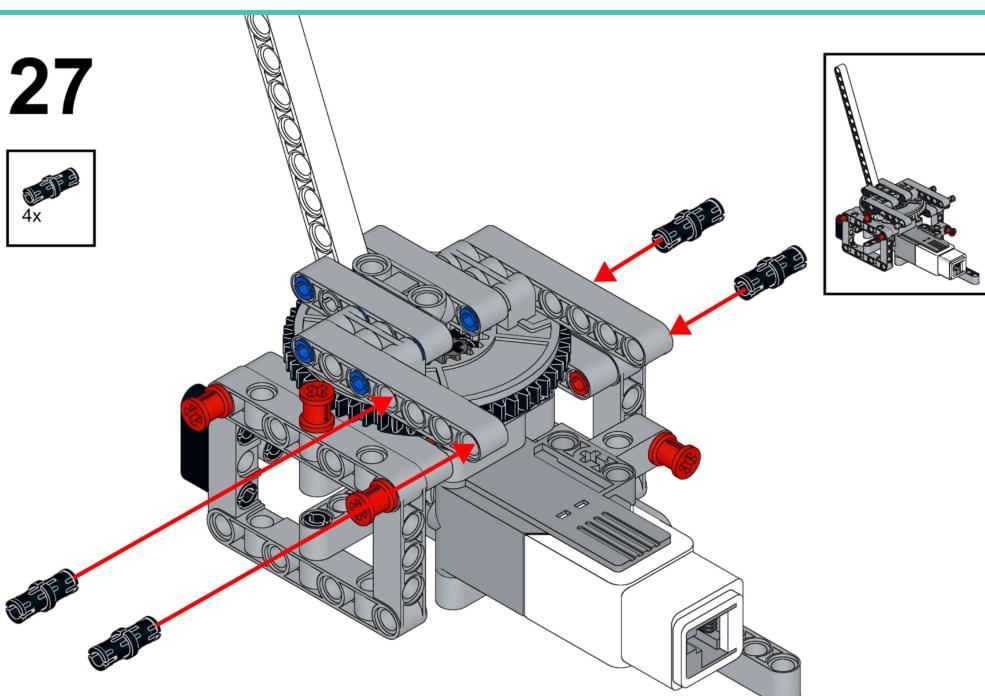
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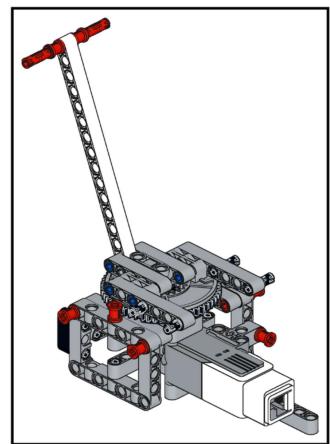
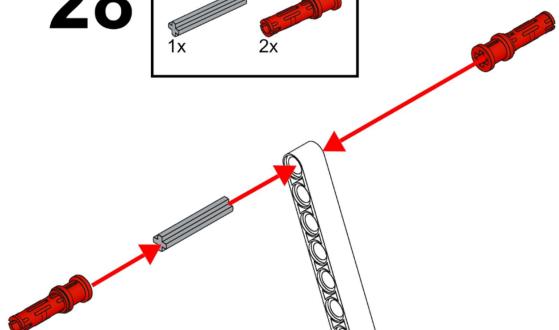
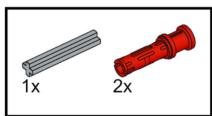


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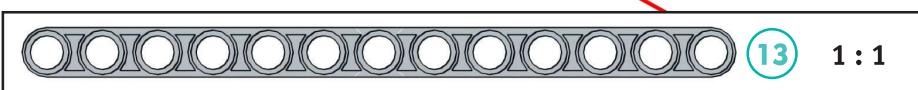
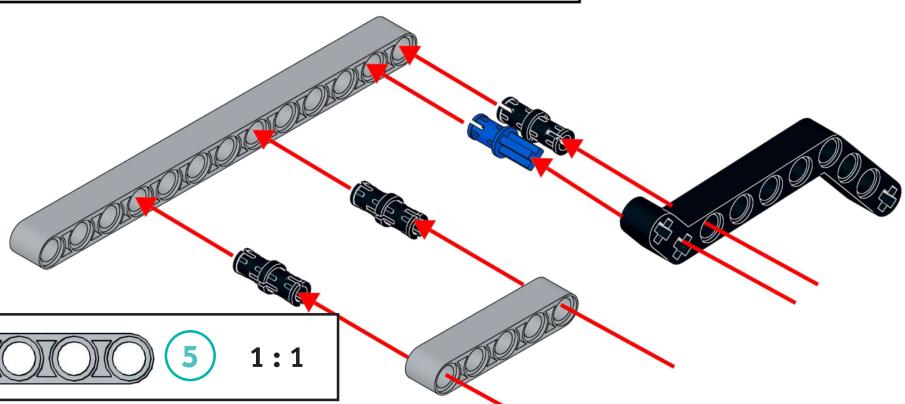
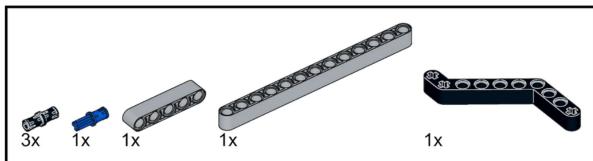
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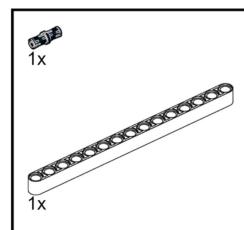
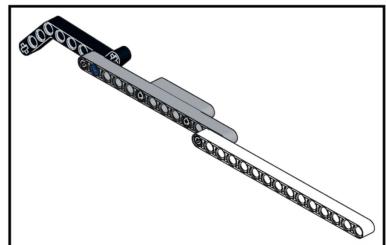
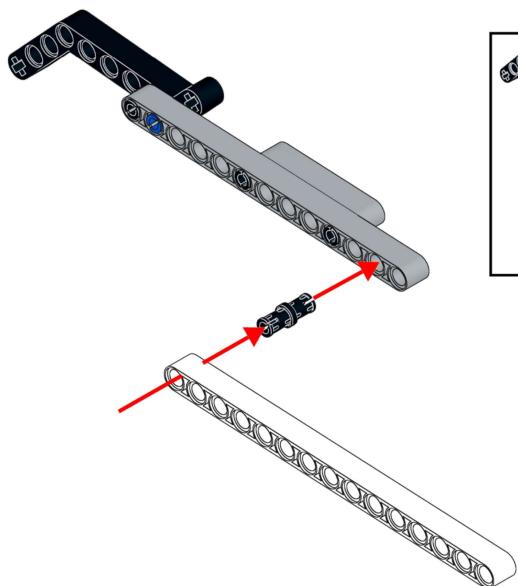
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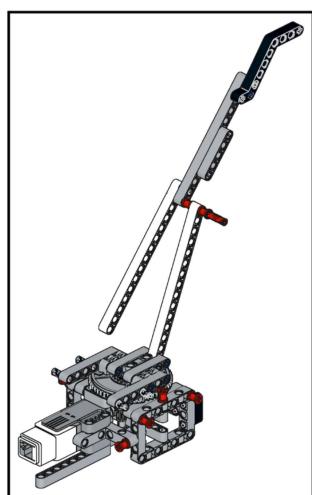
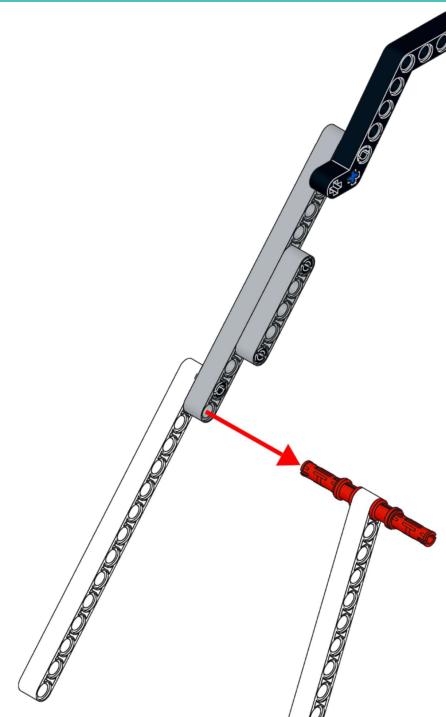
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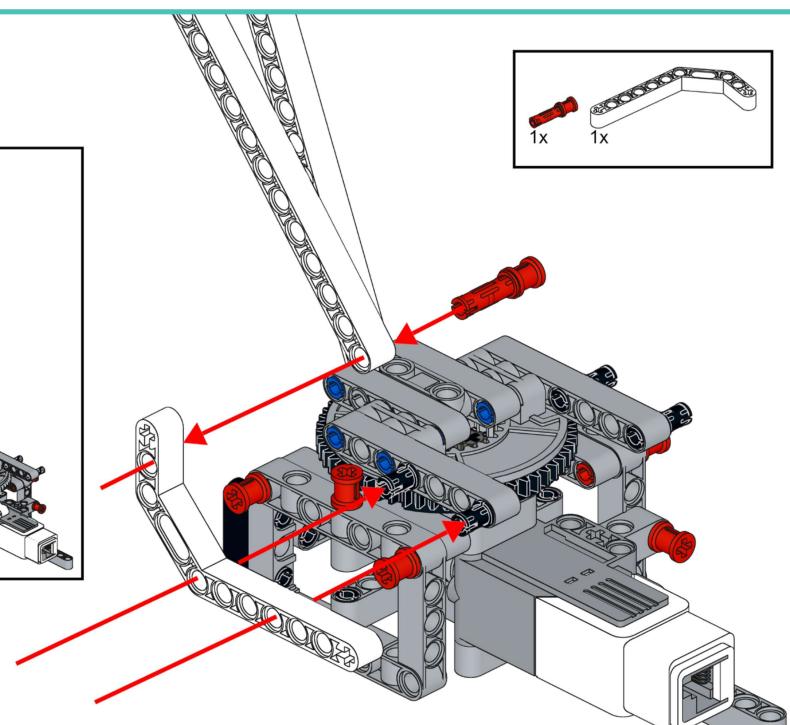
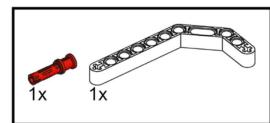
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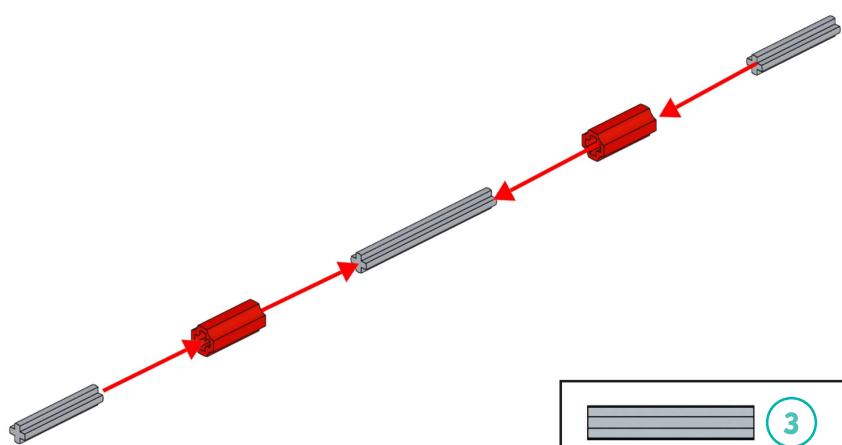
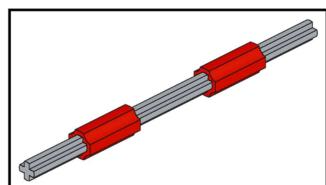
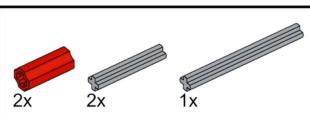
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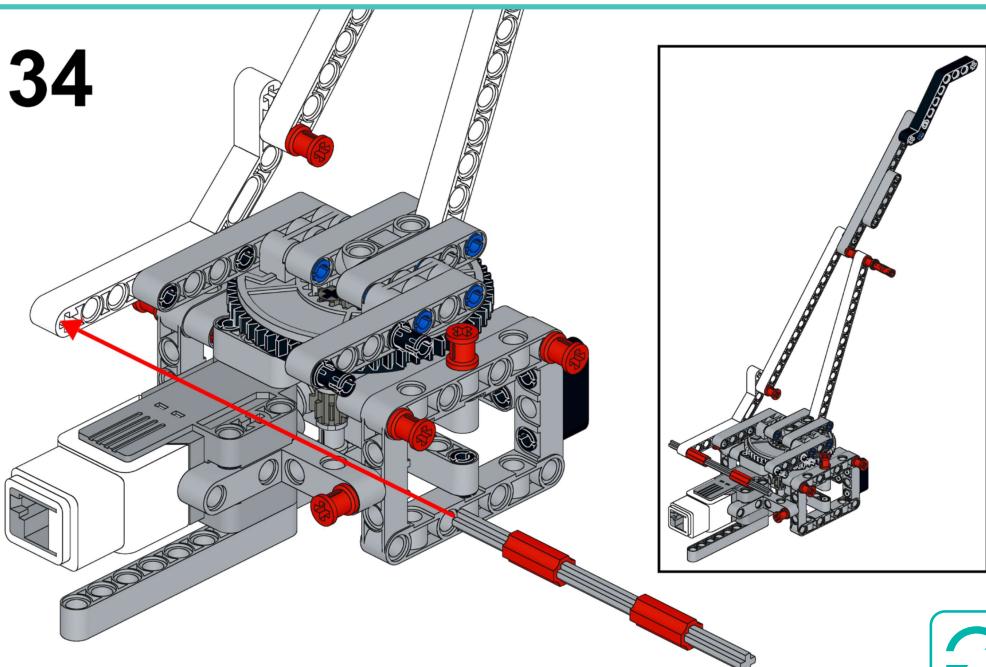
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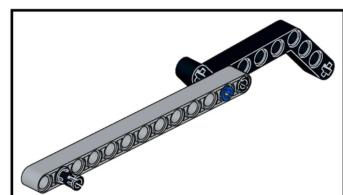
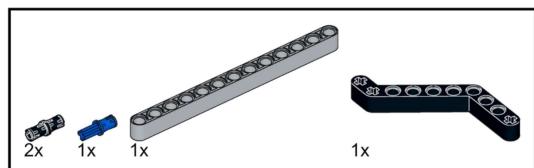
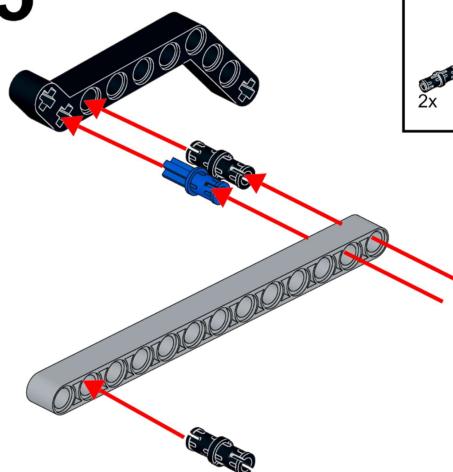
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ROBÓTICA NA PRÁTICA

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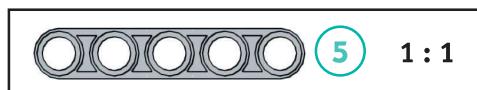
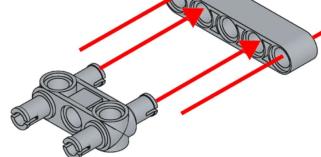
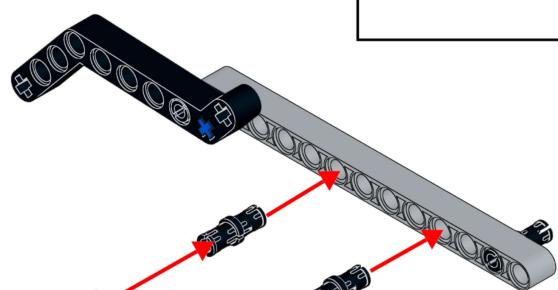
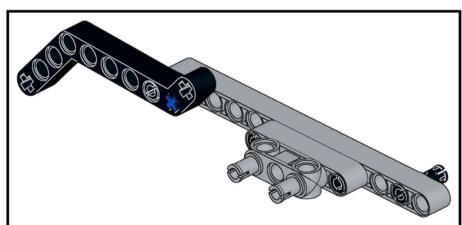
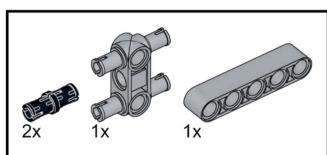
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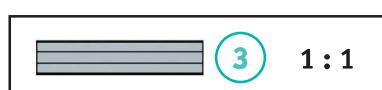
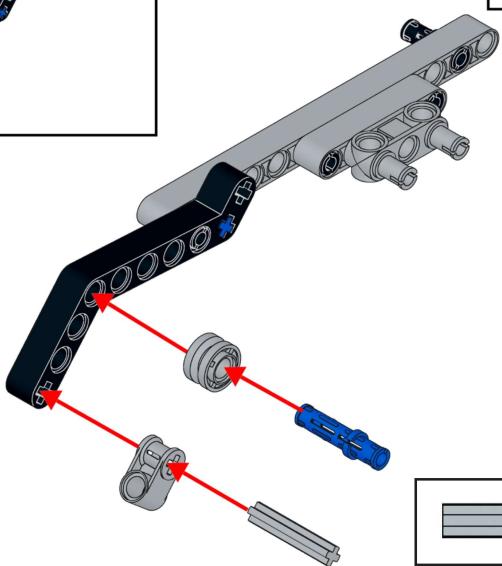
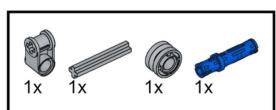
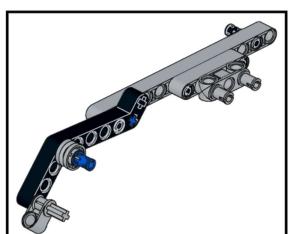
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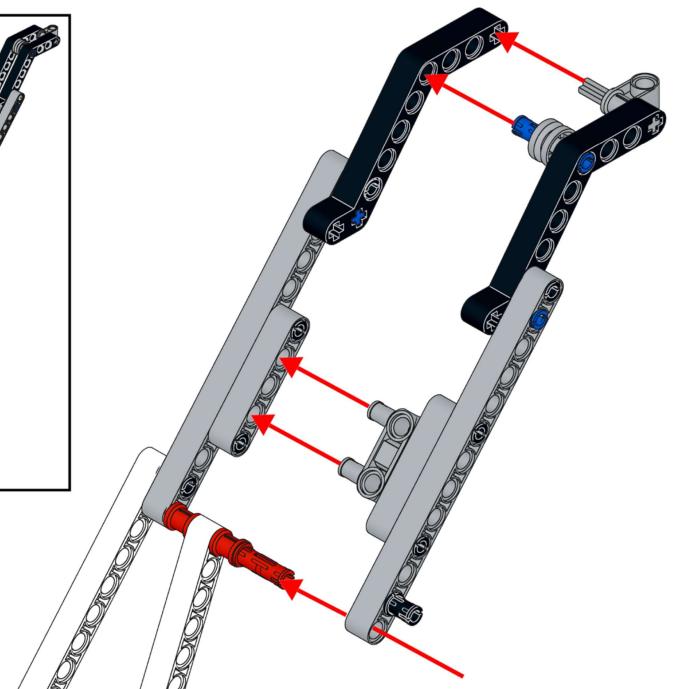
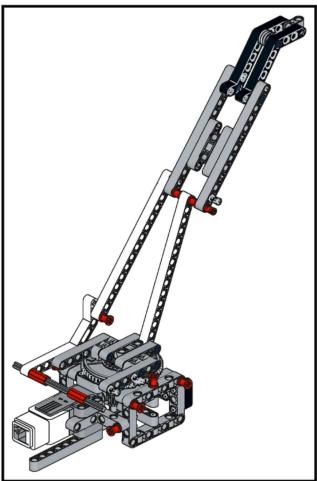
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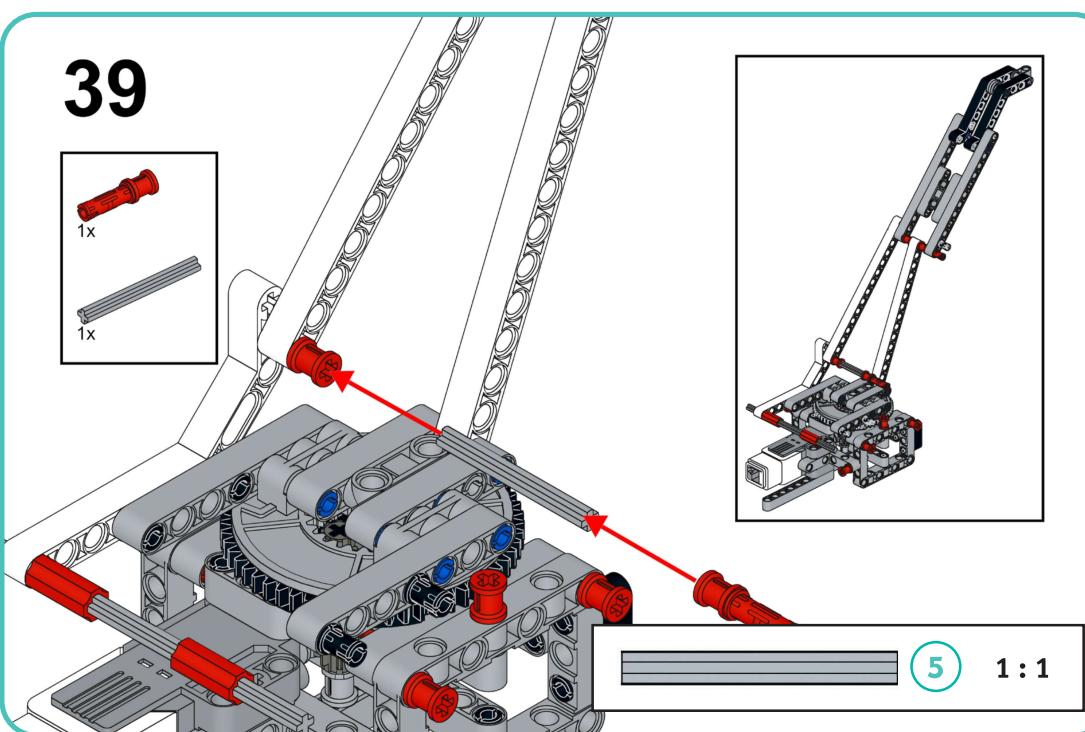
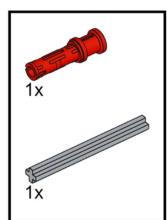
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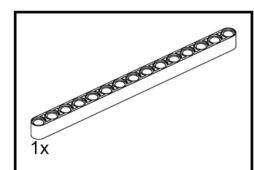
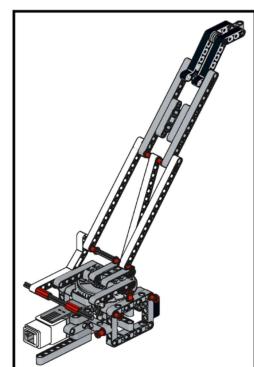
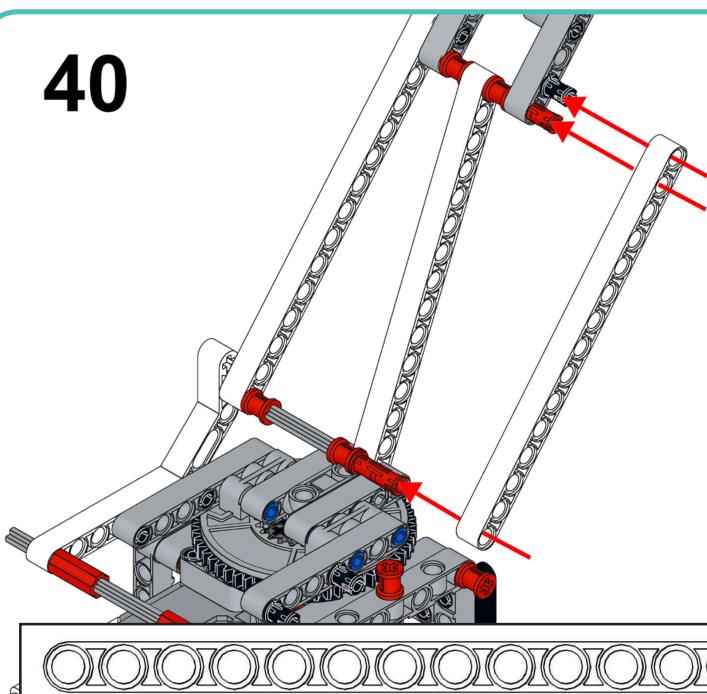


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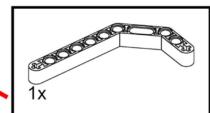
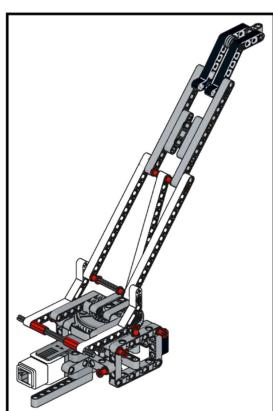
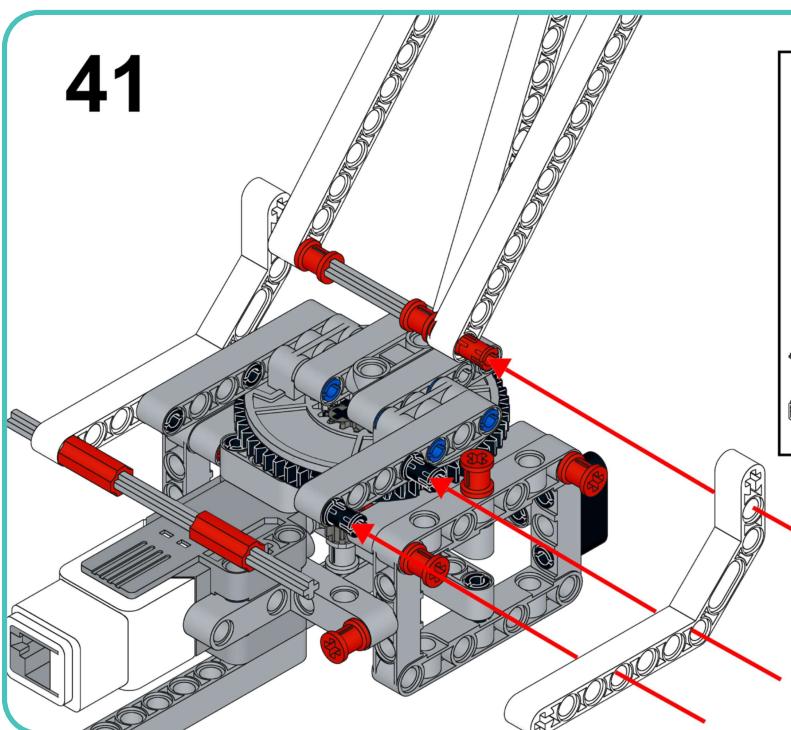
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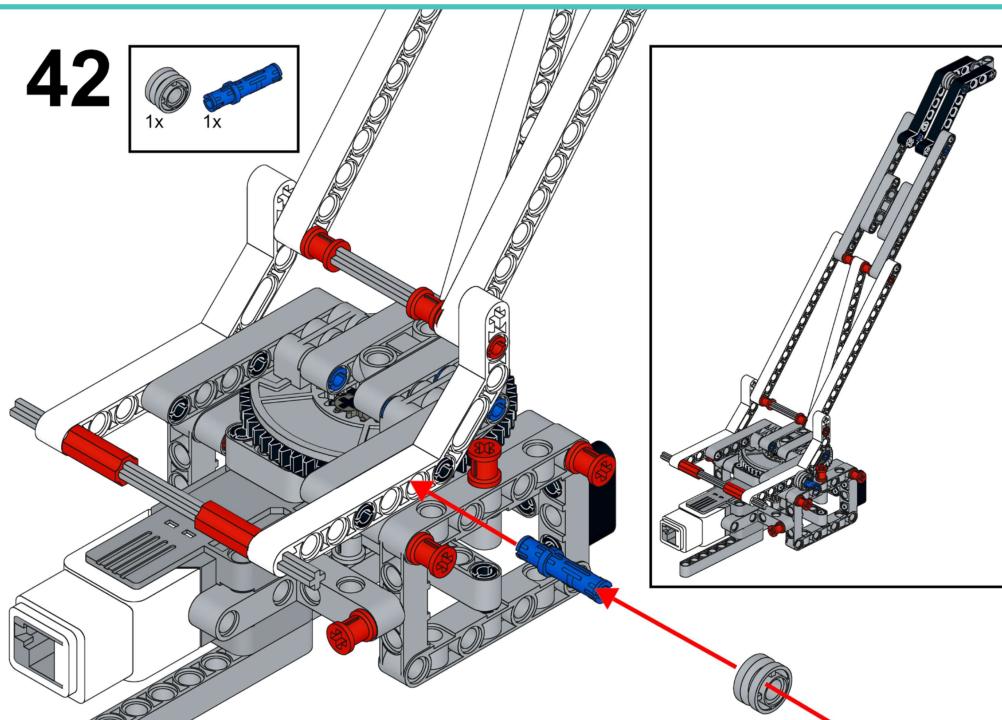
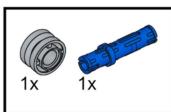
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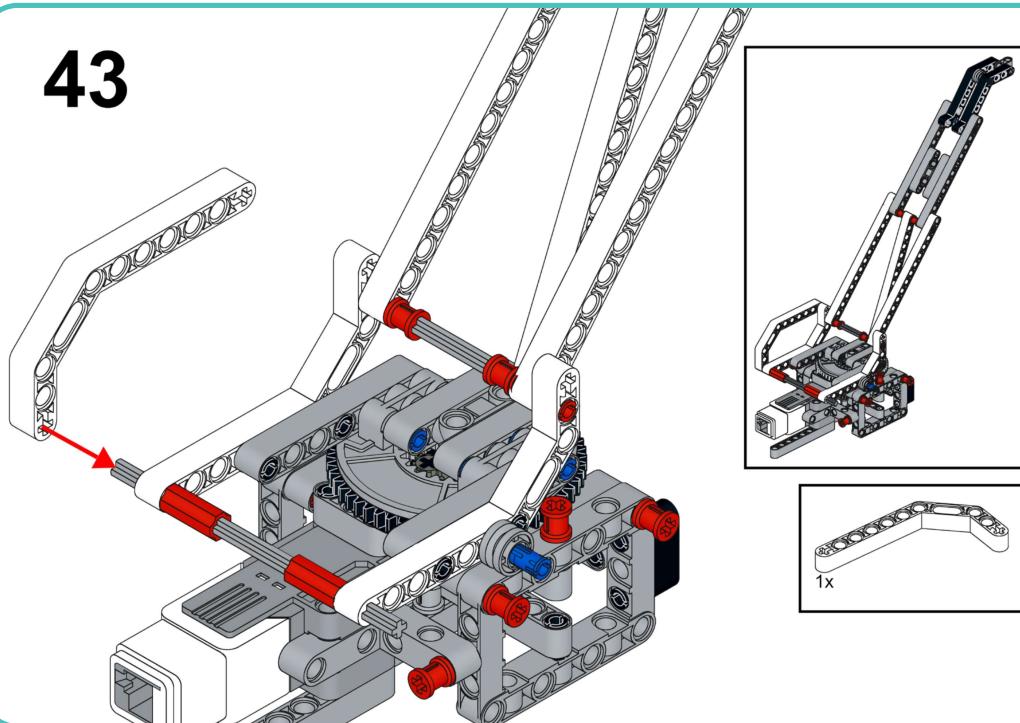
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ROBÓTICA NA PRÁTICA

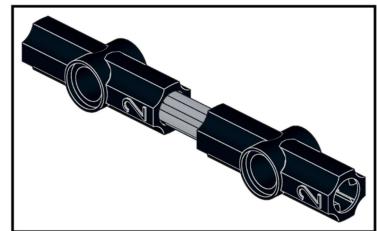
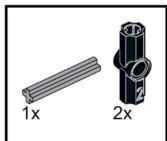
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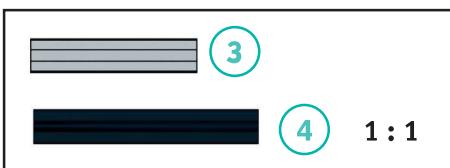
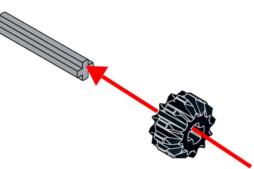
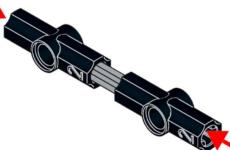
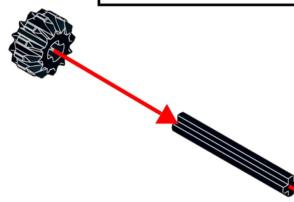
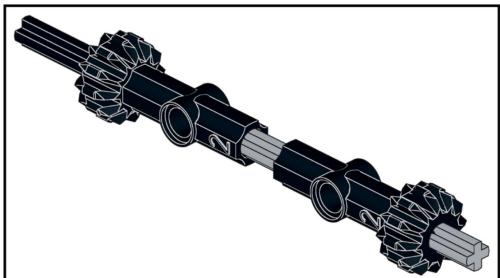
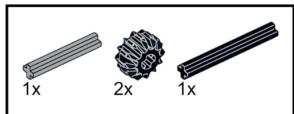
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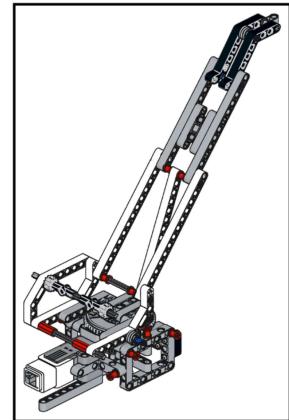
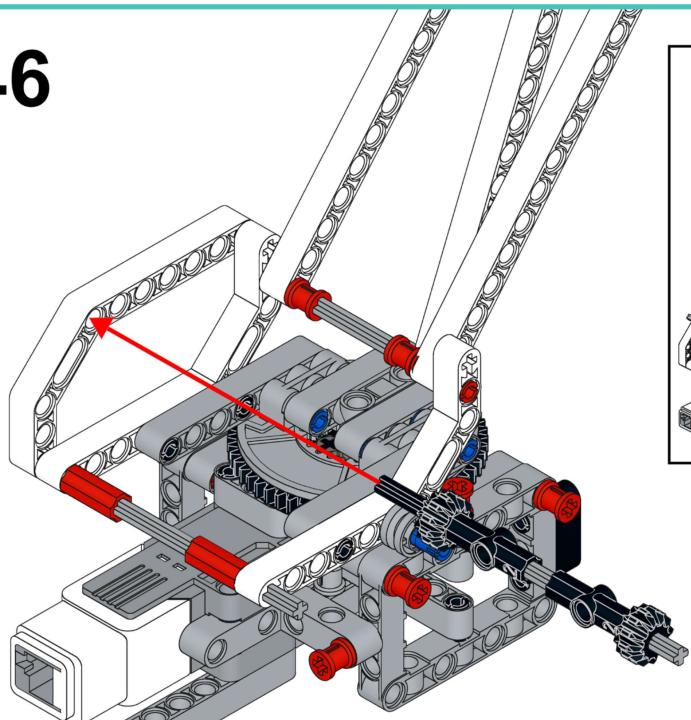
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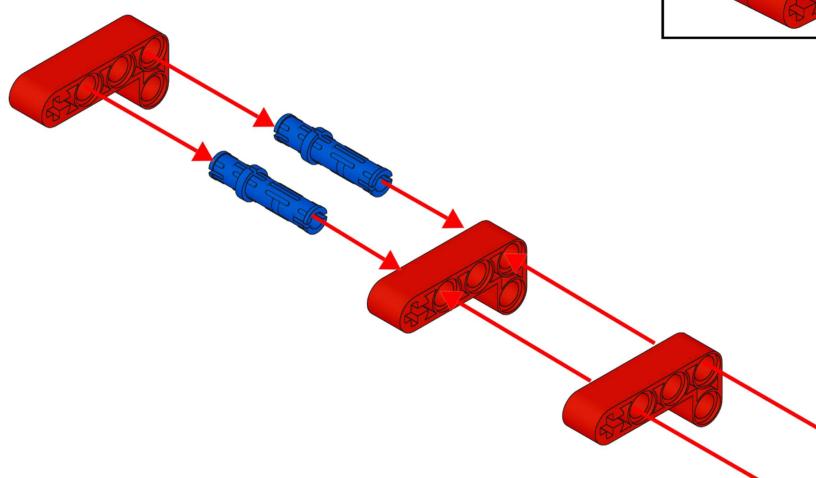
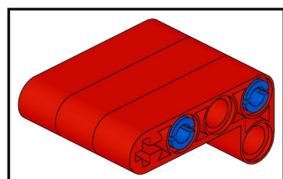
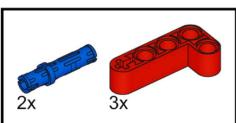
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ROBÓTICA NA PRÁTICA

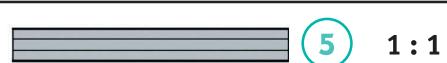
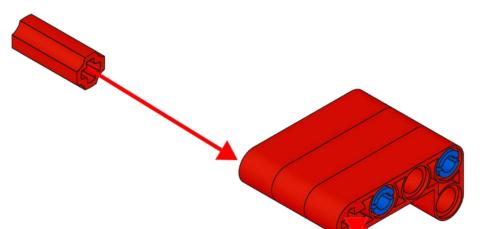
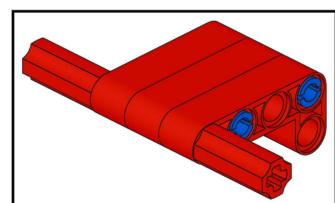
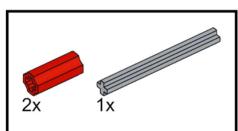
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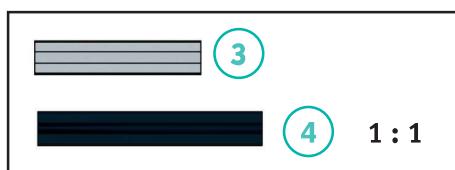
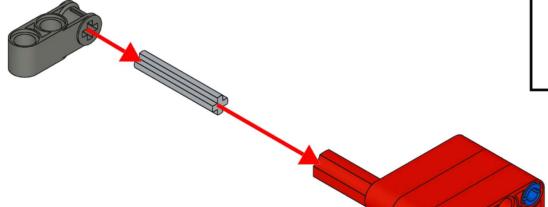
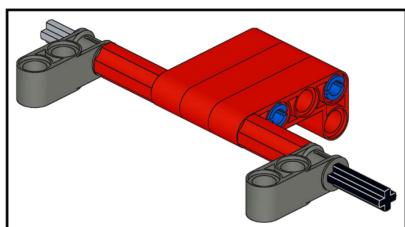
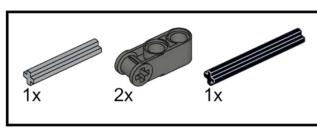
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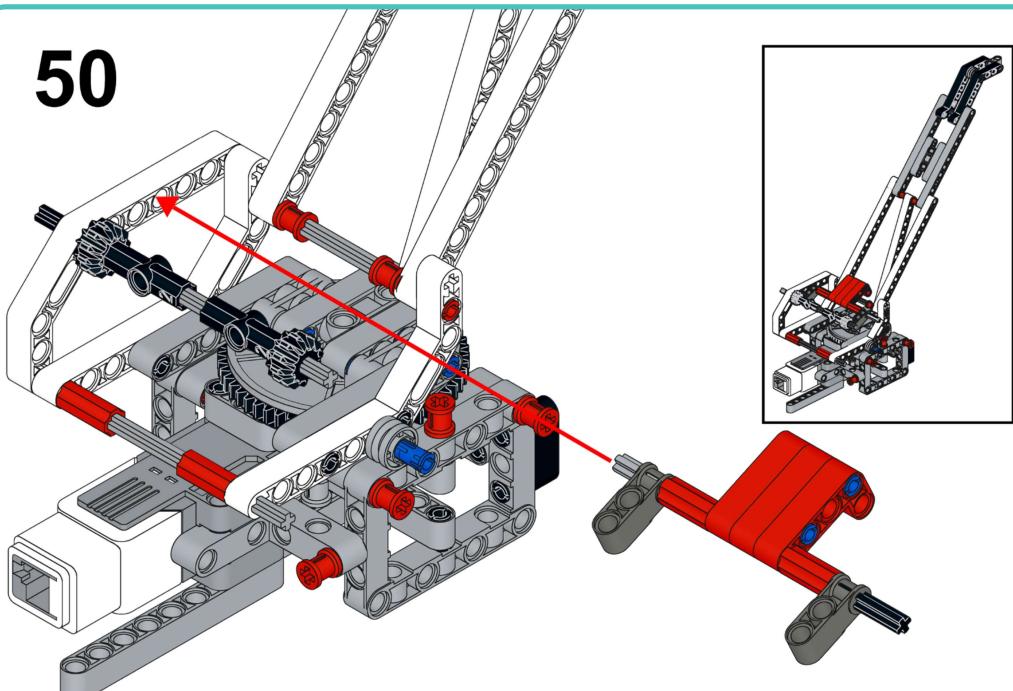
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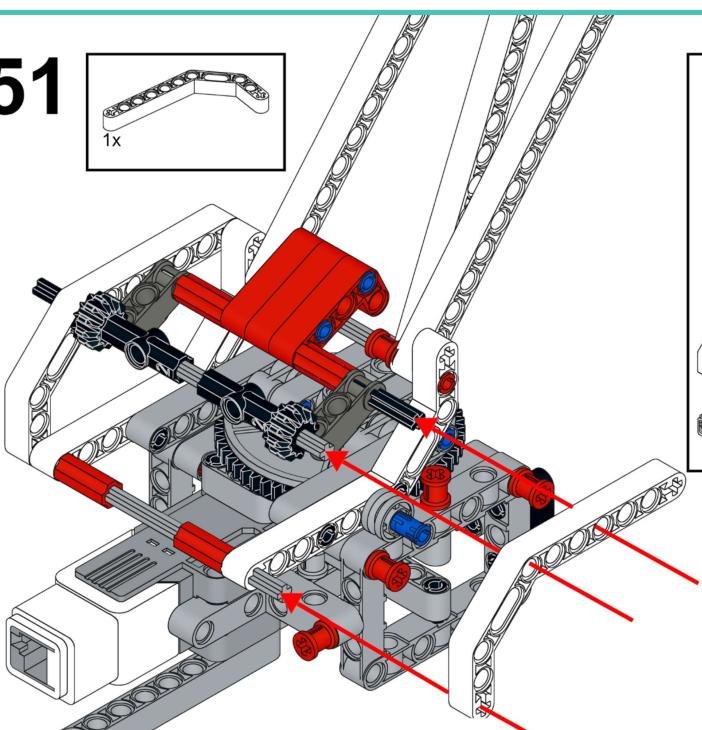
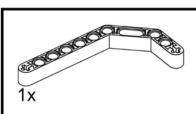
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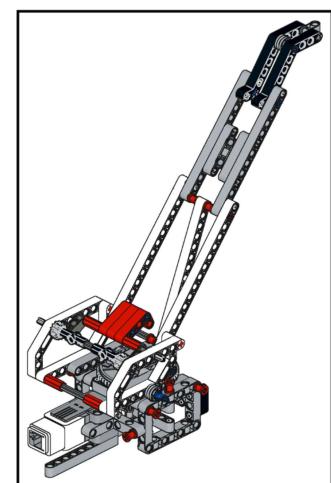
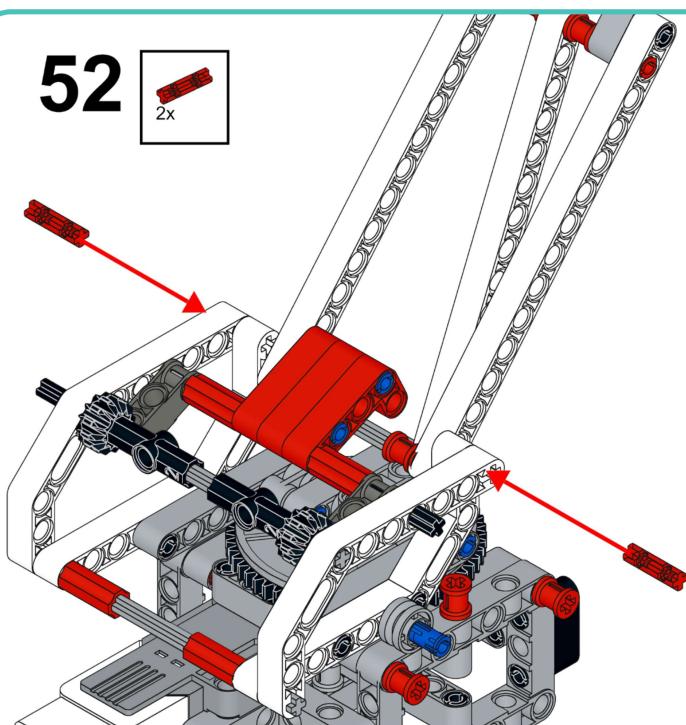


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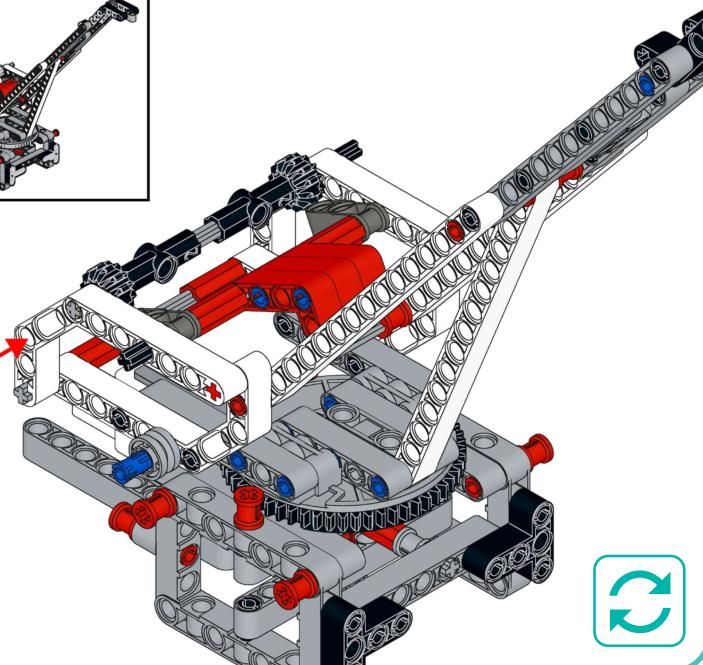
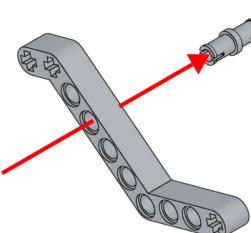
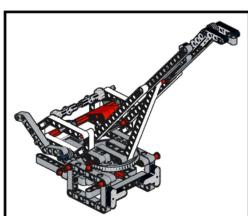
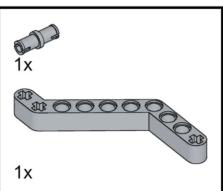
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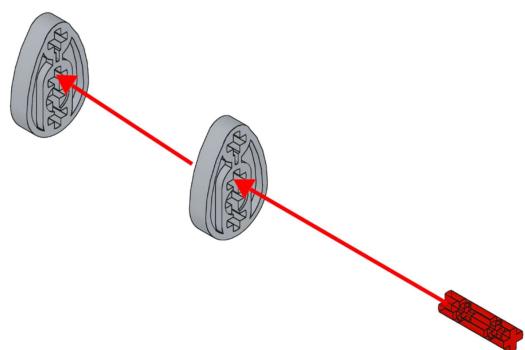
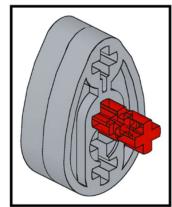
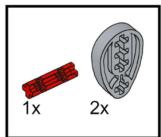
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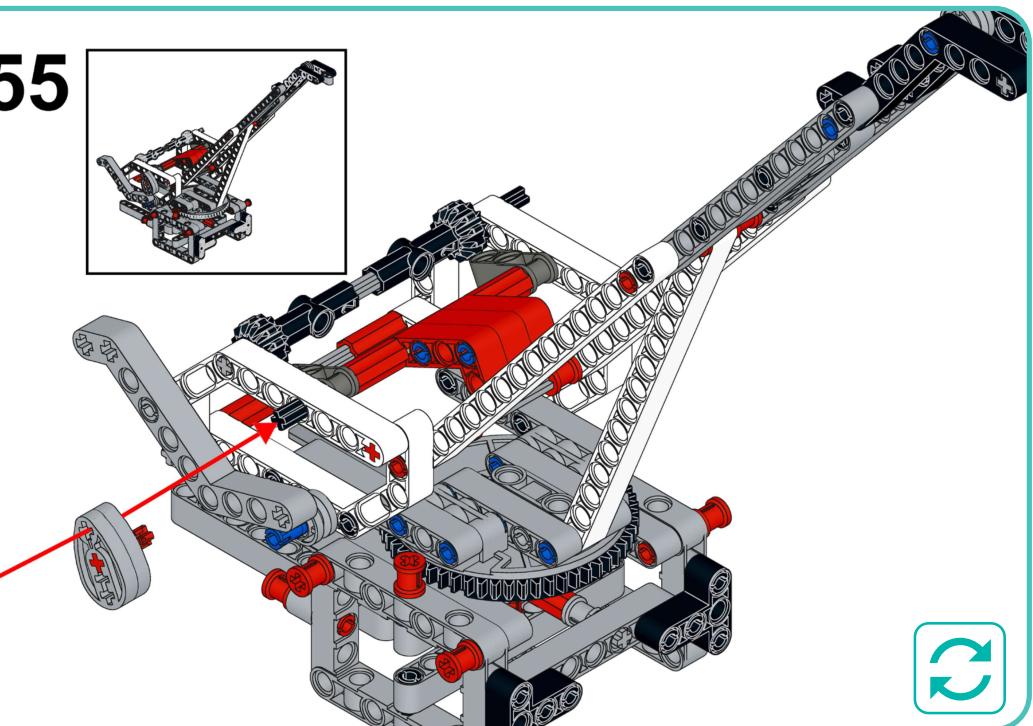
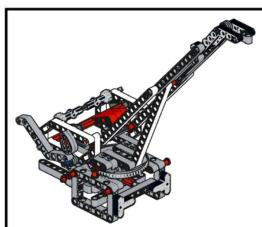
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ROBÓTICA NA PRÁTICA

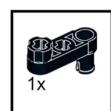
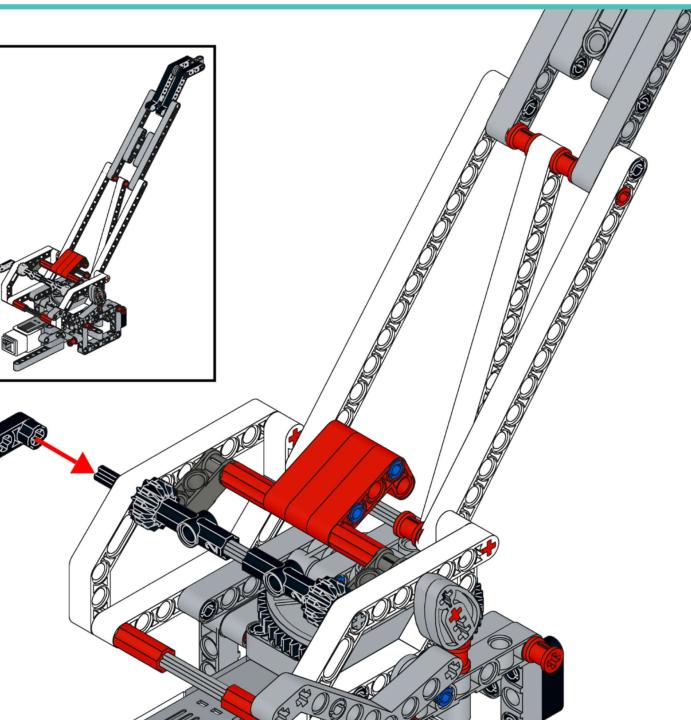
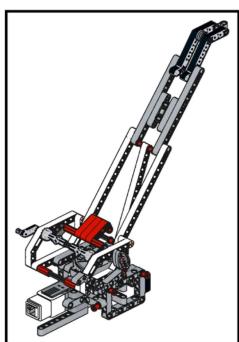
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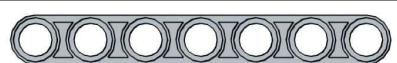
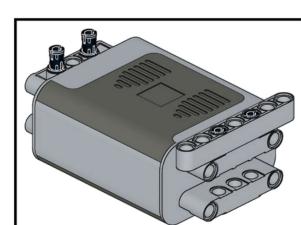
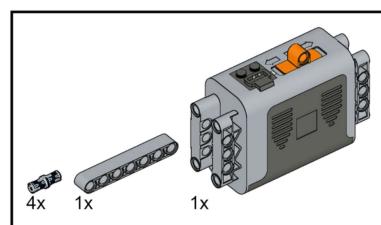
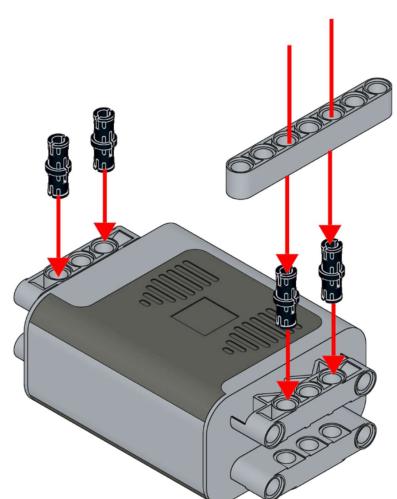
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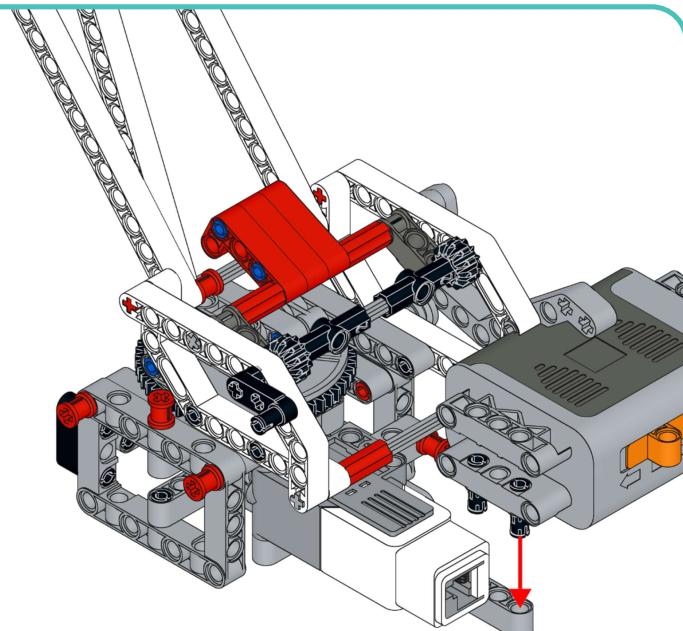
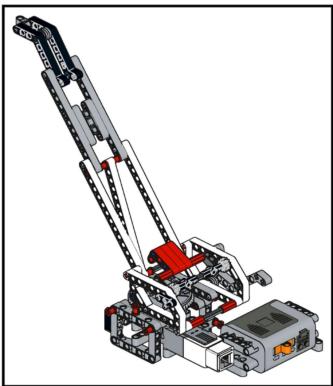
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1 : 1

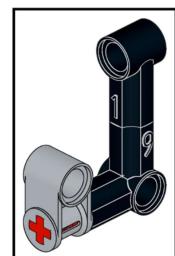
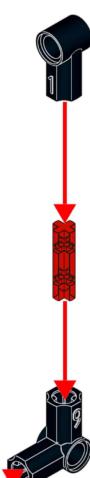
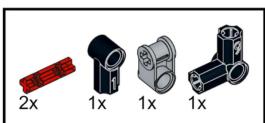
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ROBÓTICA NA PRÁTICA

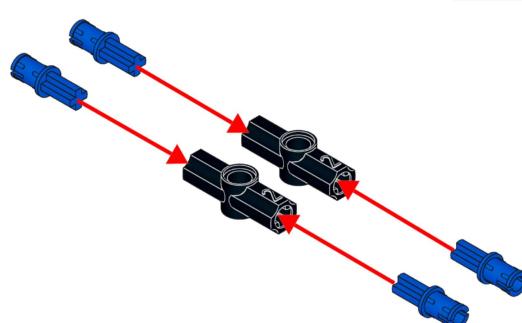
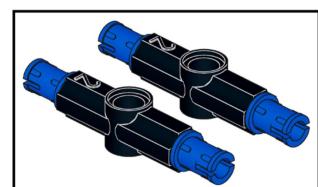
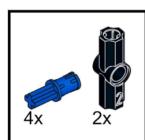
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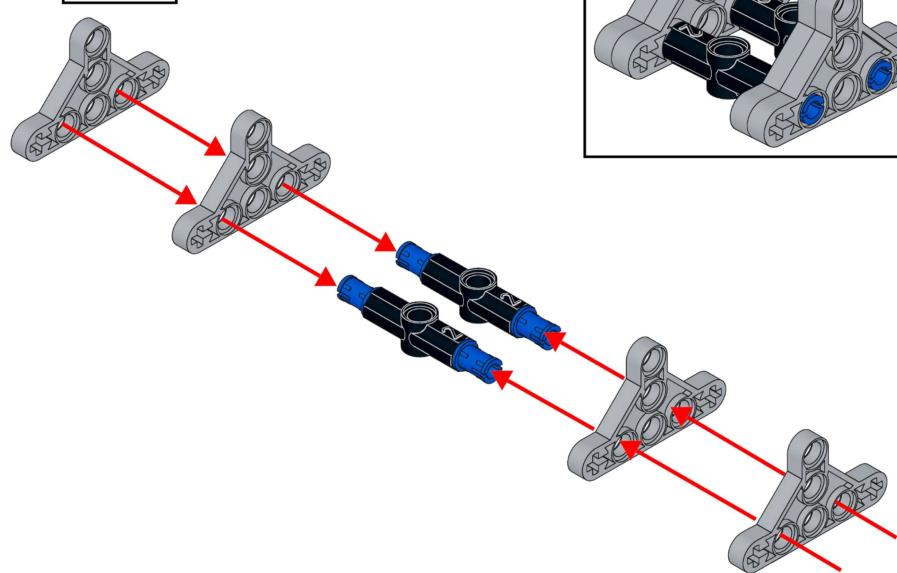
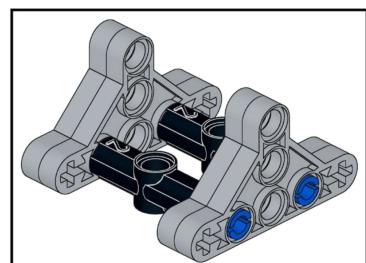
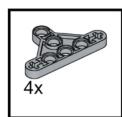
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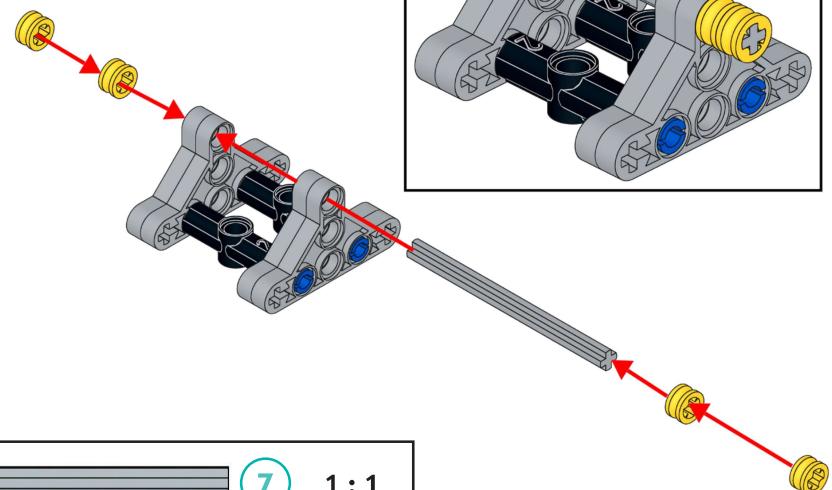
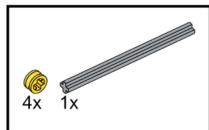
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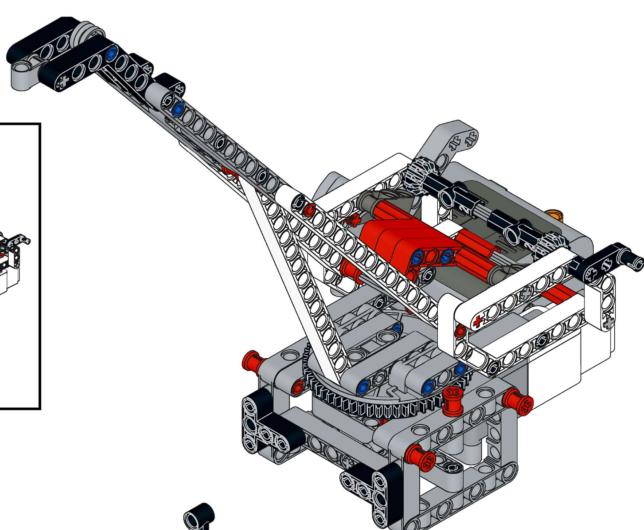
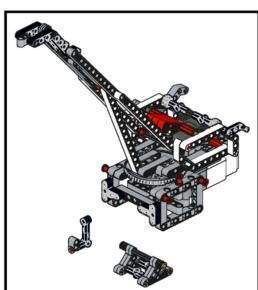
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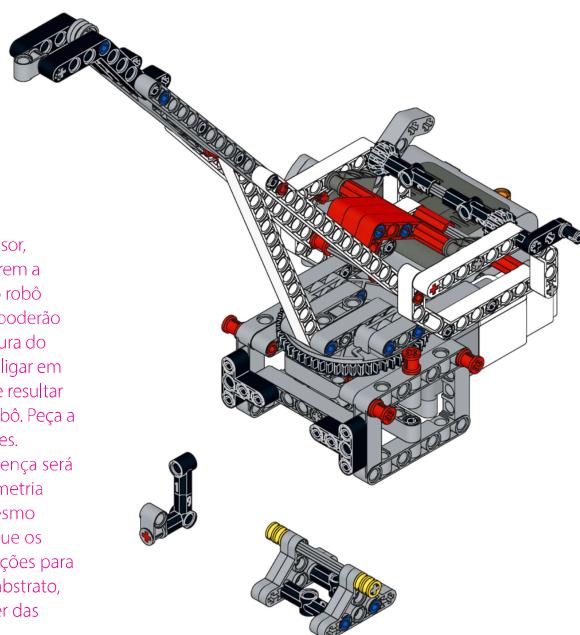
7

1 : 1

**63**



## 64



**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

Assim como no desafio do caminhão reboque, adaptaremos essa montagem utilizando mais um motor. Utilizaremos mais uma controladora motorizada e, para isso, duas equipes deverão unir forças e criar uma estratégia para automatizar a manivela manual do Guindaste a fim de que o objeto suba com ajuda do motor.

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### ROBÓTICA NA PRÁTICA