

K'nex®

EDUCATION®

REAL BRIDGE BUILDING RÉEL DE CONSTRUCTION DE PONTS

Book 2
Livre/Buch/Boek



WARNING:

CHOKING HAZARD - Small parts.
Not for children under 3 years.



ATTENTION :

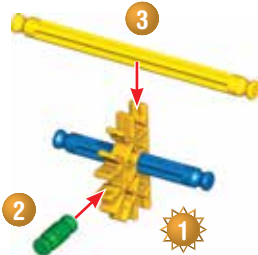
RISQUE D'ÉTOUFFEMENT. Pièces de petite taille.
Ne convient pas aux enfants de moins de 3 ans.

78680

10+
AGE/ÂGE/
ALTER/LEEFTIJD

EN Start Building

To begin your model, find the **1** and follow the numbers. Each piece has its own shape and color. Just look at the pictures, find the pieces in your set that match and then connect them together. Try to face your model in the same direction as the instructions while you build.

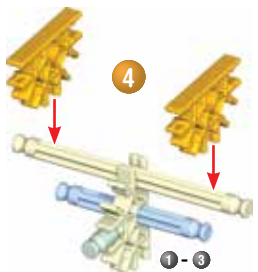


FR Préparer vous construire

Pour commencer le modèle, trouve le numéro **1** et suis les chiffres. Chaque pièce a sa propre forme et couleur. Il suffit de regarder l'illustration, trouver les morceaux dans votre série qui égale que vous voyez. Essayer de tenir votre modèle dans la direction pareille comme dans l'image si vous attacherez vos morceaux au bon endroit. Ainsi, vos pièces seront attachés correctement.

EN Next Step

The arrows show you where the parts connect, but not all connection points have arrows. The faded color parts are the ones you have already put together.

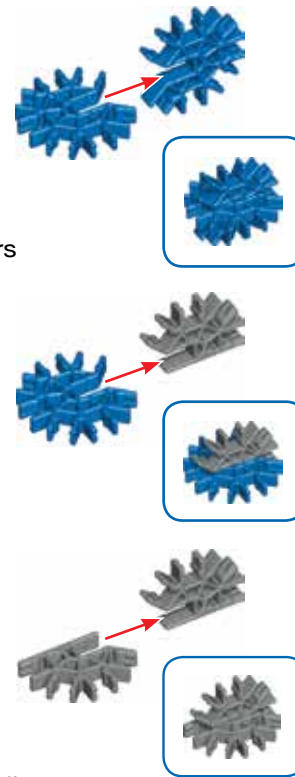


FR Continuation

Les flèches t'indiquent où les pièces s'assemblent, mais les points de raccordement n'ont pas tous des flèches. Les pièces de couleur délavée sont celles que tu as déjà assemblées.

EN Connectors

It's very important to position blue and gray connectors in a specific direction. Pay close attention to the instructions, and position these connectors horizontally or vertically exactly as they are shown. Push together tightly until you hear a "click".



FR Connecteurs

Vous trouveras des connecteurs bleues et grises comportant des fentes extra-longues. Ils se glissent l'un dans l'autre tel qu'illustré. Pousse les pièces ensemble jusqu'à ce que tu entendes un « déclic ».

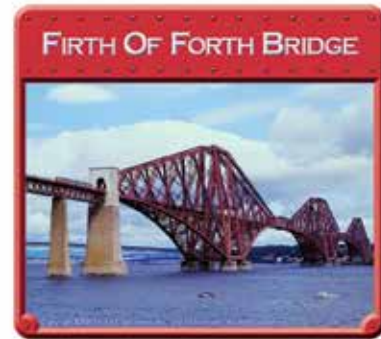
EN Spacers

There are places in your model where you need to add blue and silver spacers. Be sure to count them carefully.

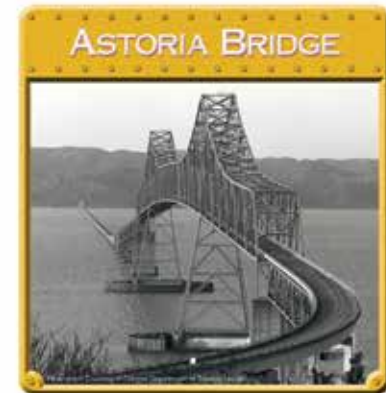


FR Pièces d'Écartement

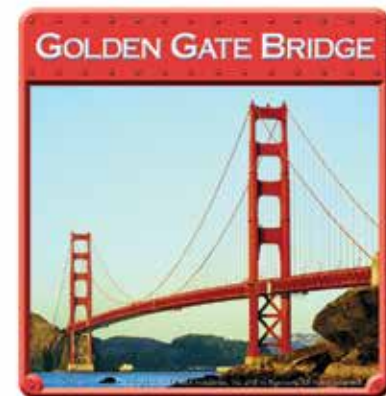
Il y a des endroits dans ton modèle où tu dois ajouter des pièces d'écartement bleues et argentées. Assure-toi d'utiliser la couleur exacte et de compter les pièces avec soin.



Page 4



Page 16



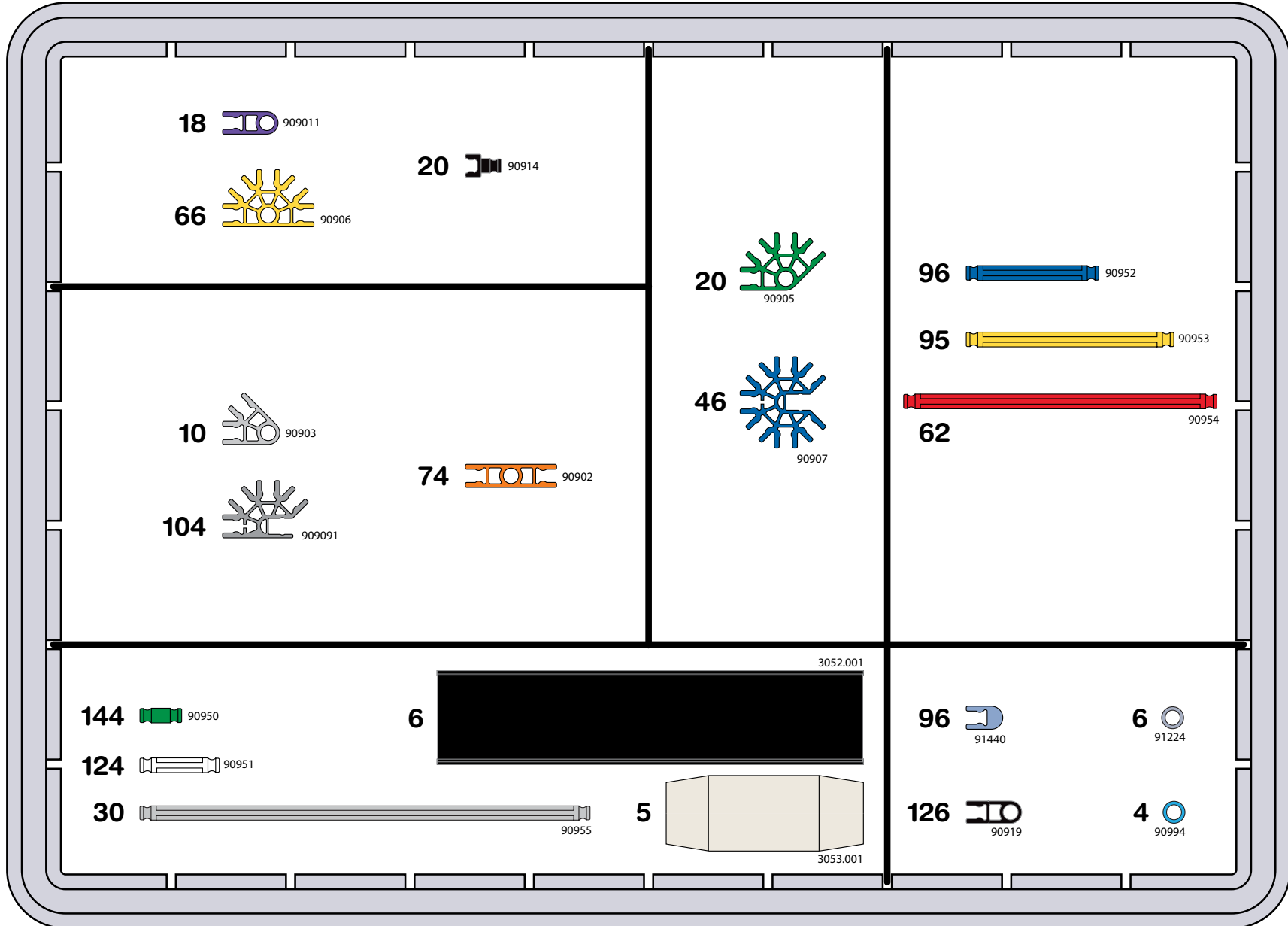
Page 34

EN Parts List

One half of the parts in the set are listed below. They can be organized in one of the plastic storage case as shown below.

FR Liste des Pièces

Une moitié des parties pour la série sont énumérées au dessous. Les parties ajustent dans le cas d'emmagasinage comme indiqué.



FIRTH OF FORTH BRIDGE



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Vital Statistics:

- Location:** Crosses the Firth of Forth (river) linking South Queensferry and North Queensferry, Scotland
- Completion Date:** 1890
- Cost:** \$15 million
- Length:** 8,276 feet (2,523 meters)
- Type:** Cantilever
- Purpose:** Railway
- Materials:** Steel
- Longest Single Span:** Center span - 350 feet (107 meters)

Fast Facts:

- The Firth of Forth Bridge might never have been built as a bridge at all – engineers considered building a tunnel, but abandoned the idea because it seemed too risky.
- The Firth of Forth Bridge was the first bridge to be built primarily of steel.
- Due to the tragic collapse of the Tay Bridge (Dundee, Scotland), the Firth of Forth Bridge; was heavily over-constructed in an attempt to regain the public's confidence in using bridge structures.

 **WARNING: CHOKING HAZARD** – Small parts.
Not for children under 3 years.

ATTENTION : RISQUE D'ÉTOUFFEMENT – Pièces de petite taille.
Ne convient pas aux enfants de moins de 3 ans.

ACHTUNG: ERSTICKUNGSGEFAHR – Kleinteile.
Nicht geeignet für Kinder unter 3 Jahren.

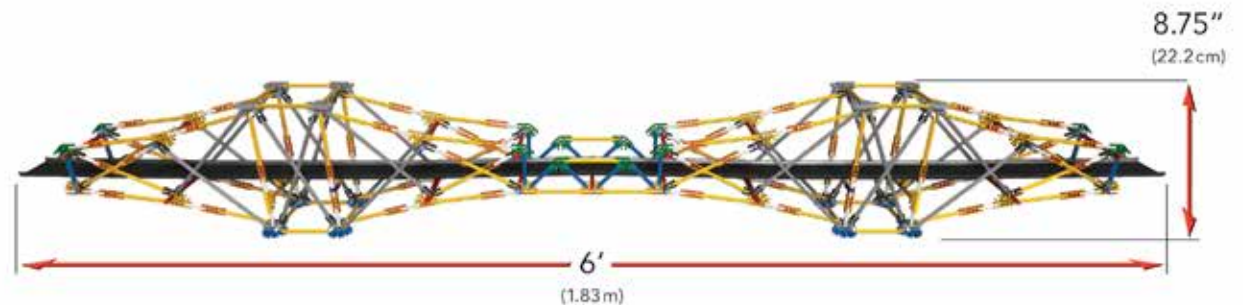
WAARSCHUWING: VERSTIKKINGSGEVAAR – Kleine onderdelen.
Niet geschikt voor kinderen jonger dan 3 jaar.

The K'NEX Firth of Forth Bridge

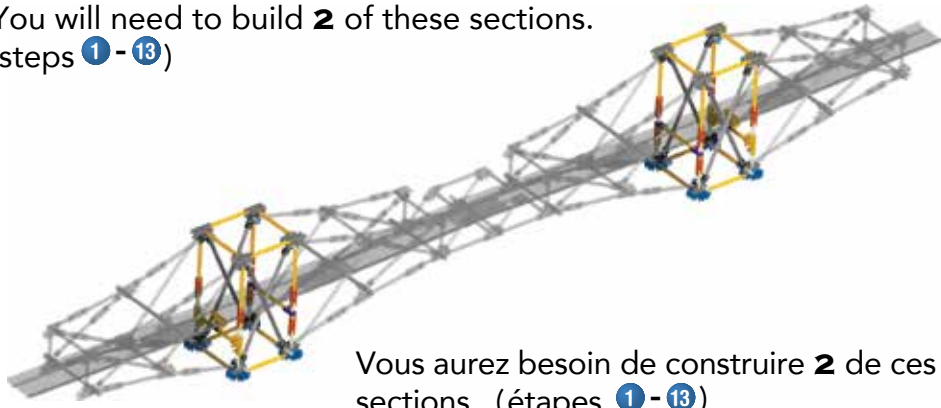


K'NEX Statistics/Statistiques:

K'NEX Parts/Pièces = 500



You will need to build **2** of these sections.
(steps 1 - 13)



Vous aurez besoin de construire **2** de ces sections. (étapes 1 - 13)

Firth of Forth Bridge

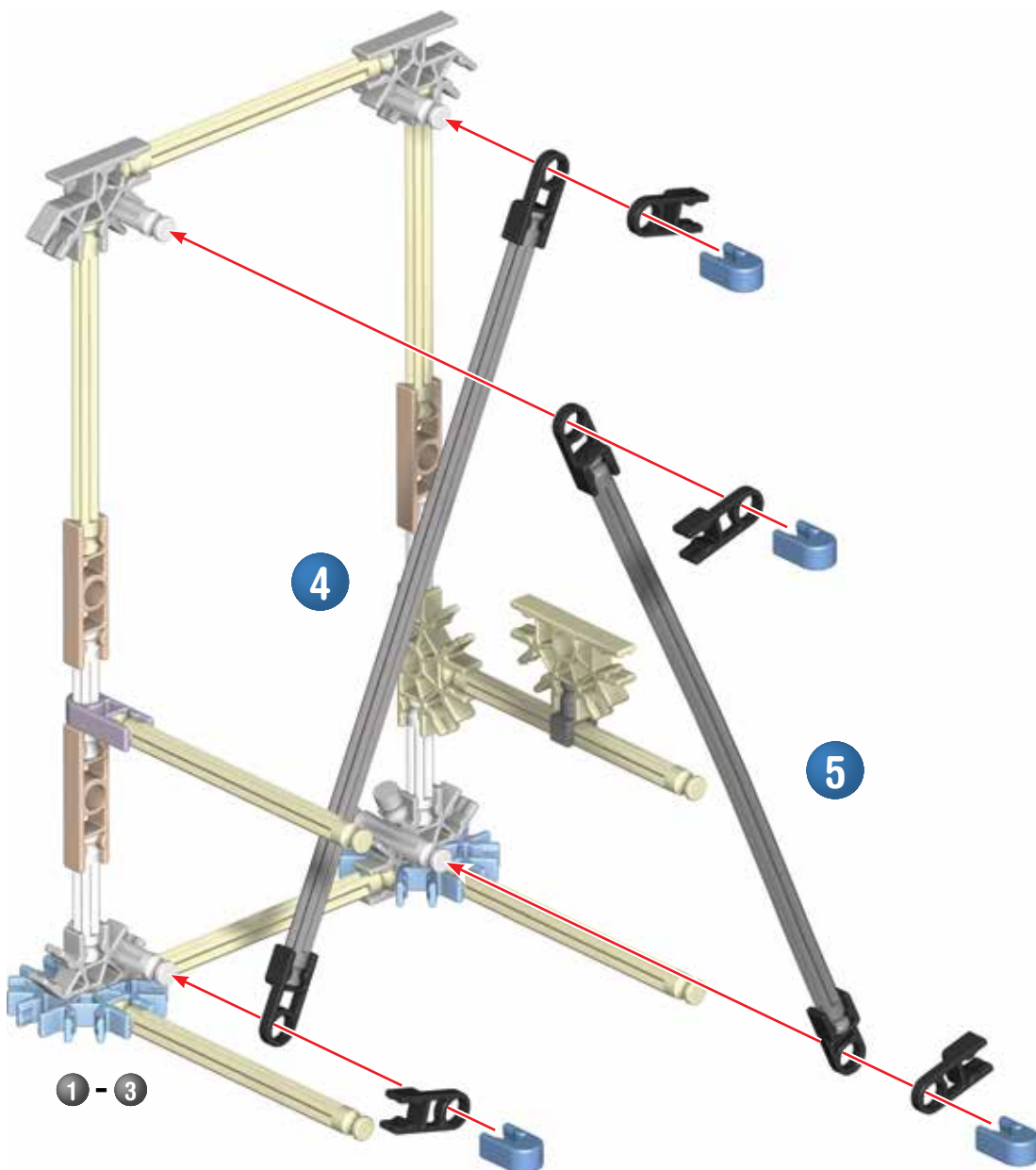
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|----|--|----|--|----|--|
| 48 | | 4 | | 12 | |
| 80 | | 60 | | 24 | |
| 2 | | 32 | | 8 | |
| 80 | | | | | |
| 16 | | | | | |
| 82 | | | | | |
| 17 | | | | | |
| 24 | | | | | |
| 5 | | | | | |
| 6 | | | | | |



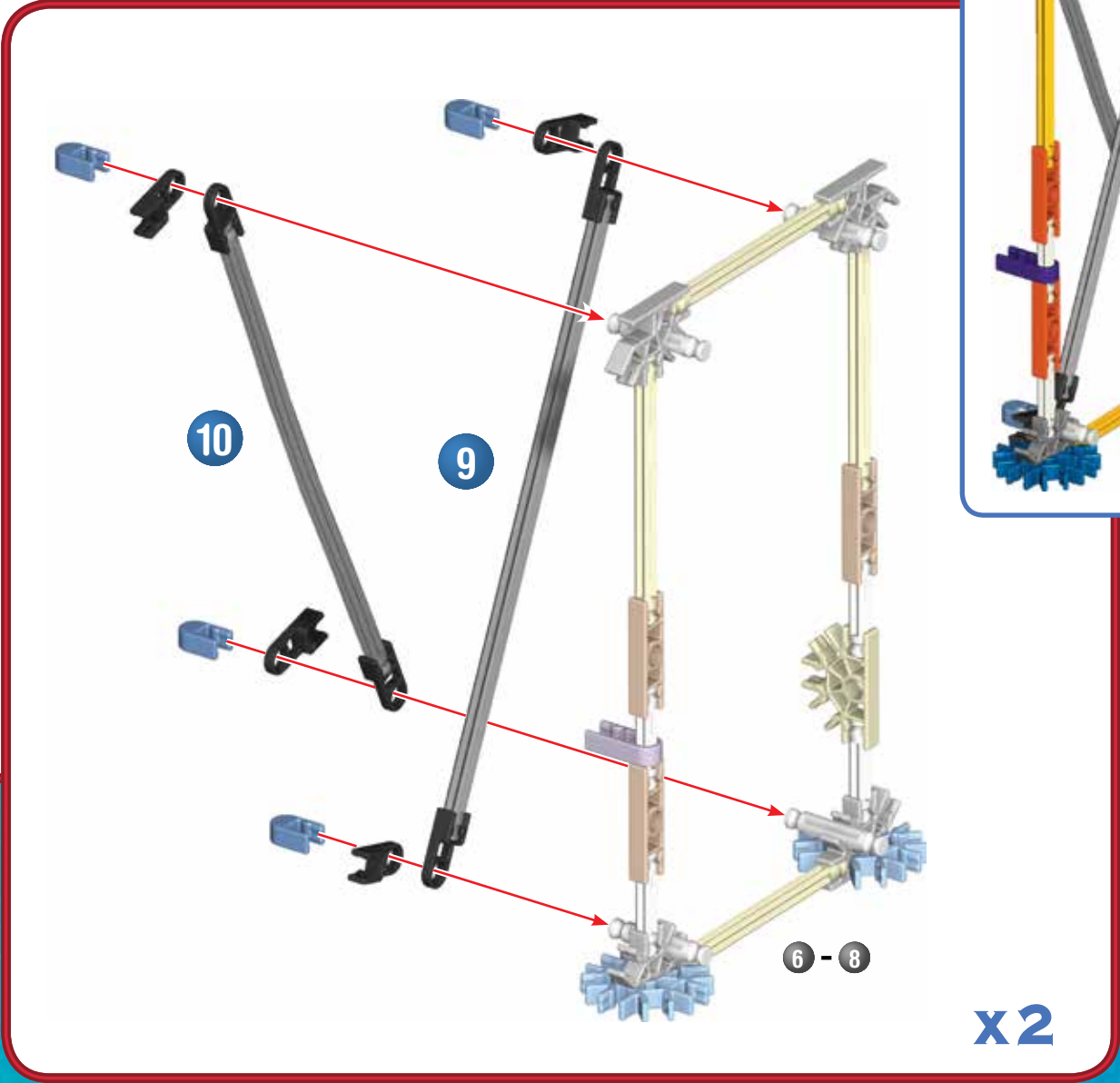
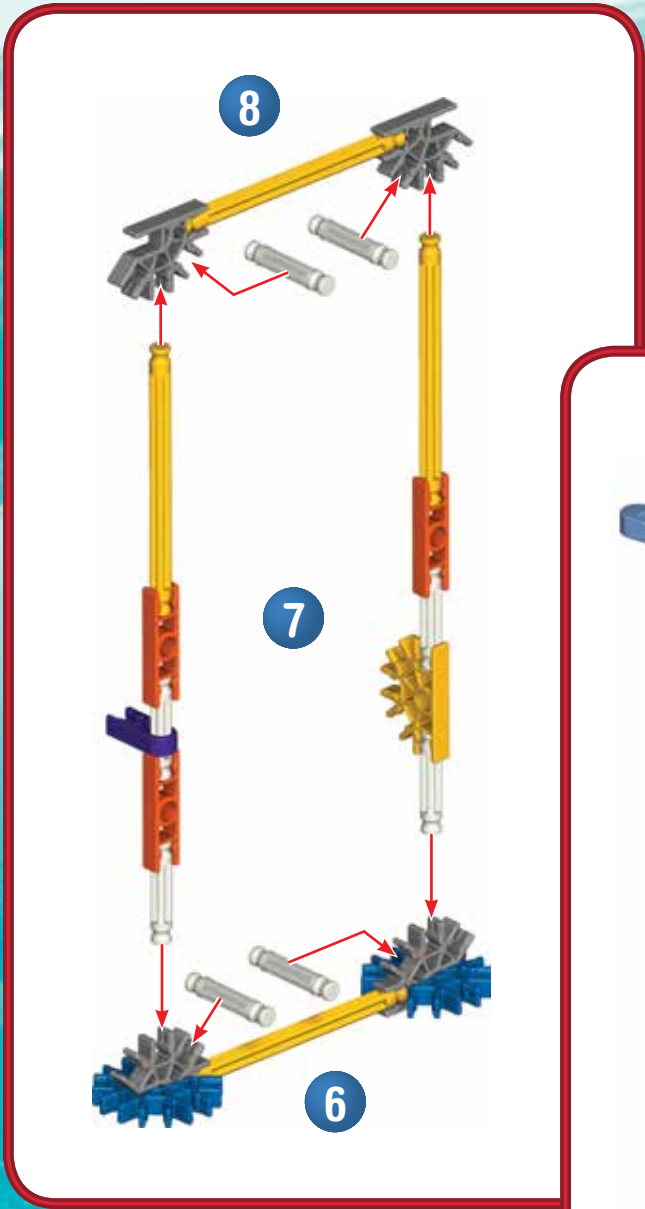
x2

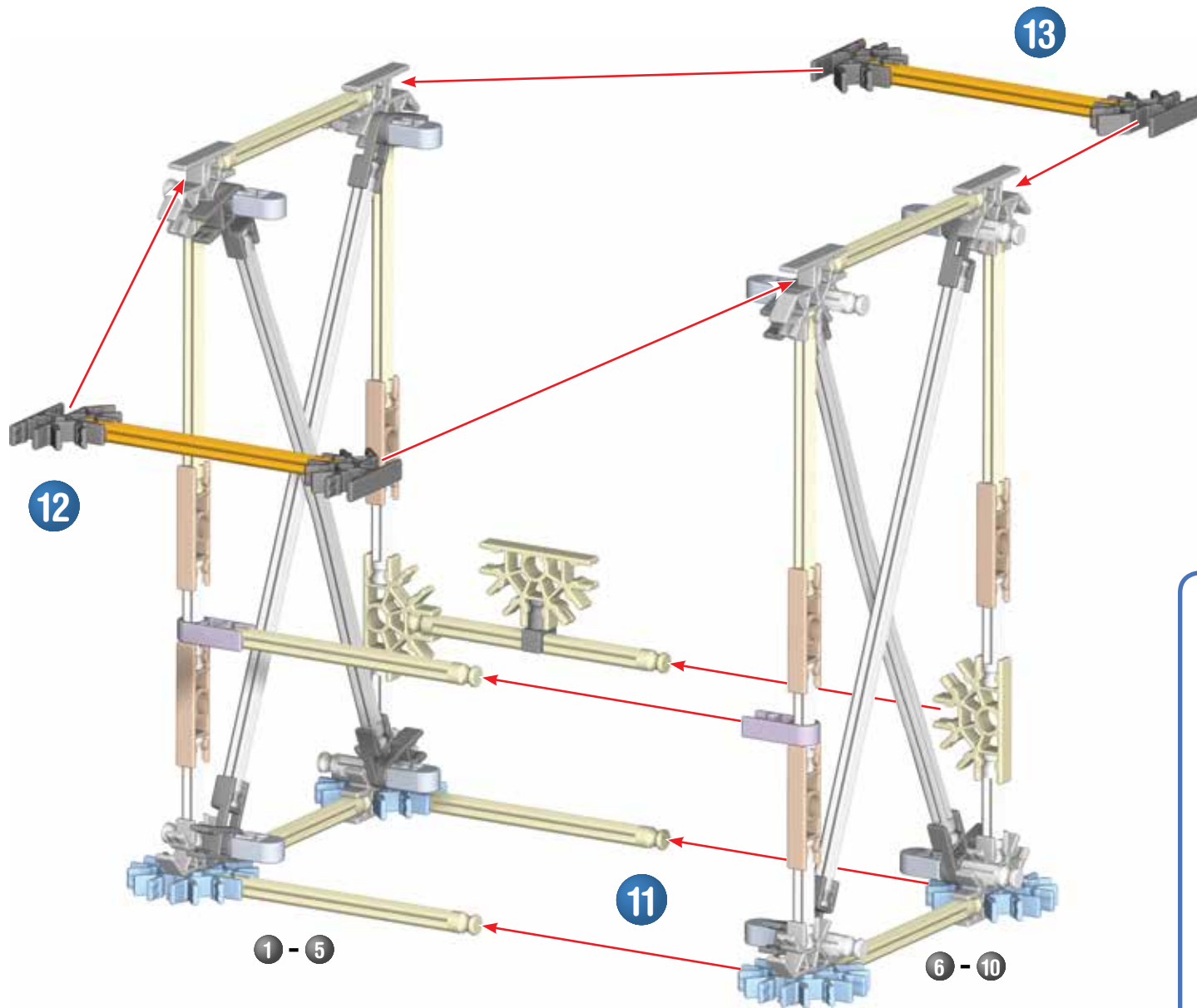


1 - 5



x2

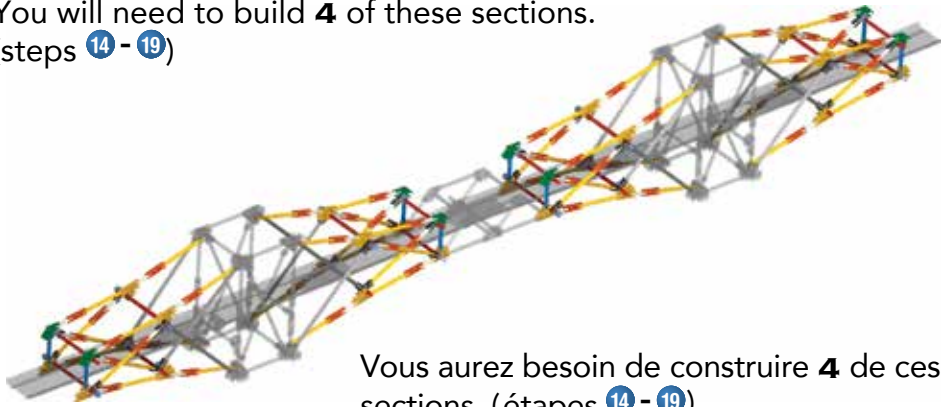




x2



You will need to build **4** of these sections.
(steps 14 - 19)

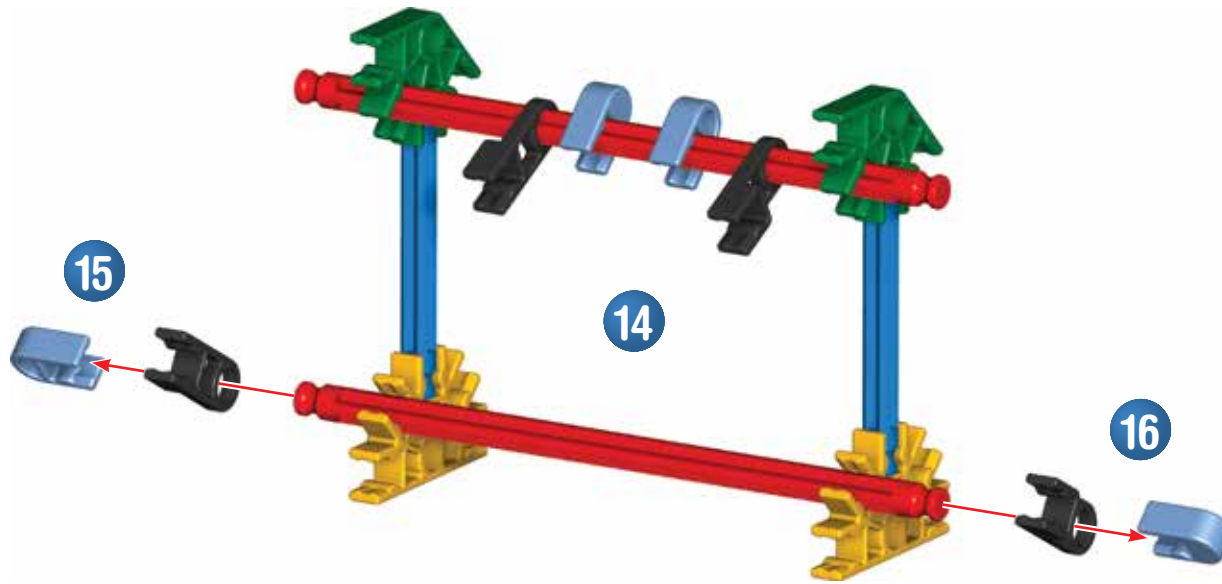


Vous aurez besoin de construire **4** de ces sections. (étapes 14 - 19)

x 4



14 - 16



15

14

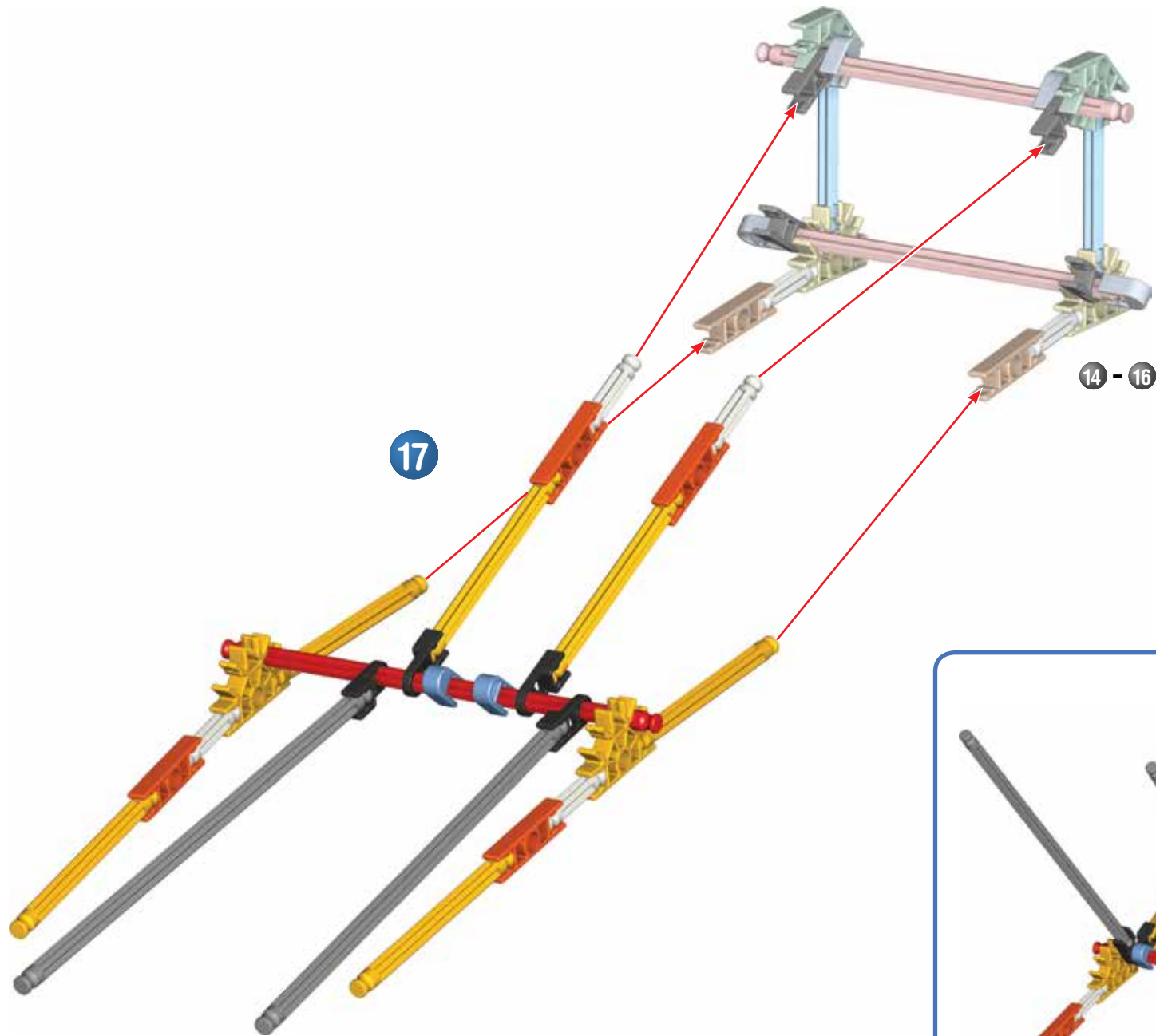
16

x 4

17

x4

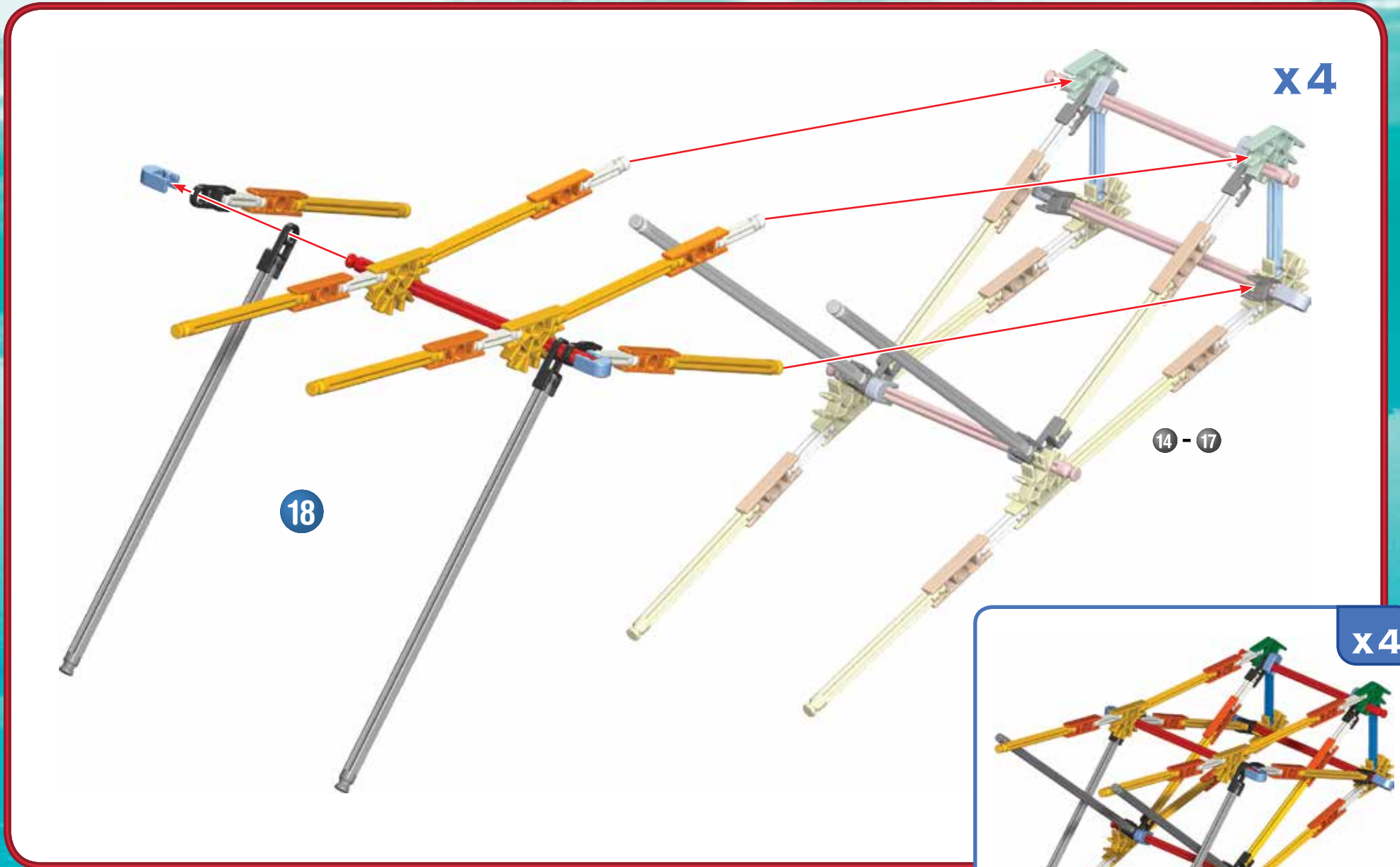
14 - 16

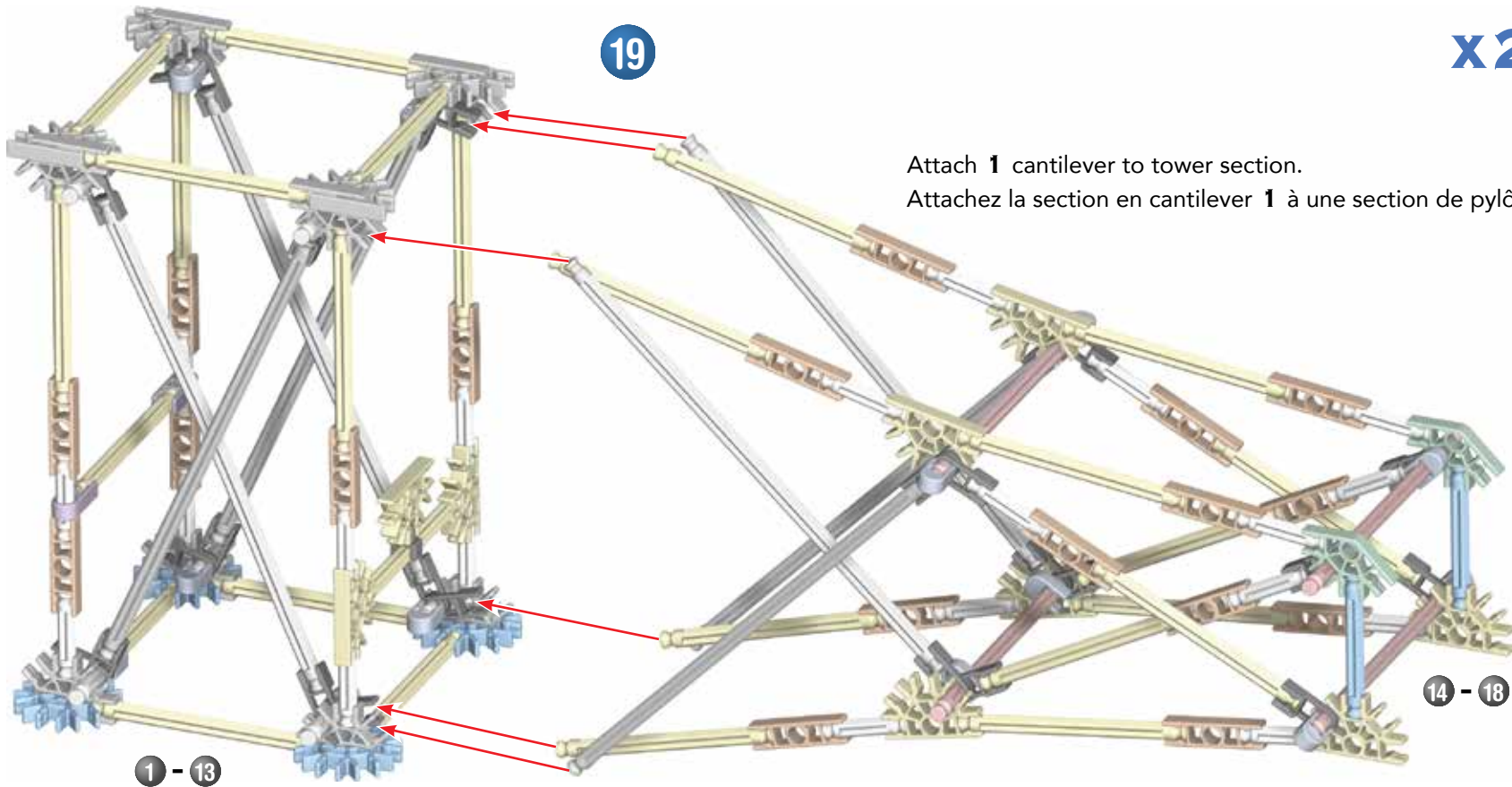


x4



14 - 17





x2

Attach **1** cantilever to tower section.
Attachez la section en cantilever **1** à une section de pylône.

1 - 13

14 - 18

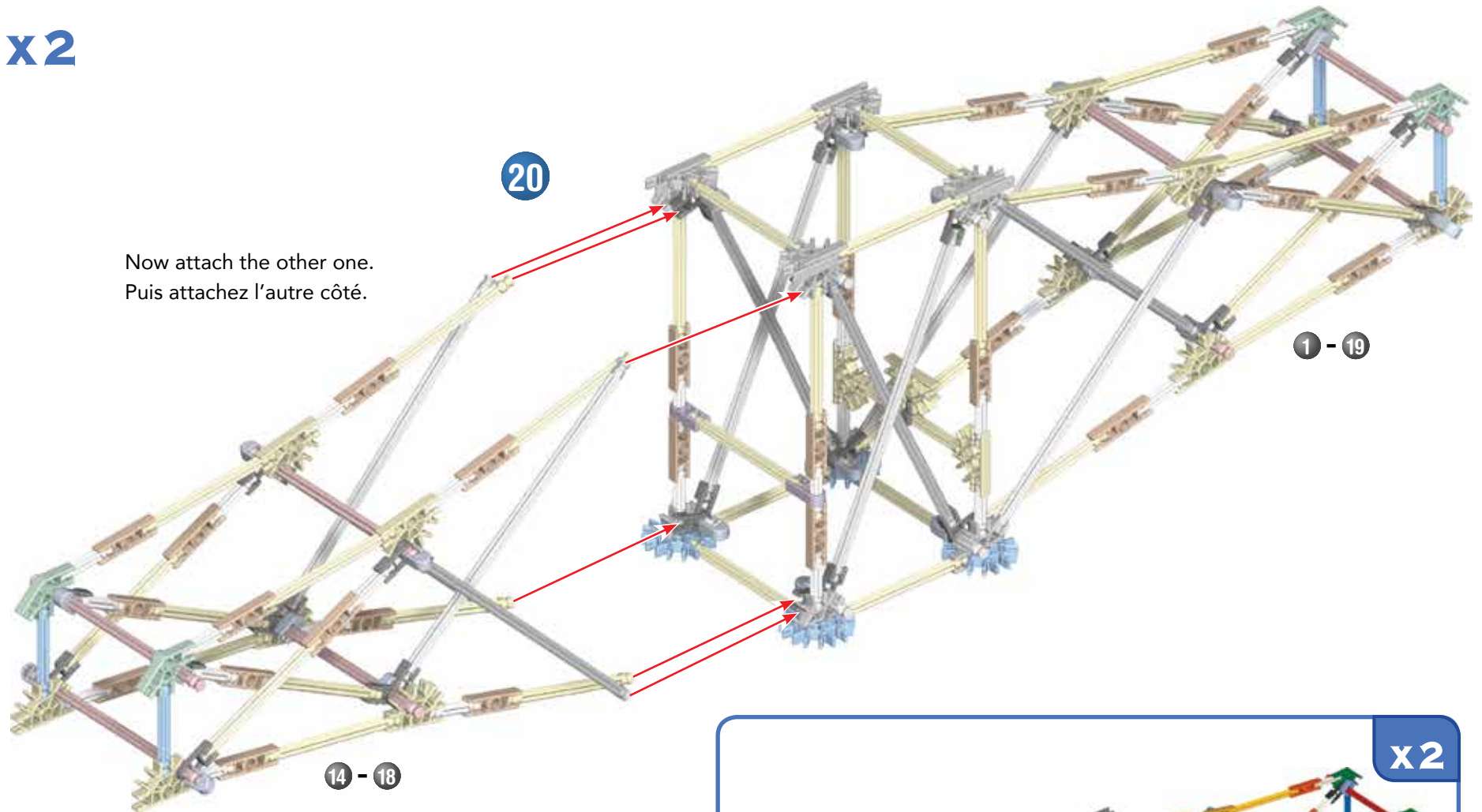
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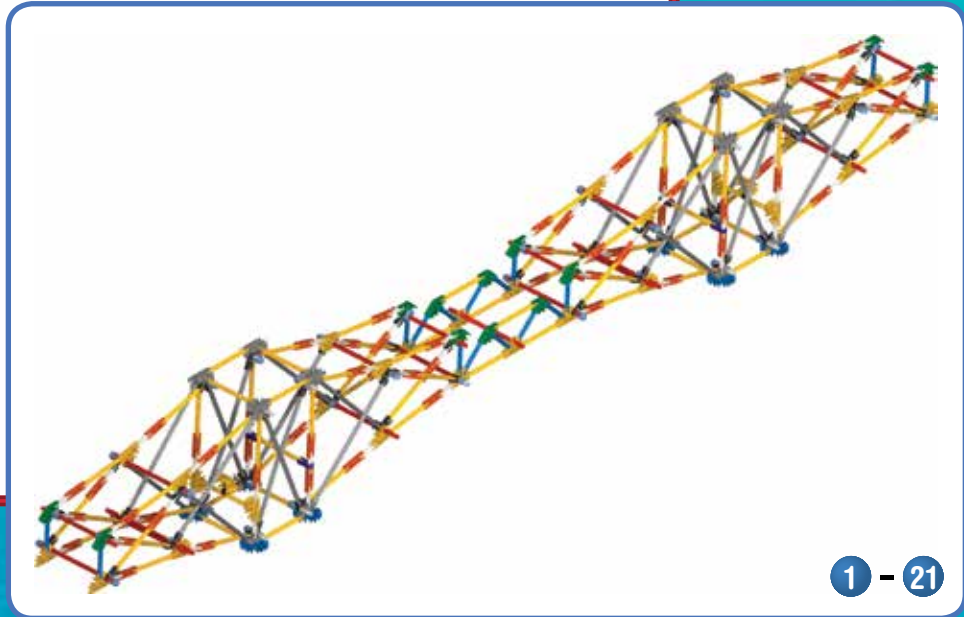
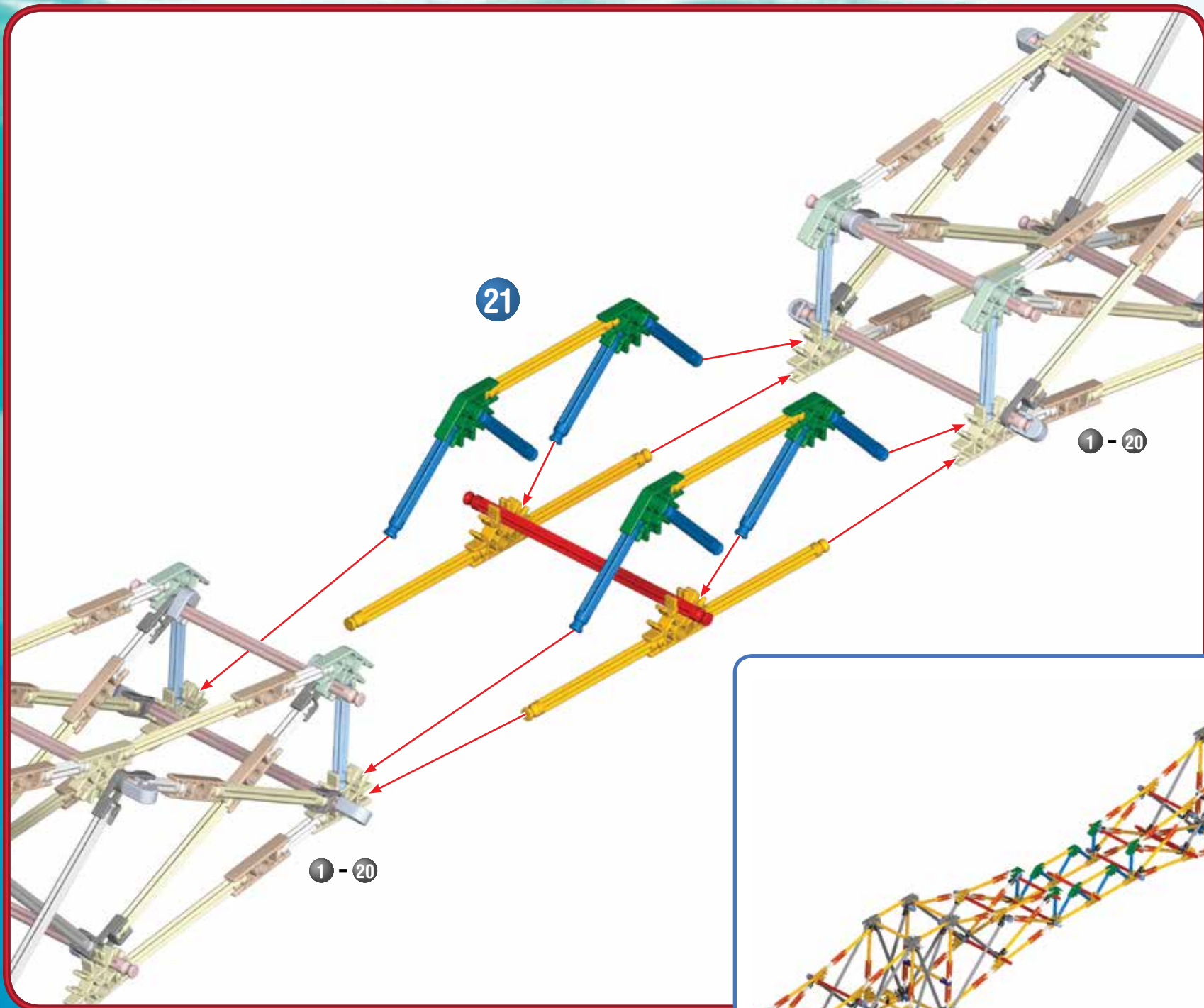


x2

1 - 19

x2







22



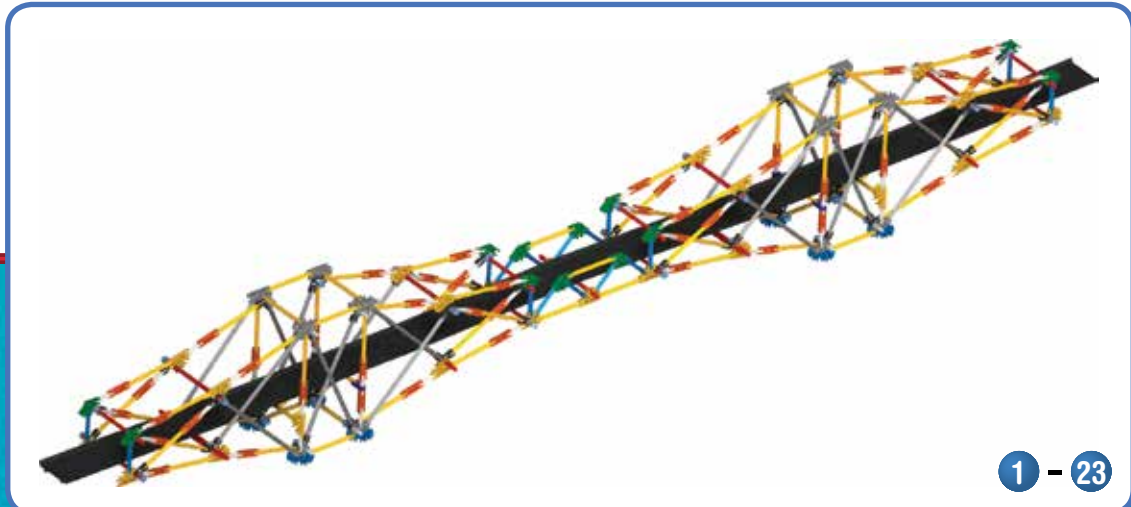
Underneath View
Vue de dessous



23

22

1 - 21



1 - 23

ASTORIA BRIDGE



Photograph Courtesy of Oregon Department of Transportation

Vital Statistics:

Location: Oregon Coast Highway (US Route 101) crosses the Columbia River in Astoria, Oregon, U.S.A.

Completion Date: 1966

Cost: N/A

Length: 21,474 feet (6,545 meters)

Type: Truss, cantilever

Purpose: Roadway

Materials: Steel

Longest Single Span: 2,468 feet (752 meters)

Fast Facts:

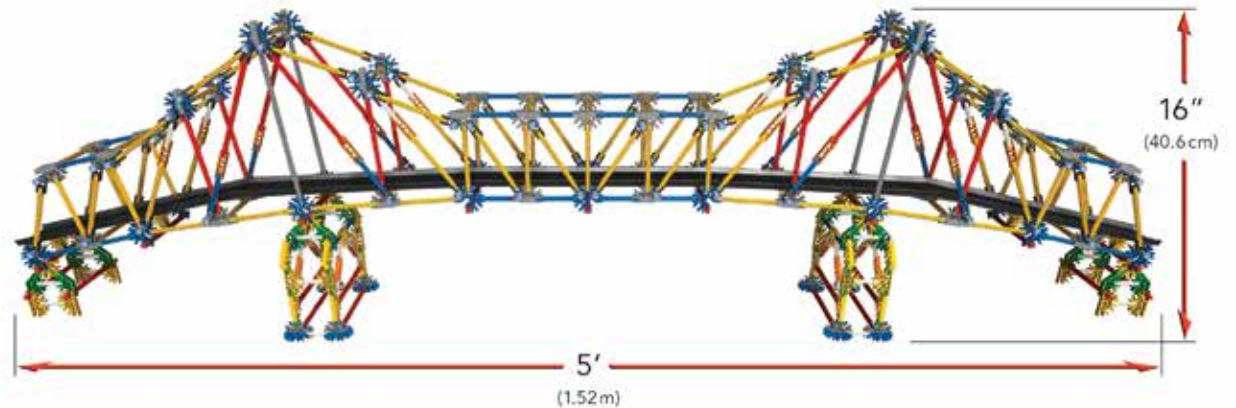
- The Columbia River (Astoria) Bridge, also known as the Astoria-Megler Bridge, is the longest continuous three-span through-truss bridge in the world.
- It crosses the Columbia River linking Oregon to Washington and completed US Route 101 as an unbroken link between the Canadian and the Mexican borders.
- Called the "Bridge to Nowhere" since it didn't lead to any major cities, people opposed the bridge on grounds that it would be too costly and take too long to pay for itself. More than two years ahead of schedule, the bonds were paid off and the toll removed.

The K'NEX Astoria Bridge



K'NEX Statistics/Statistiques:

K'NEX Parts/Pièces = 747



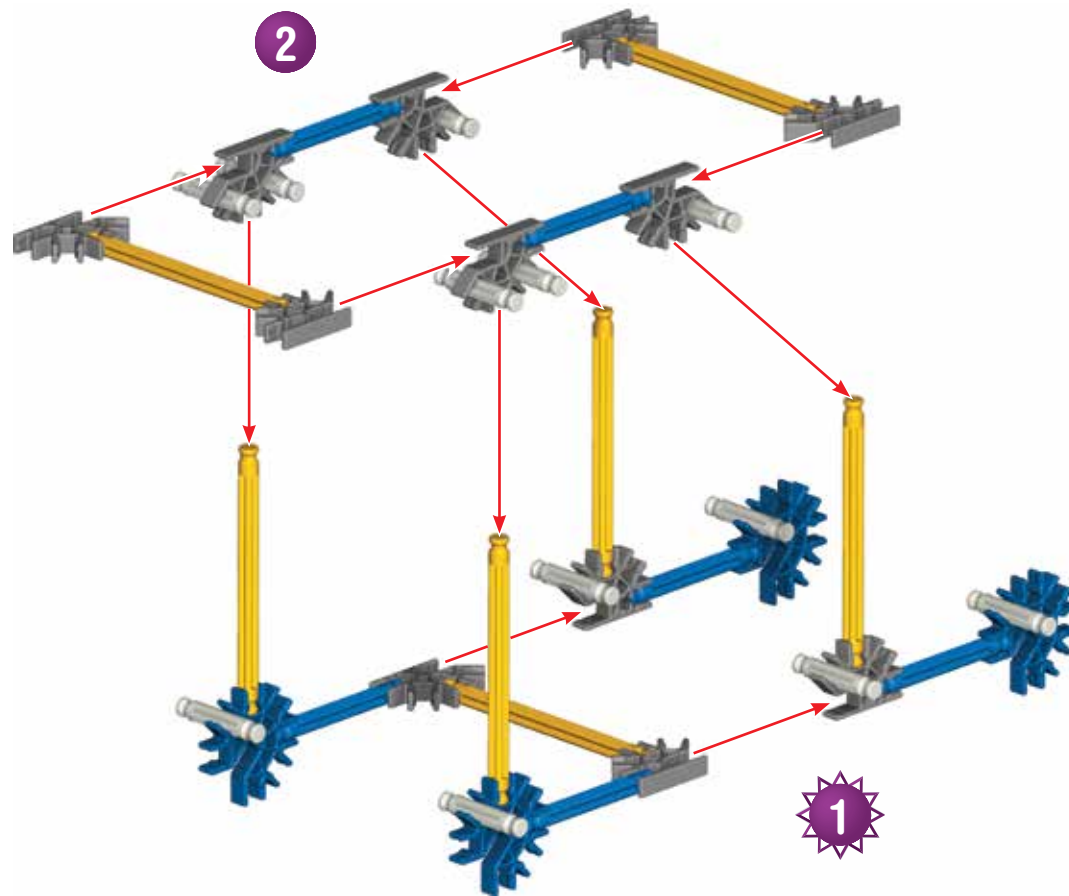
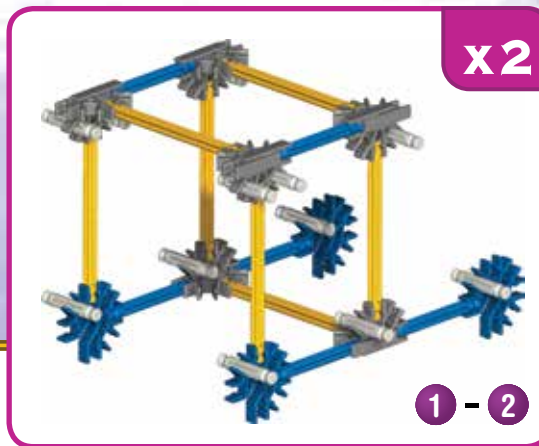
You will need to build **2** of these sections.
(steps 1 - 34)

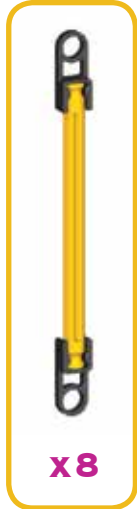
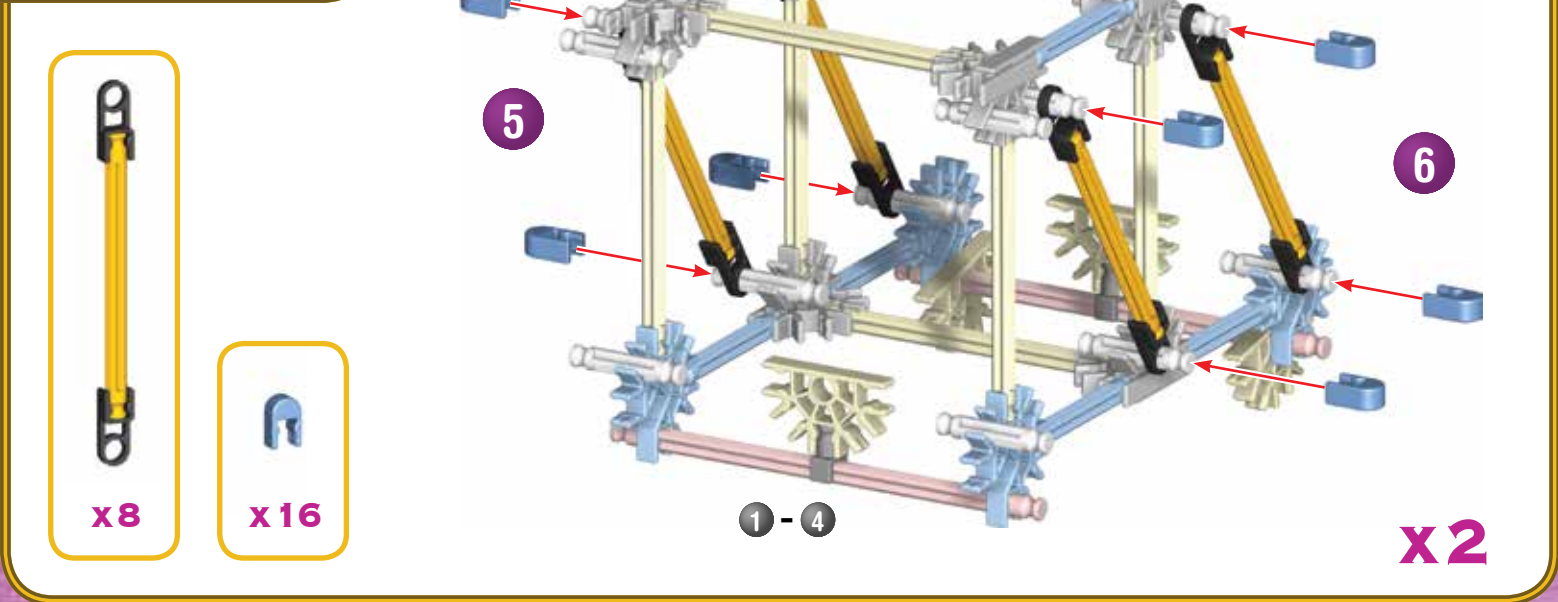
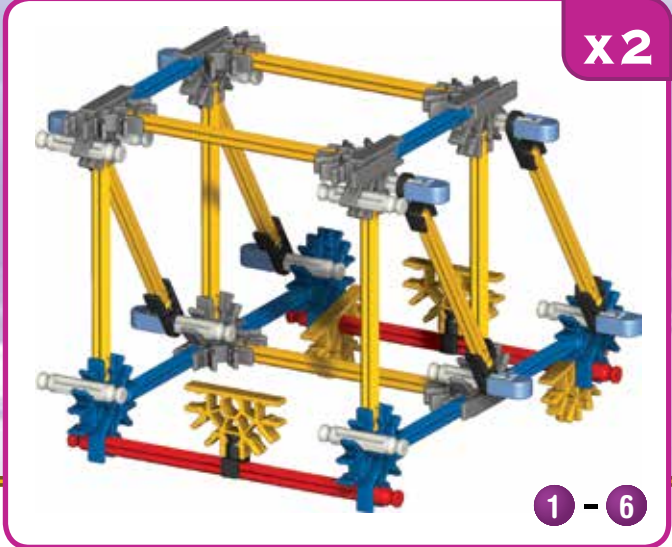
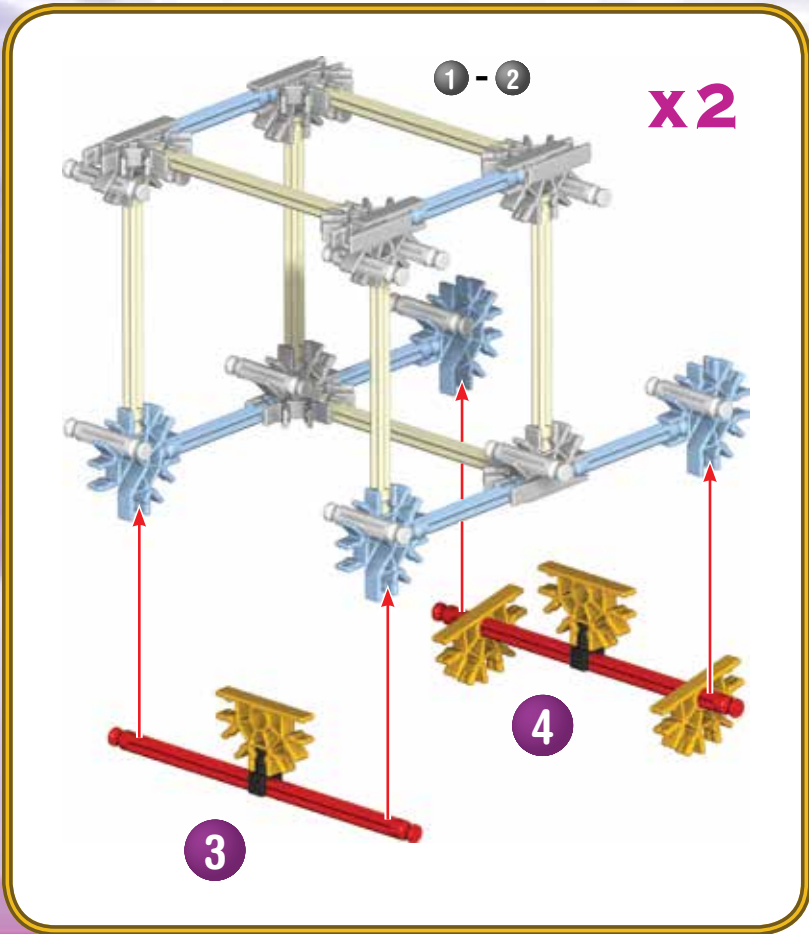


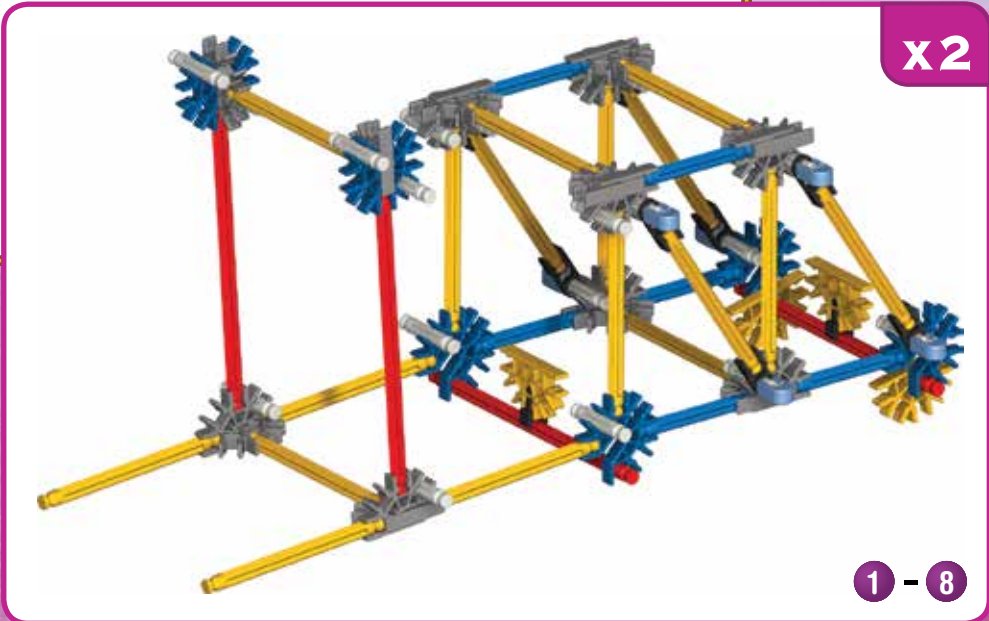
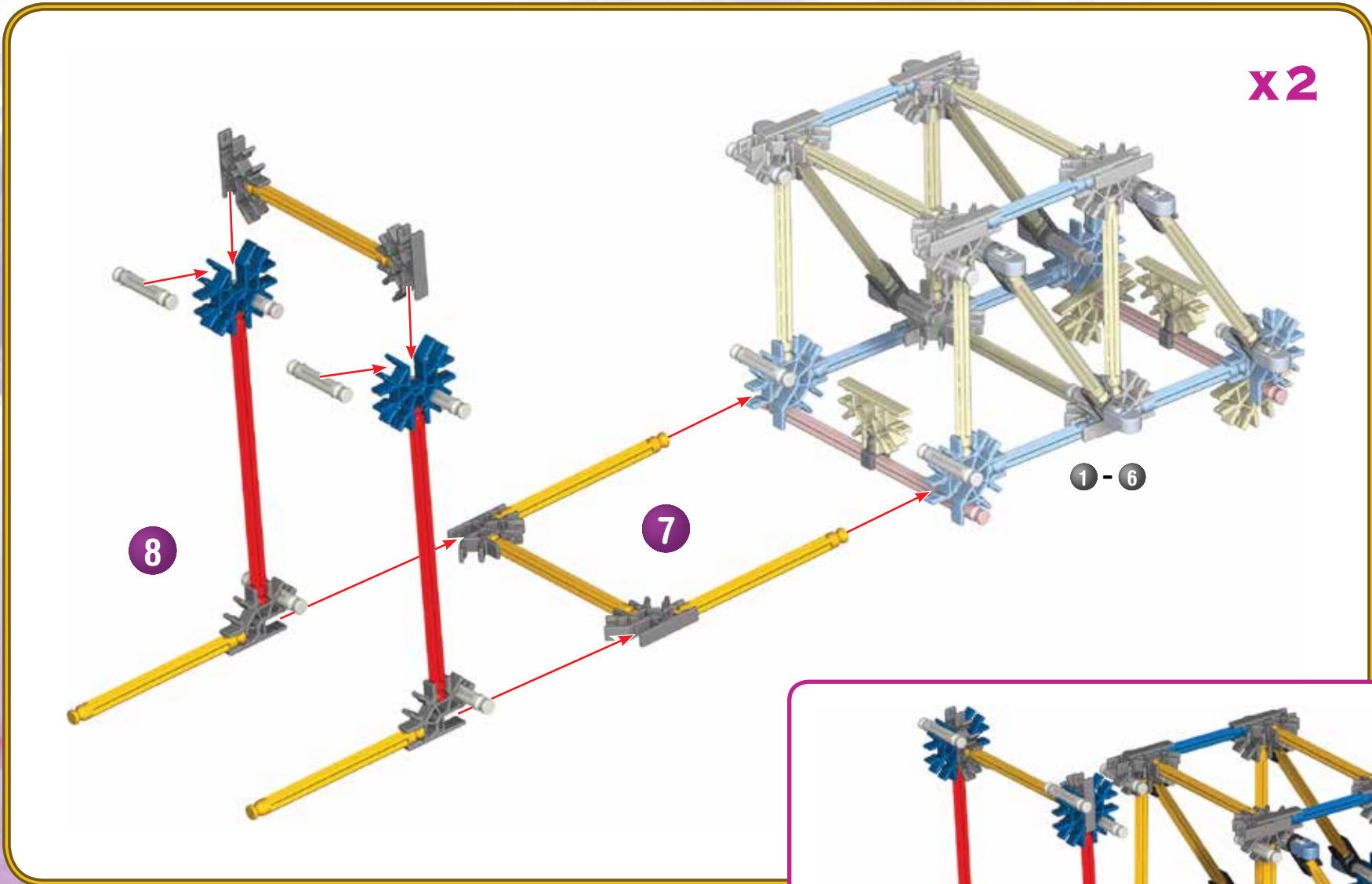
Vous aurez besoin de construire **2**
de ces sections. (étapes 1 - 34)

Astoria Bridge

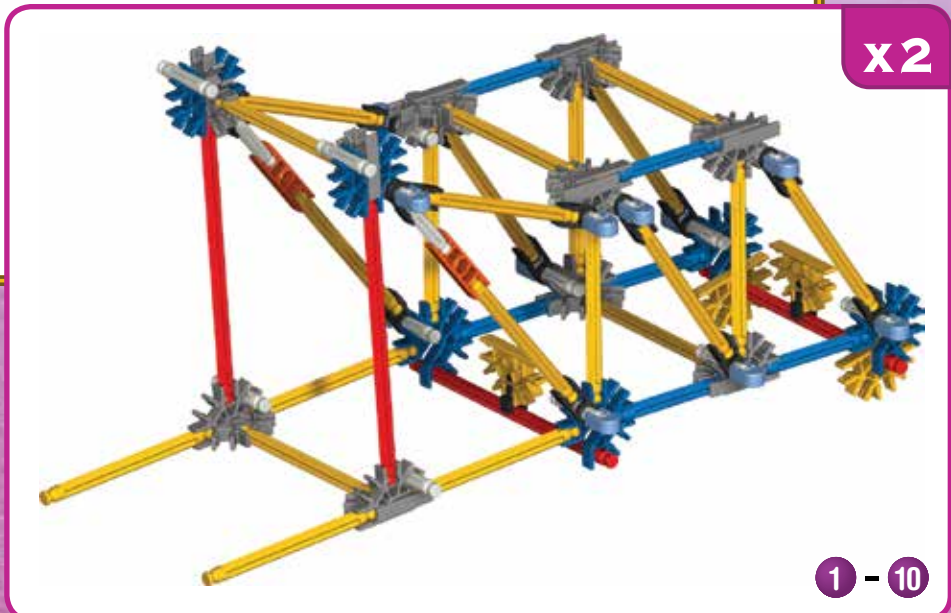
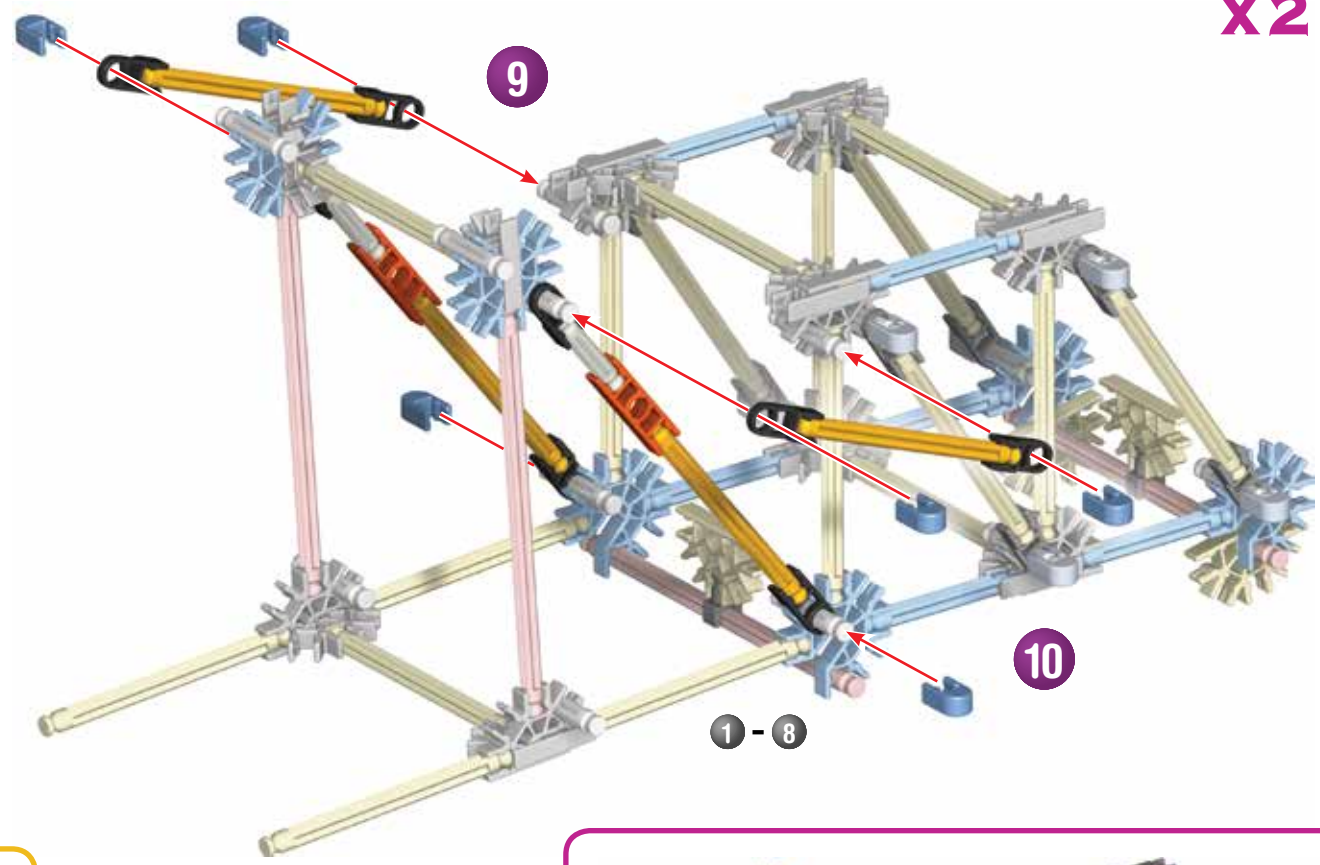
- | | | | | | |
|-----|--|----|--|----|--|
| 80 | | 24 | | 16 | |
| 96 | | 48 | | 88 | |
| 4 | | | | 38 | |
| 40 | | | | | |
| 124 | | | | | |
| 44 | | | | | |
| 95 | | | | | |
| 37 | | | | | |
| 4 | | | | | |
| 4 | | | | | |
| 5 | | | | | |







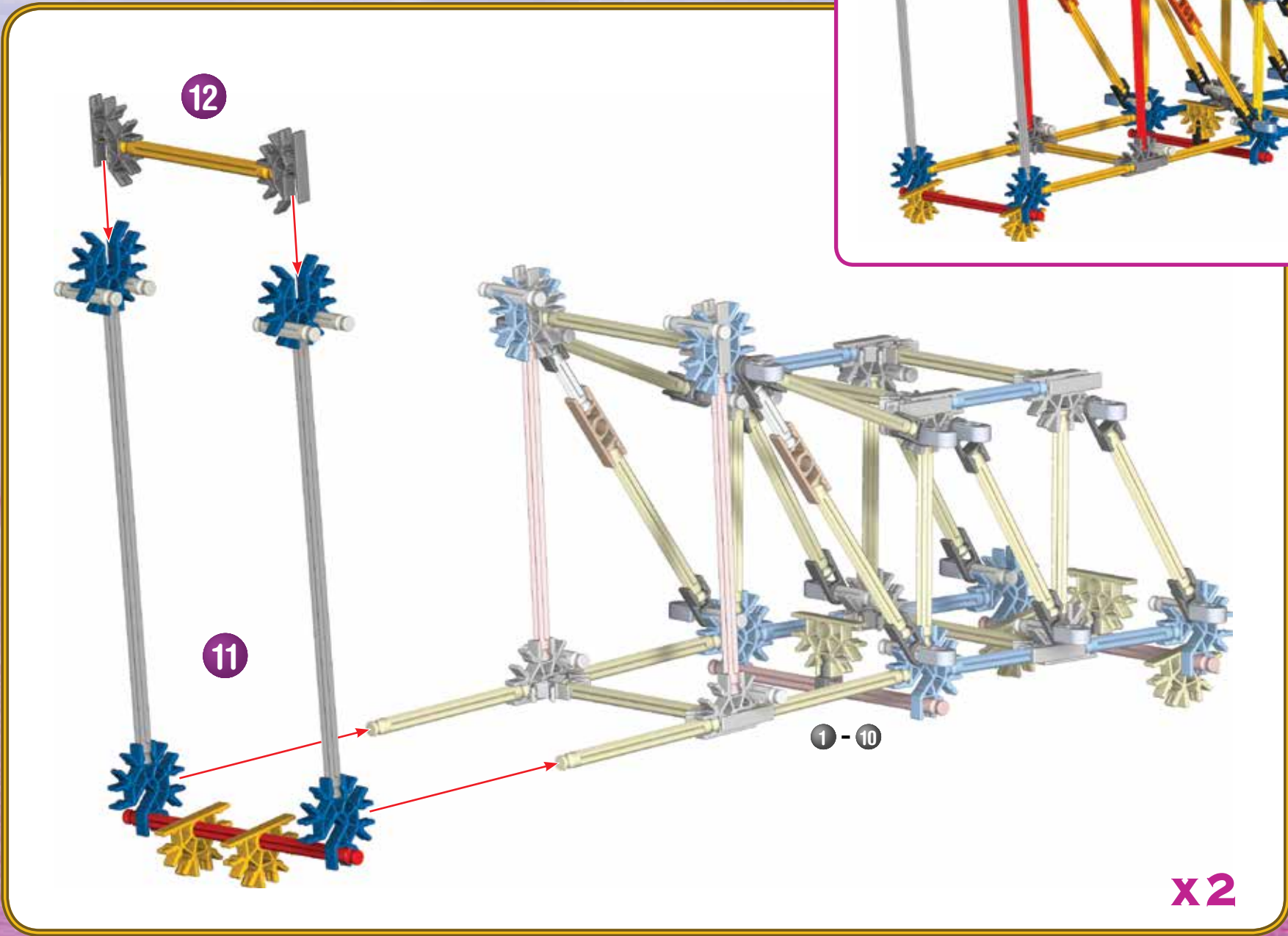
x2



x2



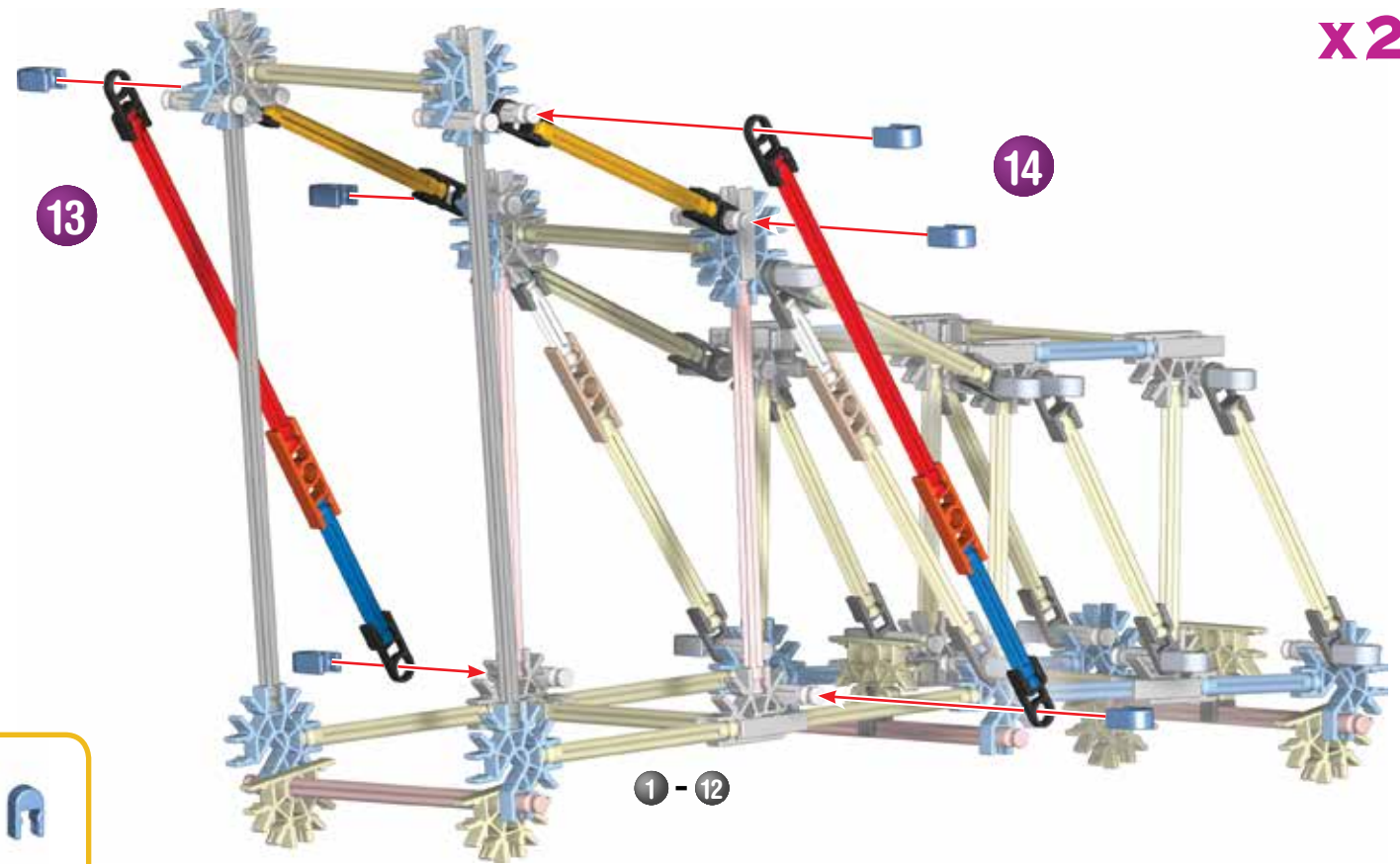
1 - 12



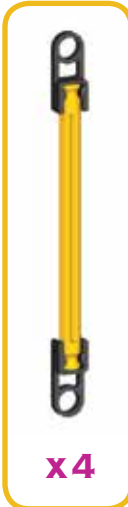
1 - 10

x2

x2



x4



x4



x12

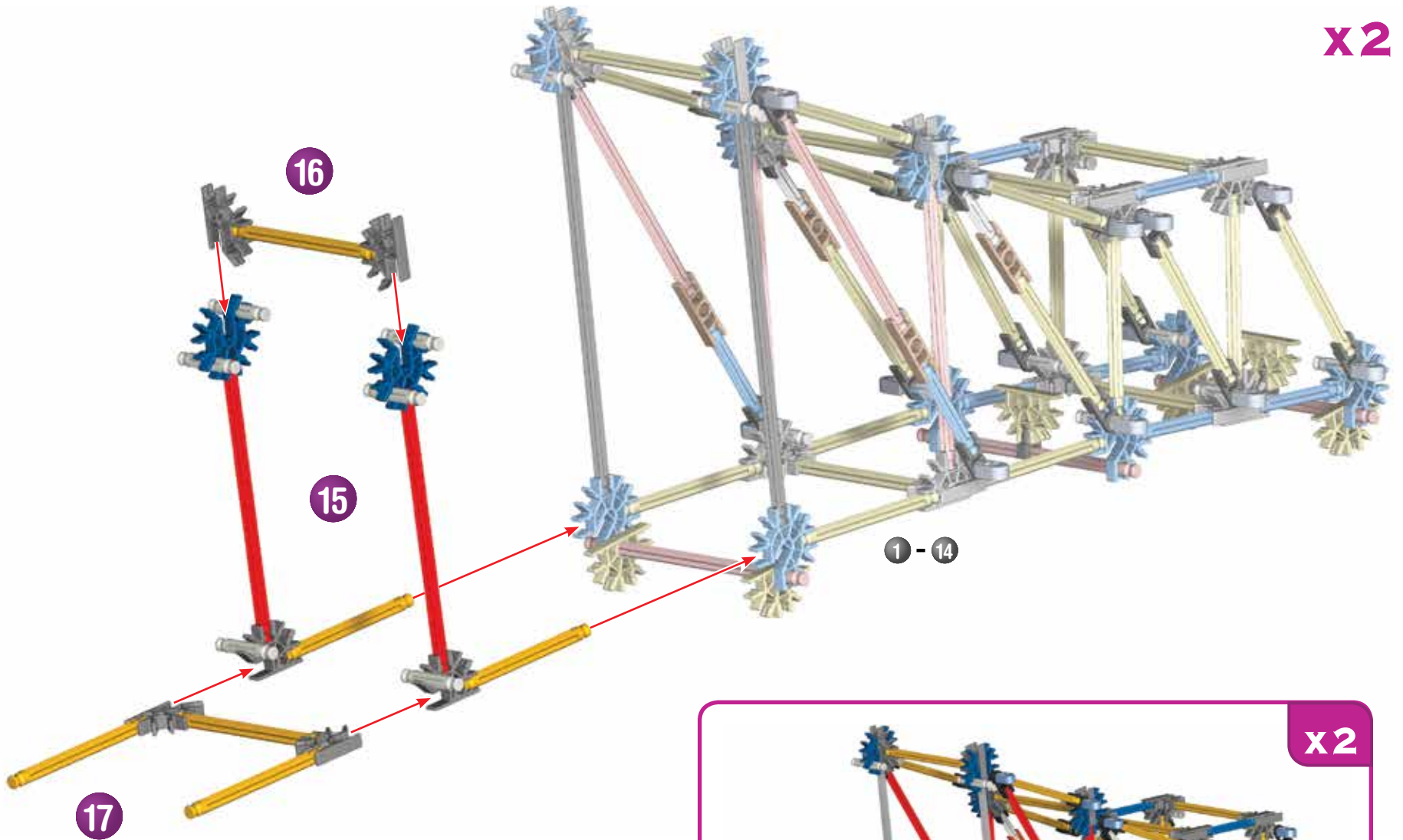
1 - 12



x2

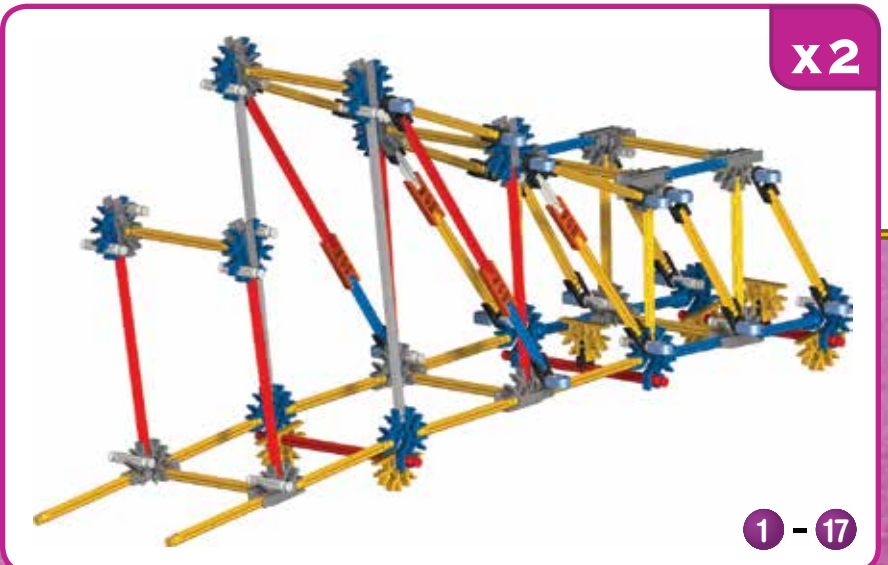
1 - 14

x2



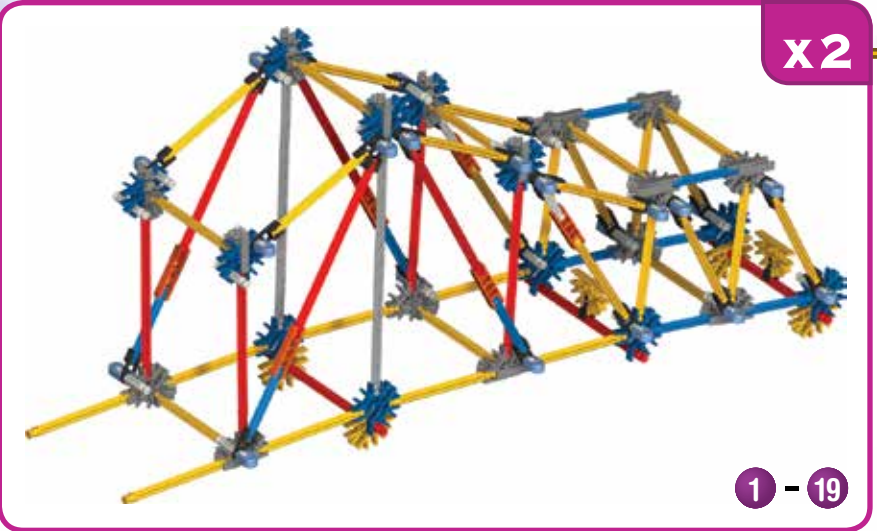
1 - 14

x2



1 - 17

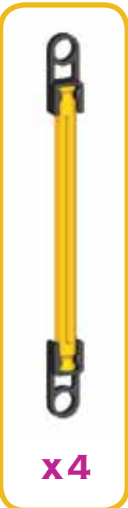
x2



1 - 19



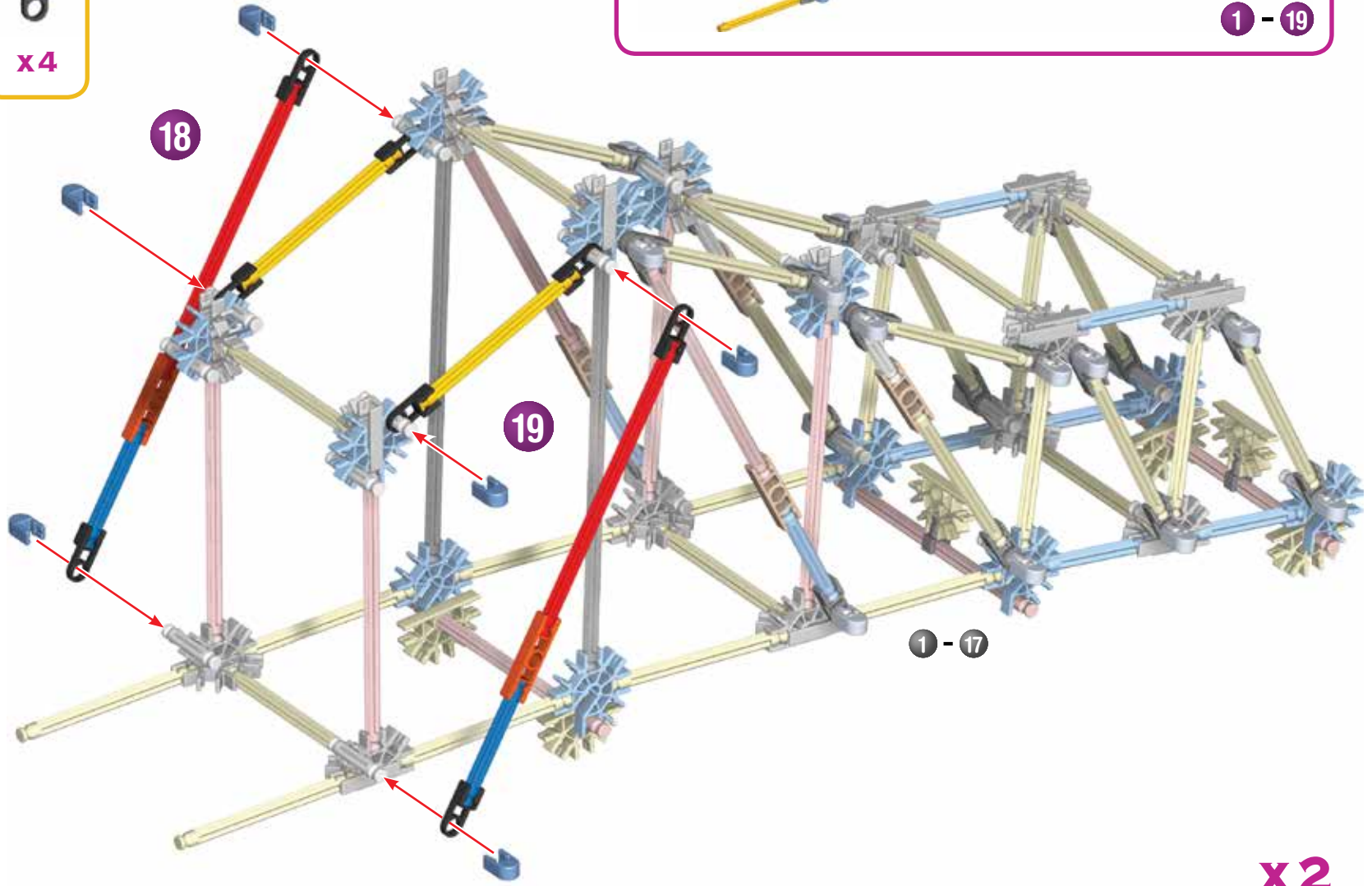
x 12



x 4

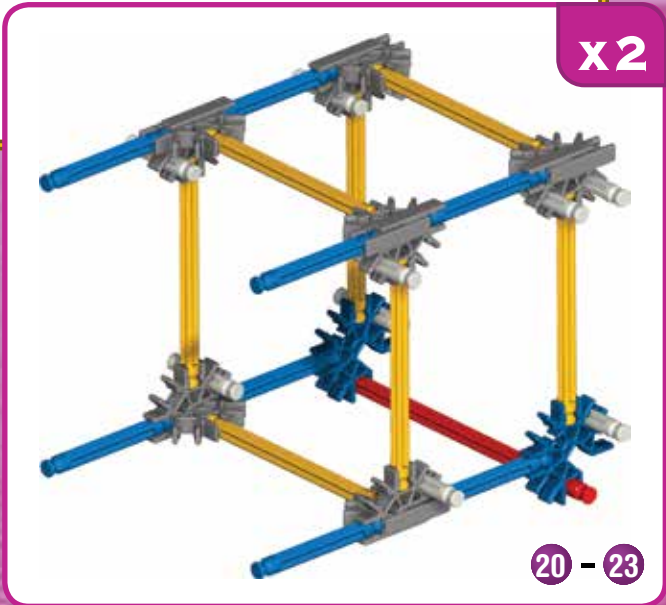
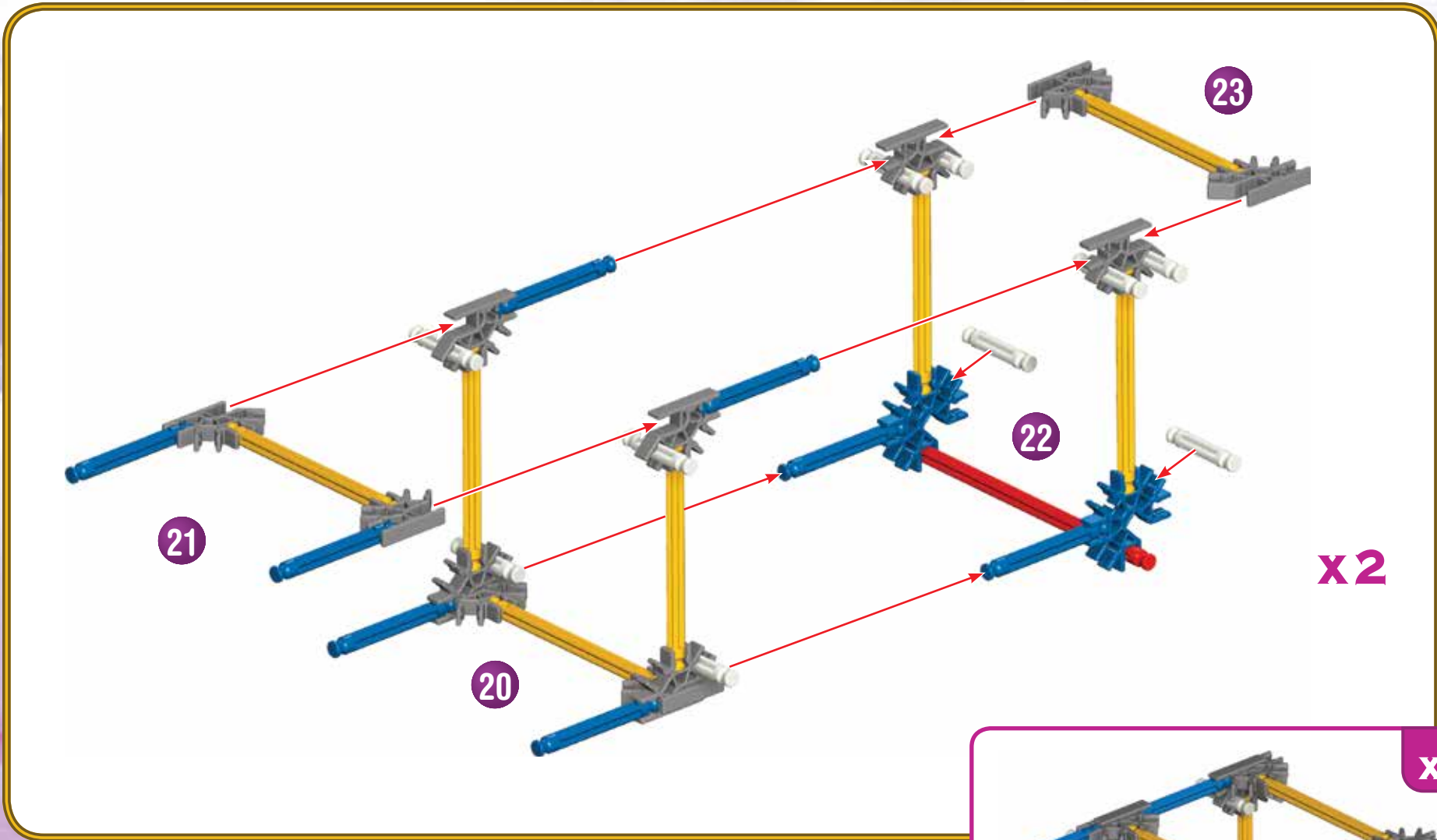


x 4

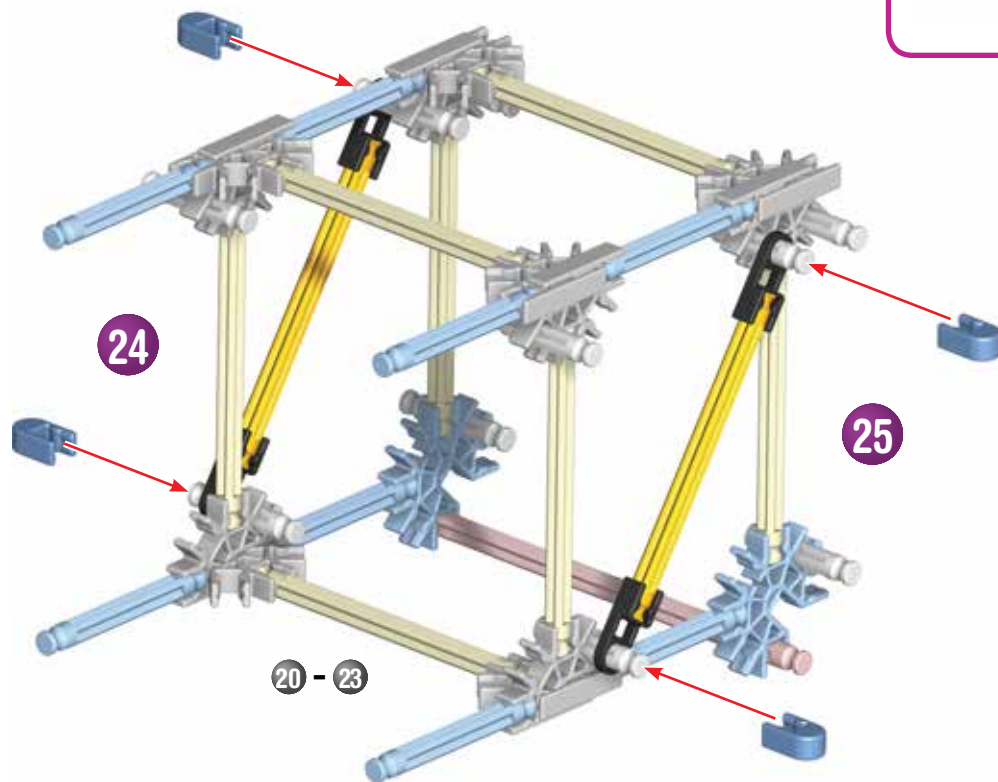


1 - 17

x2



x2

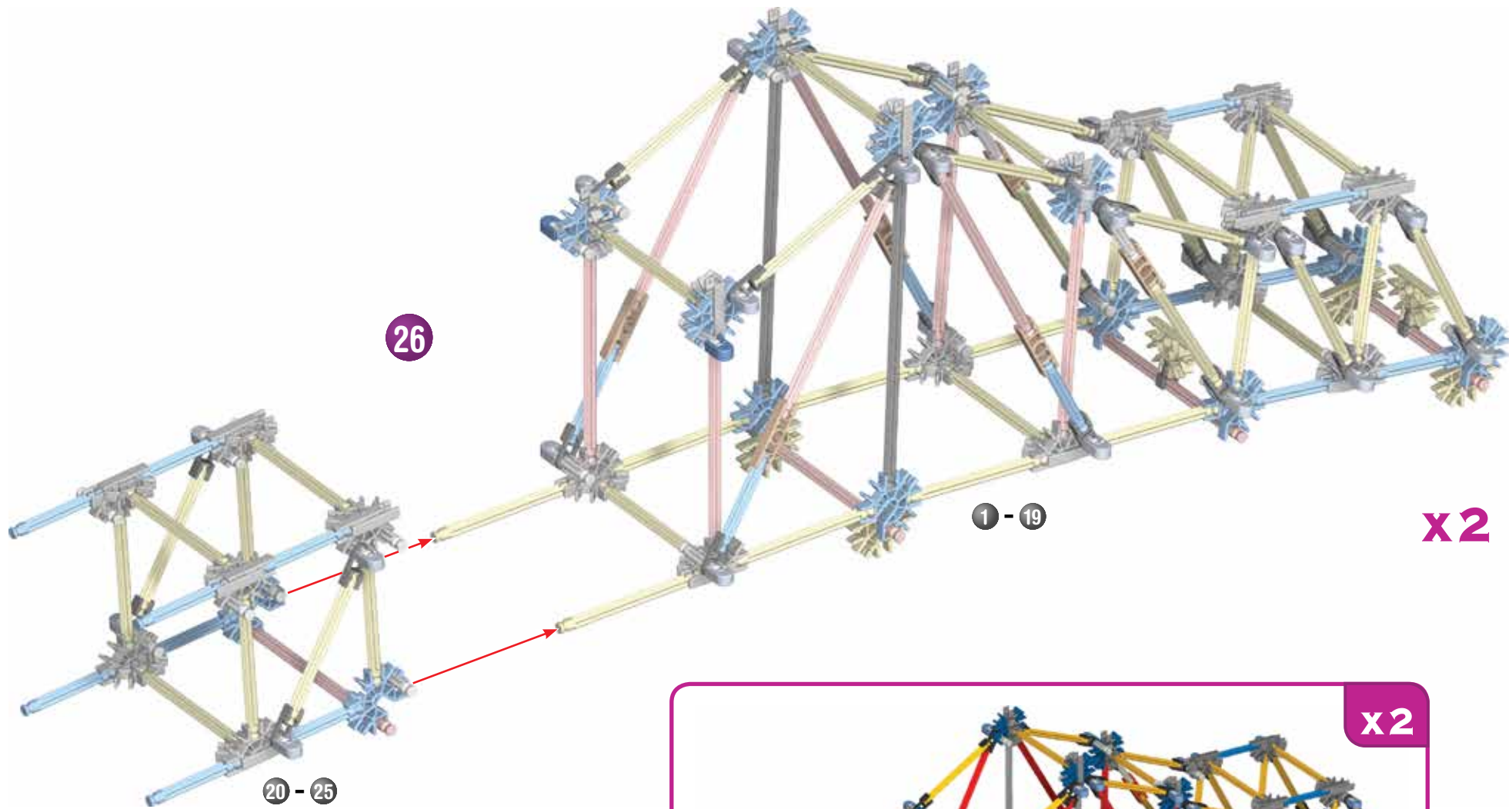


x4



x8

x2

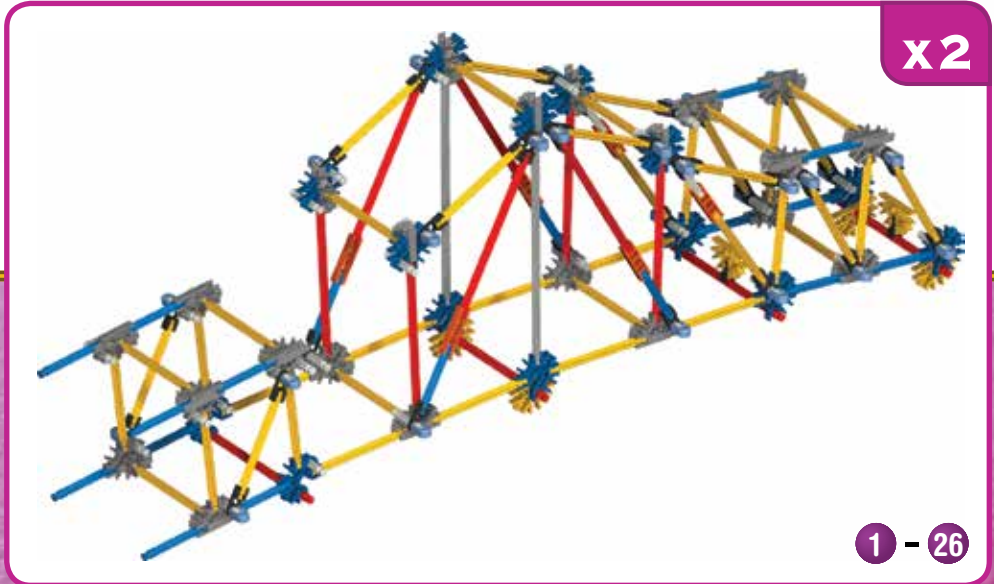


26

1 - 19

x2

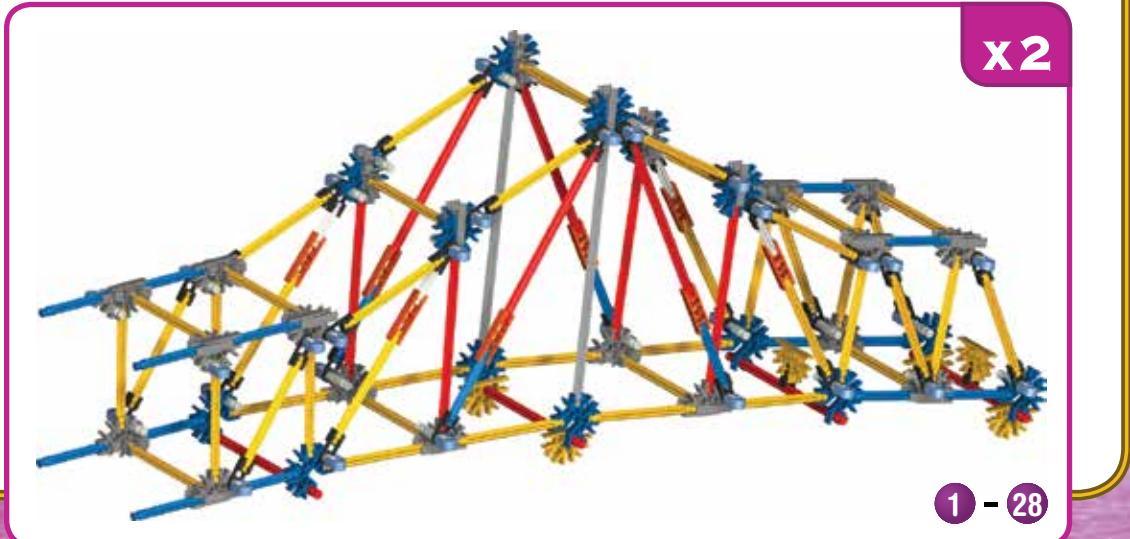
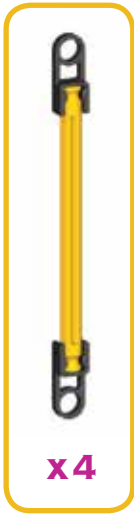
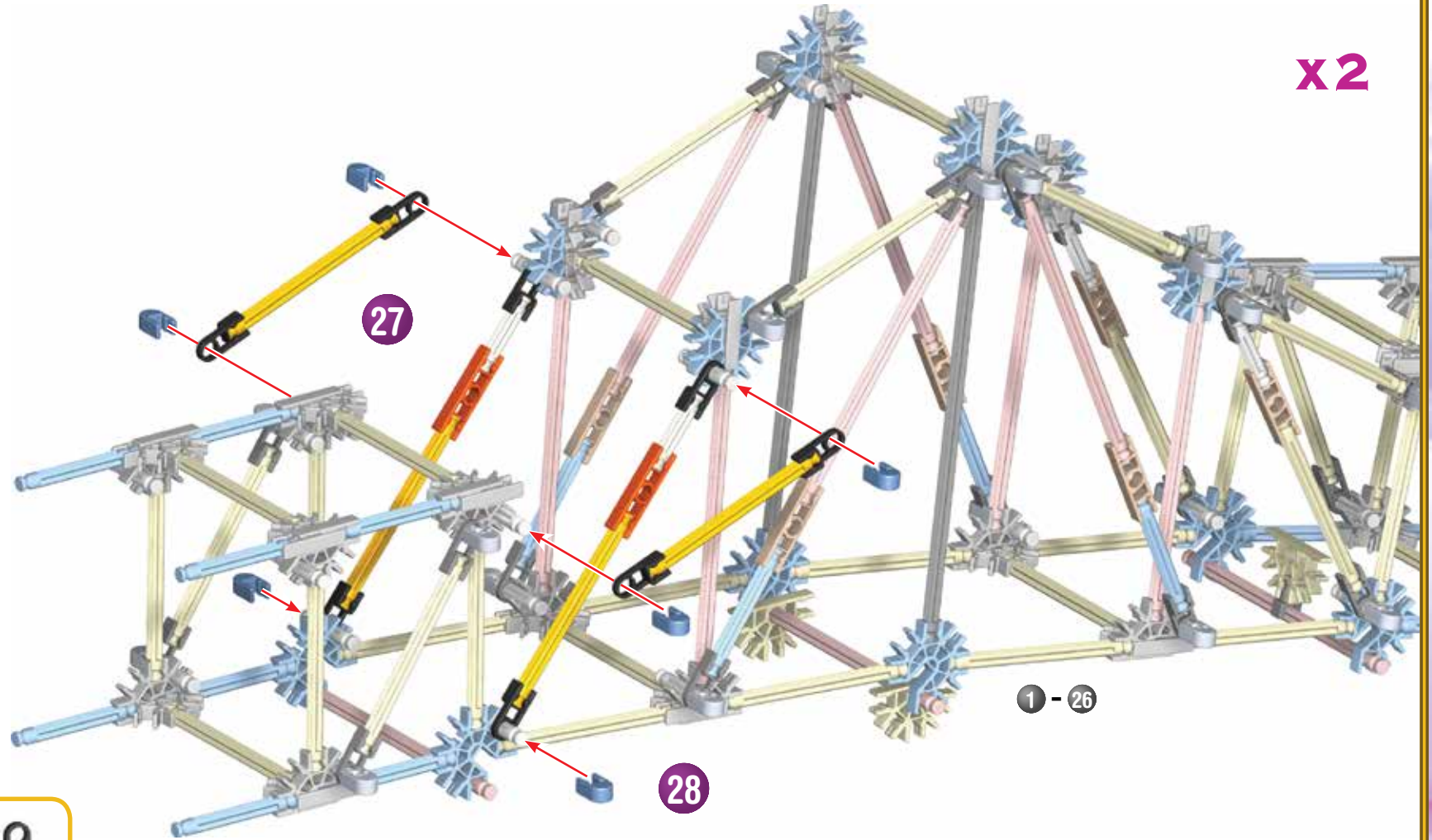
20 - 25

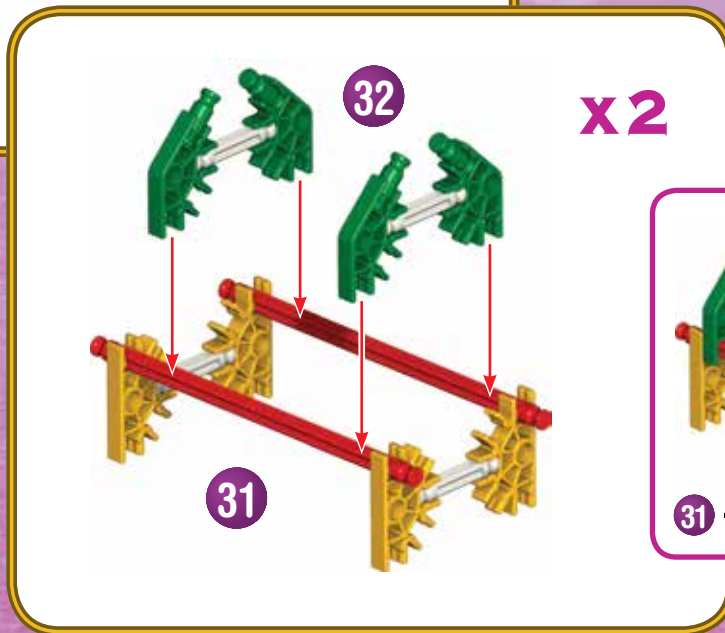
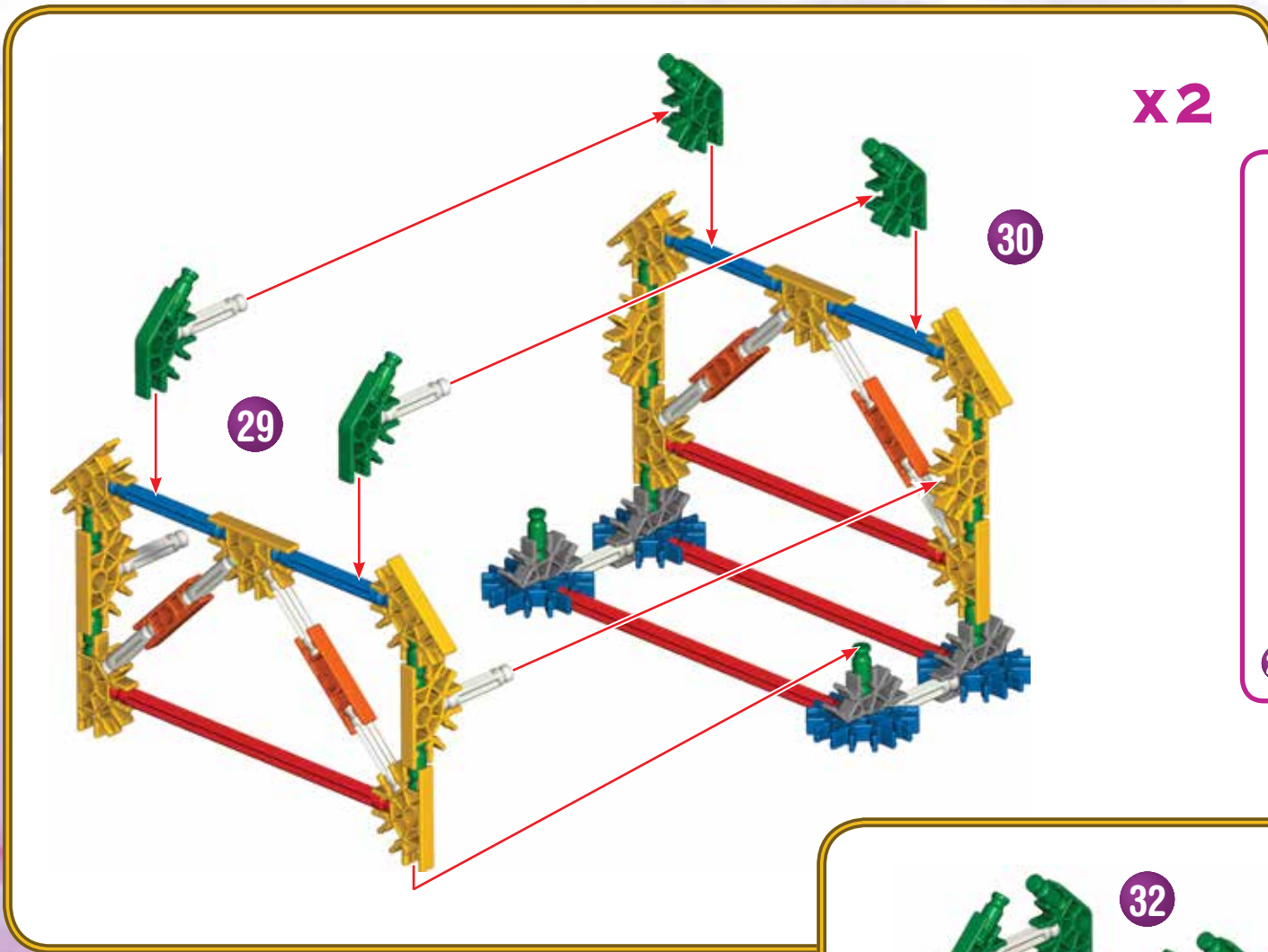


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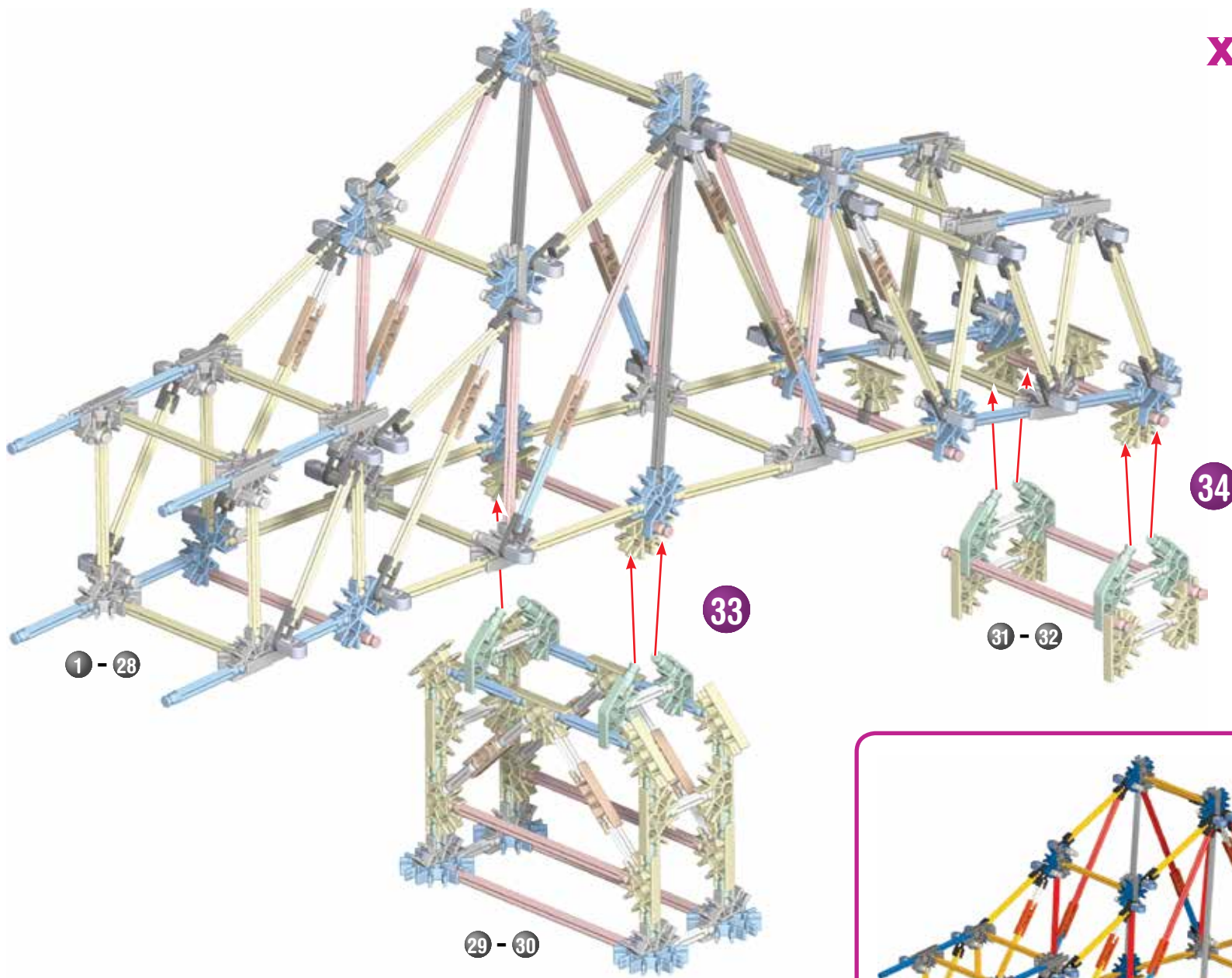
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x2

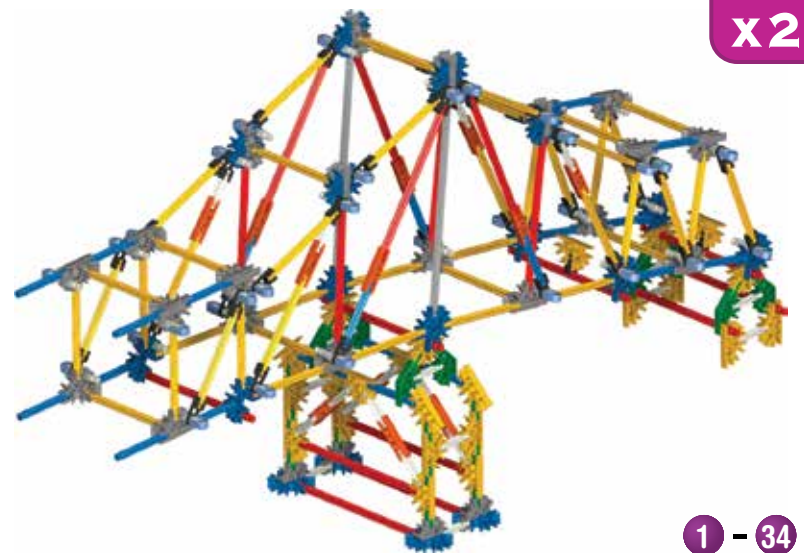


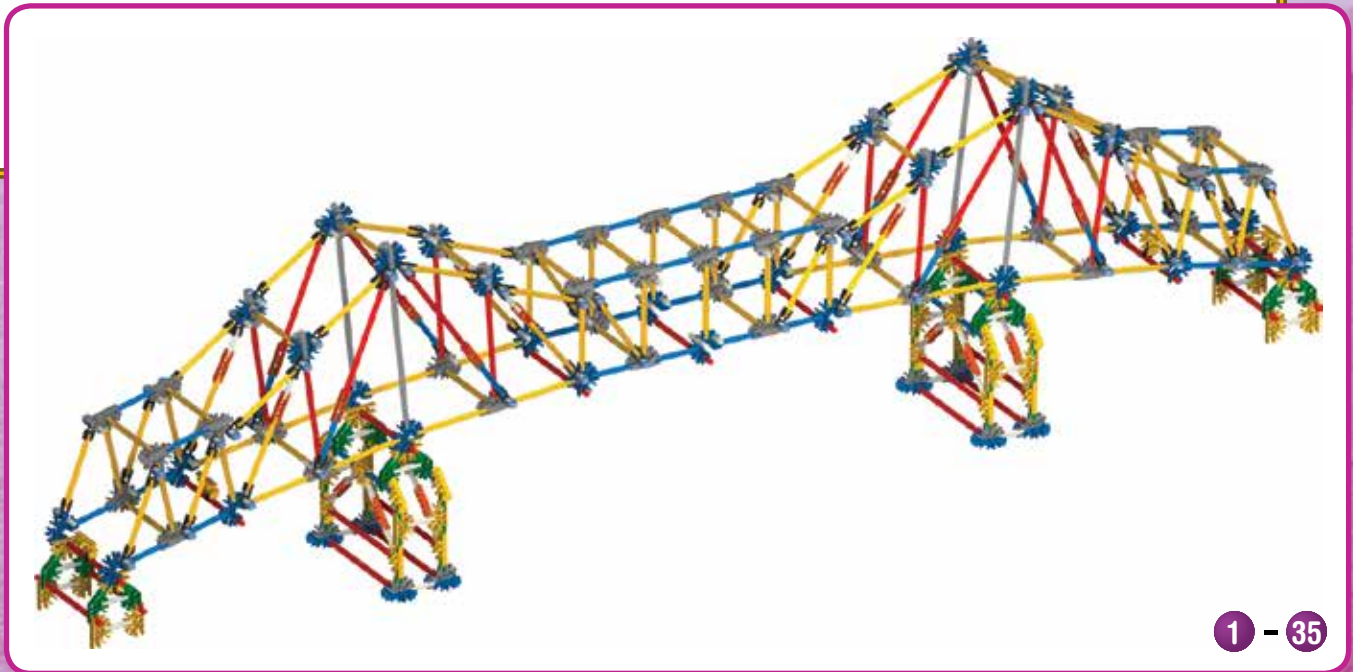
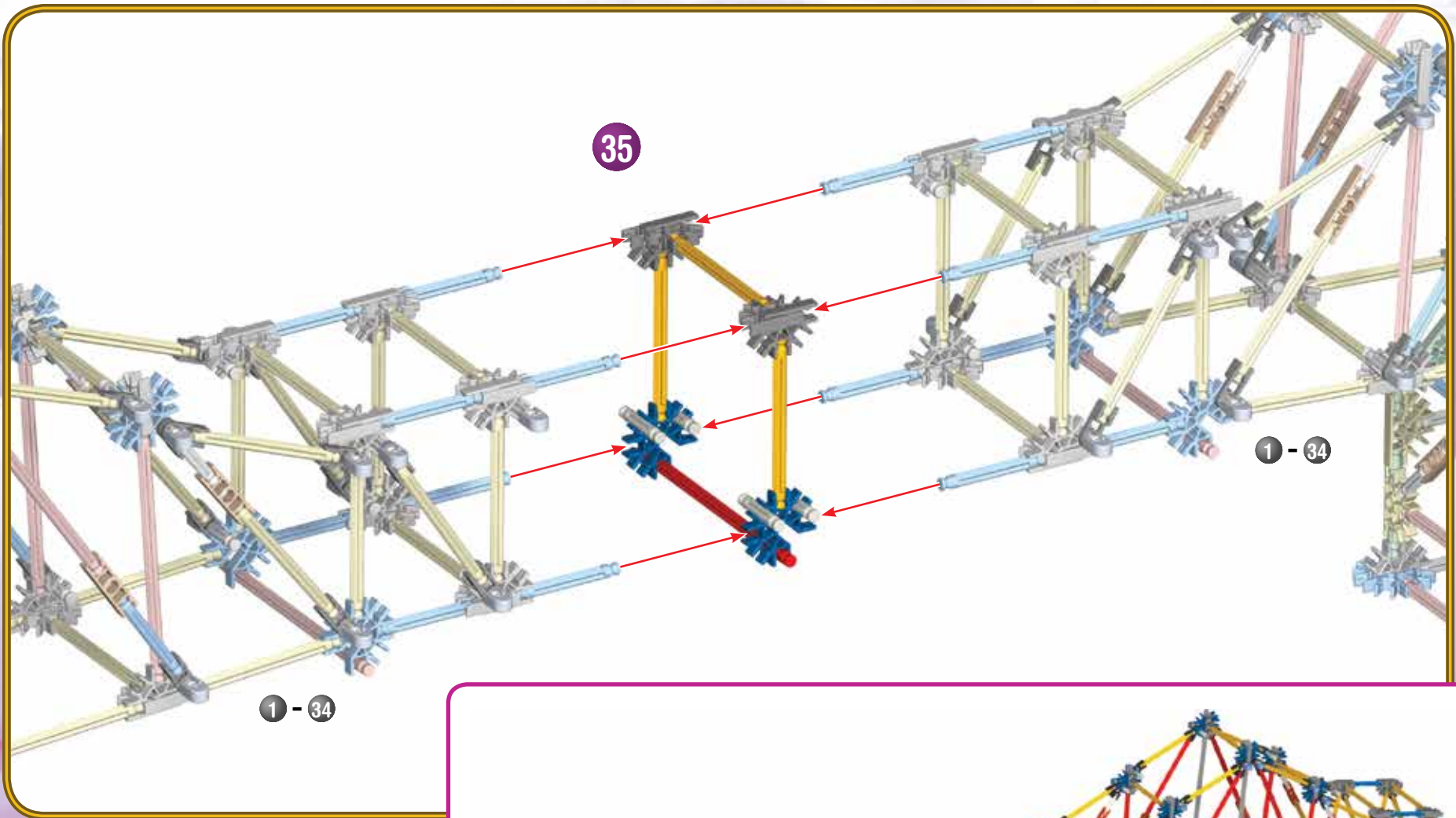


x2



x2







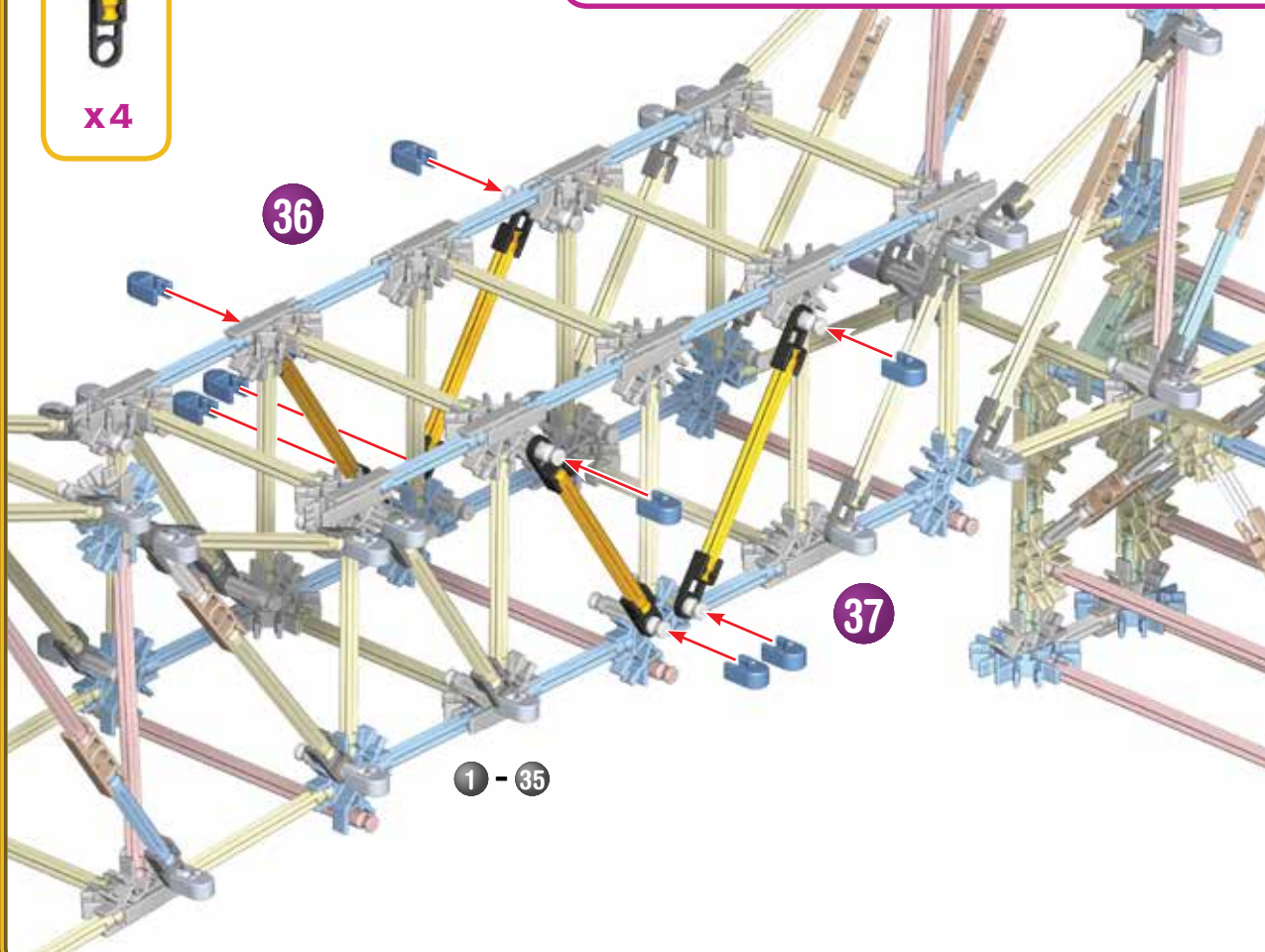
x4



x8



1 - 37



36

37

1 - 35

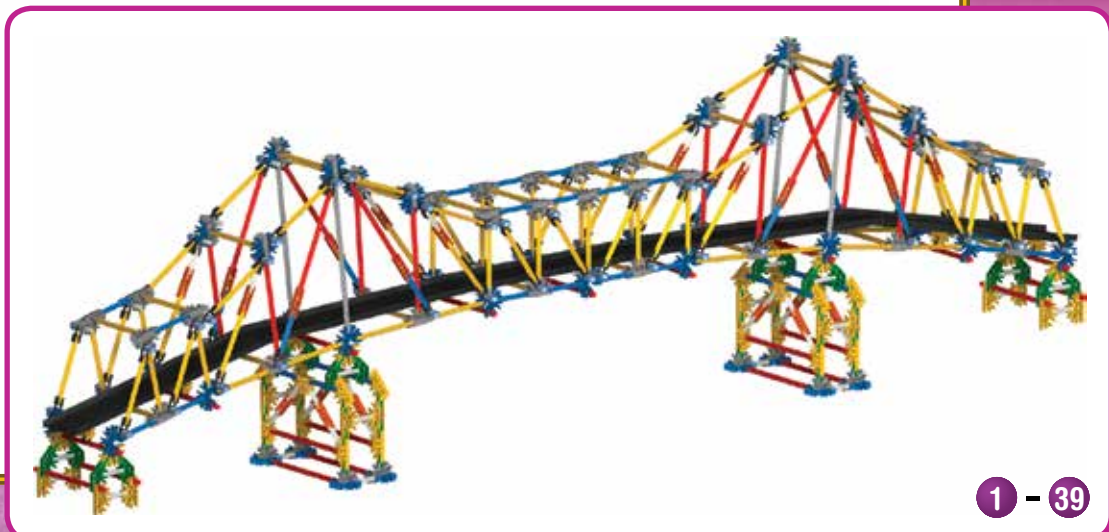
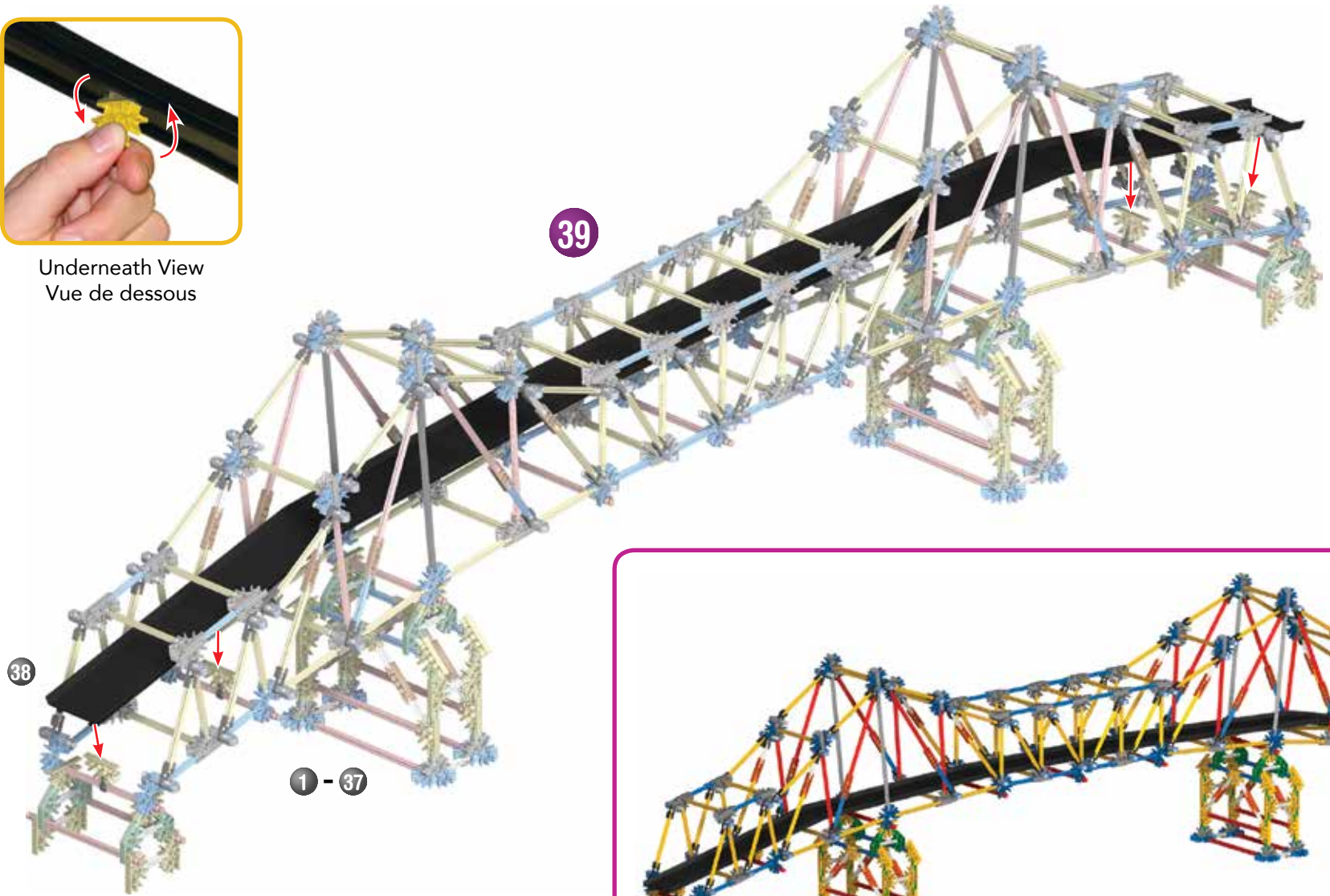


38



Underneath View
Vue de dessous

39



1 - 39

GOLDEN GATE BRIDGE



Vital Statistics:

Location: US Route 101 crosses the San Francisco Bay, linking Sausalito and San Francisco, California, U.S.A.

Completion Date: 1937

Cost: \$27 million

Length: 8,981 feet (2,737 meters)

Type: Suspension

Purpose: Roadway

Materials: Steel, concrete

Longest Single Span: 4,200 feet (1,280 meters)

Fast Facts:

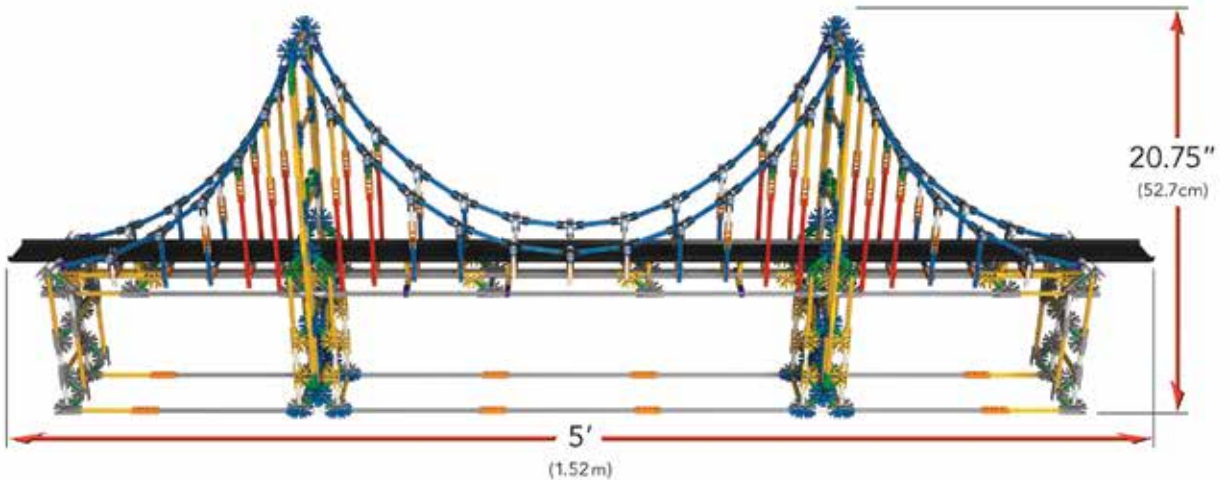
- The length of the steel wires used in the cables of the bridge is enough to circle Earth three times!
- If the U.S. Navy had its way, the bridge might have been painted in black and yellow stripes to assure greater visibility for passing ships.
- During construction, a safety net below the bridge saved the lives of 19 men.
- Since the bridge opened in 1937, more than 1.75 billion cars have crossed the structure and \$1.25 billion in tolls have been collected.

The K'NEX Golden Gate Bridge

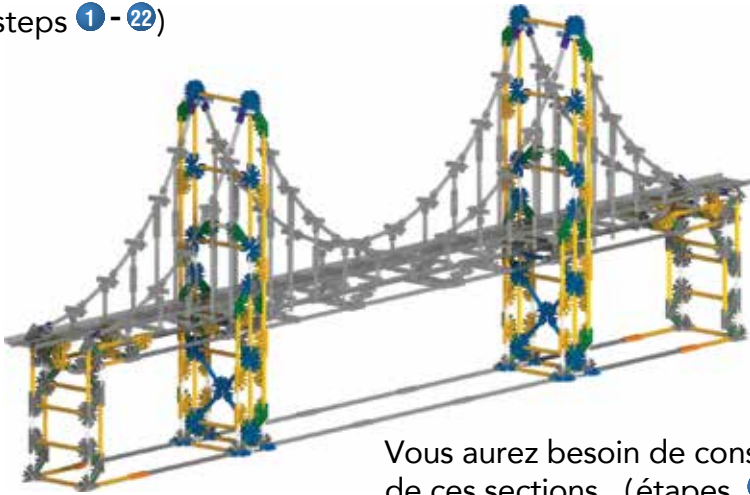


K'NEX Statistics/Statistiques:

K'NEX Parts/Pièces = 1051



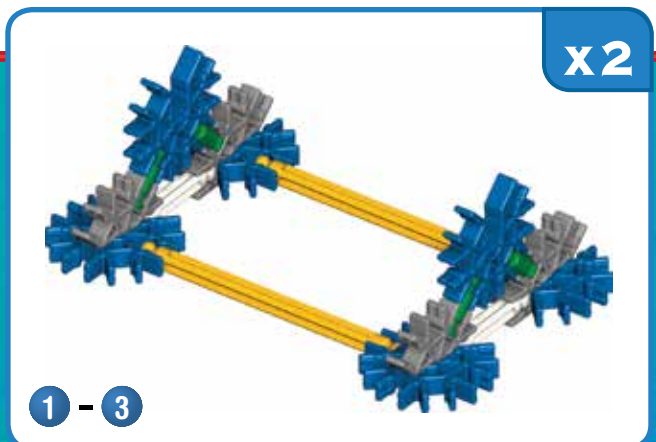
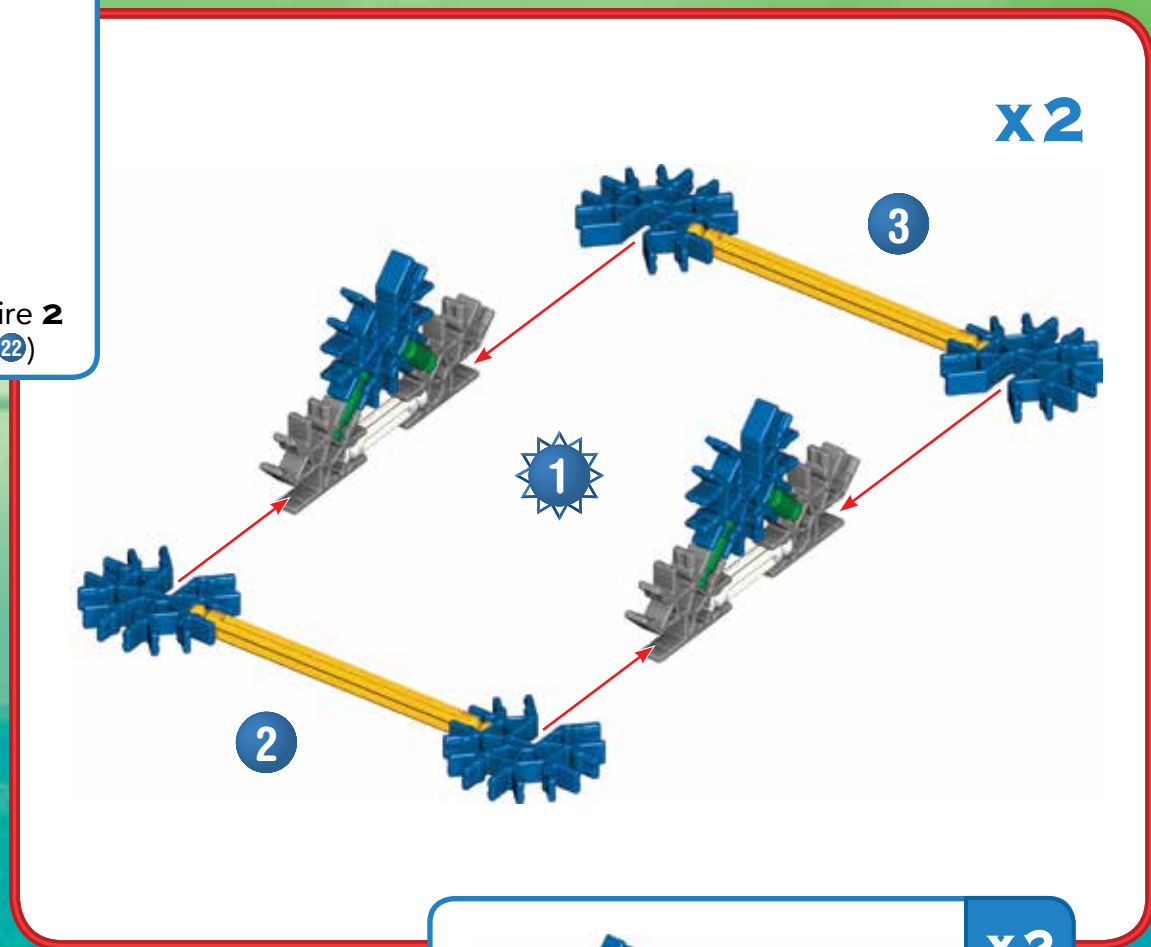
You will need to build **2** of these sections.
(steps 1 - 22)



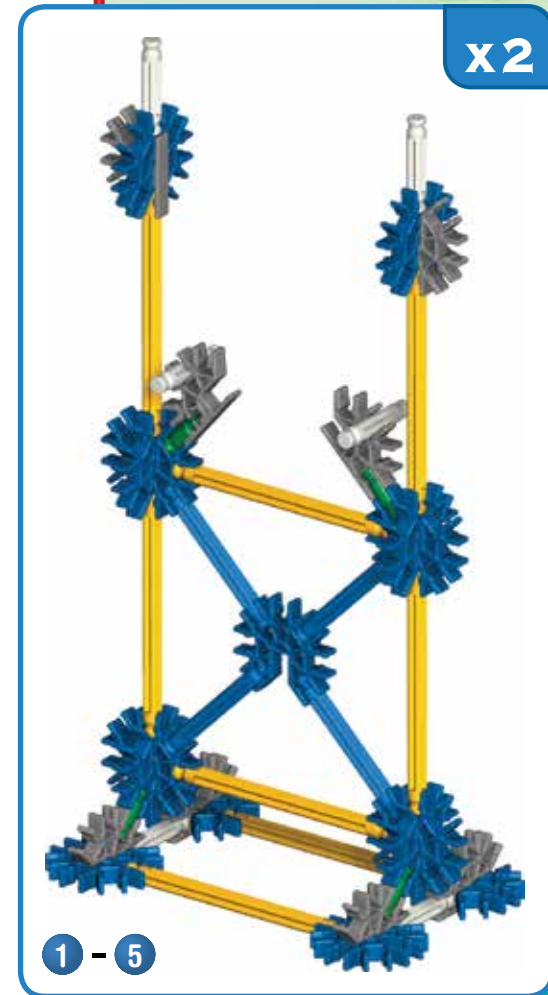
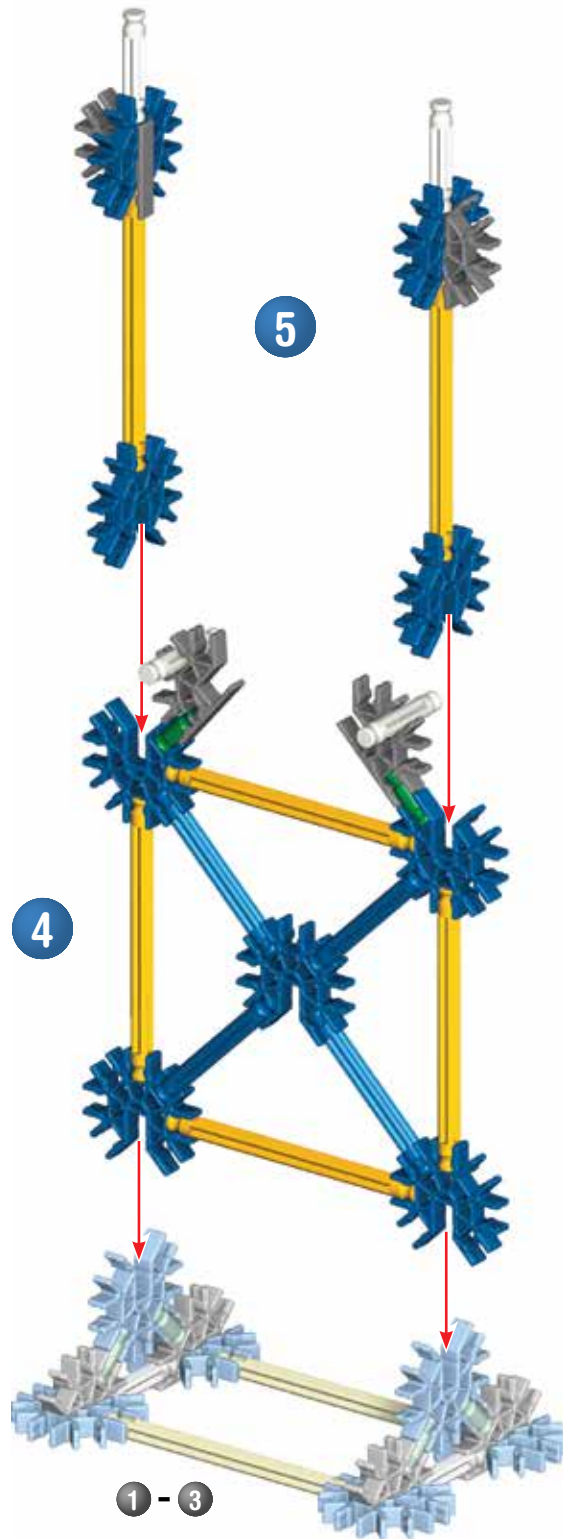
Vous aurez besoin de construire **2**
de ces sections. (étapes 1 - 22)

Golden Gate Bridge

- | | | | | | |
|-----|--|----|--|-----|--|
| 96 | | 74 | | 104 | |
| 126 | | 66 | | 46 | |
| 18 | | 20 | | | |
| 144 | | | | | |
| 116 | | | | | |
| 96 | | | | | |
| 90 | | | | | |
| 16 | | | | | |
| 30 | | | | | |
| 4 | | | | | |
| 5 | | | | | |



x2

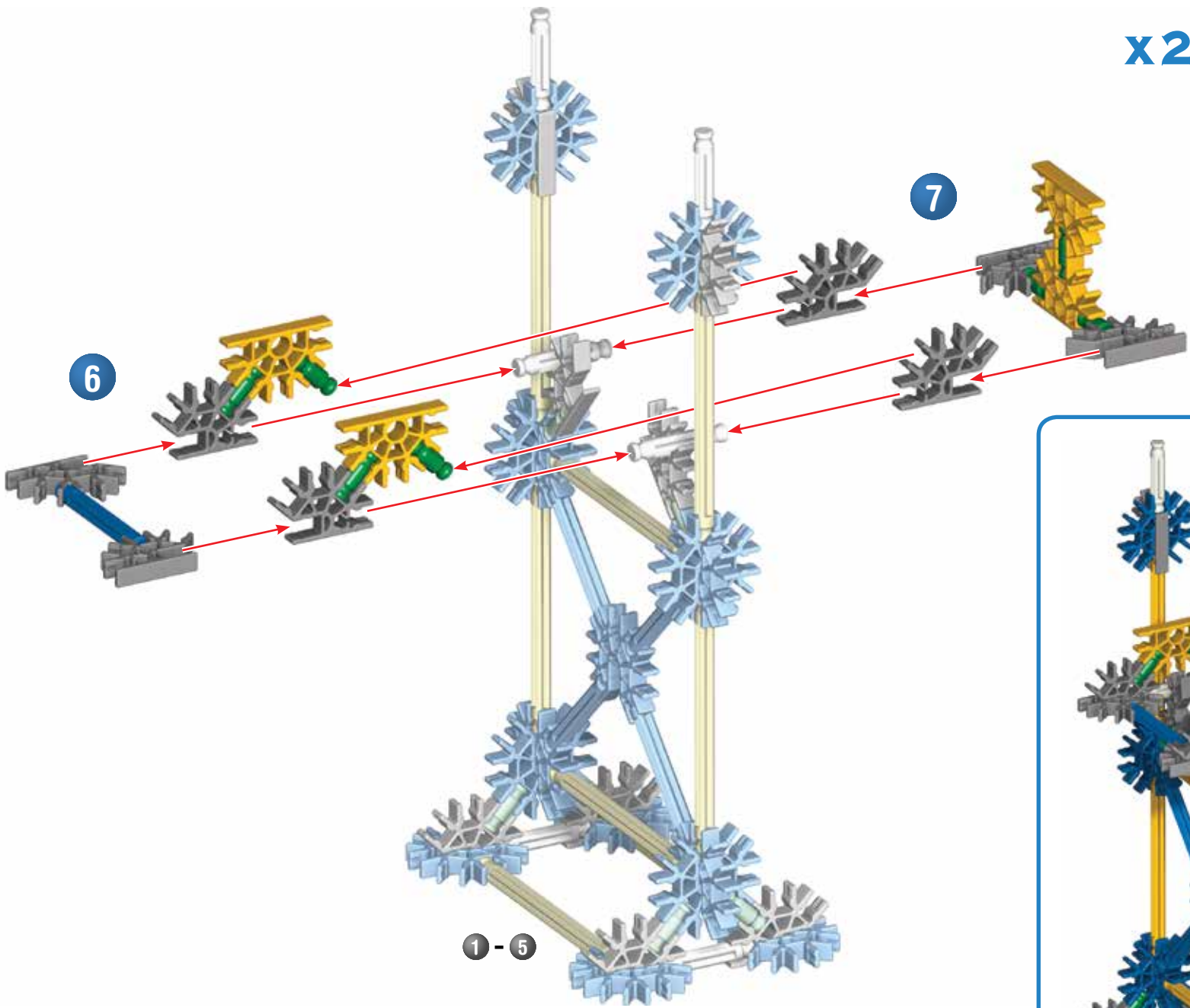


x2

7

6

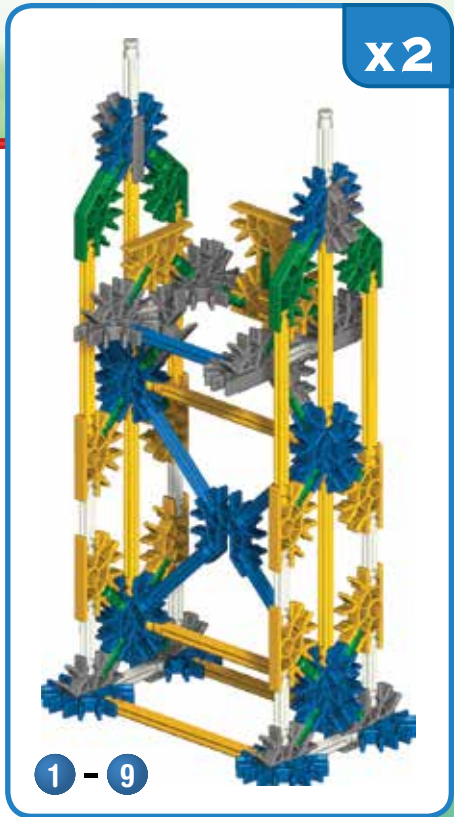
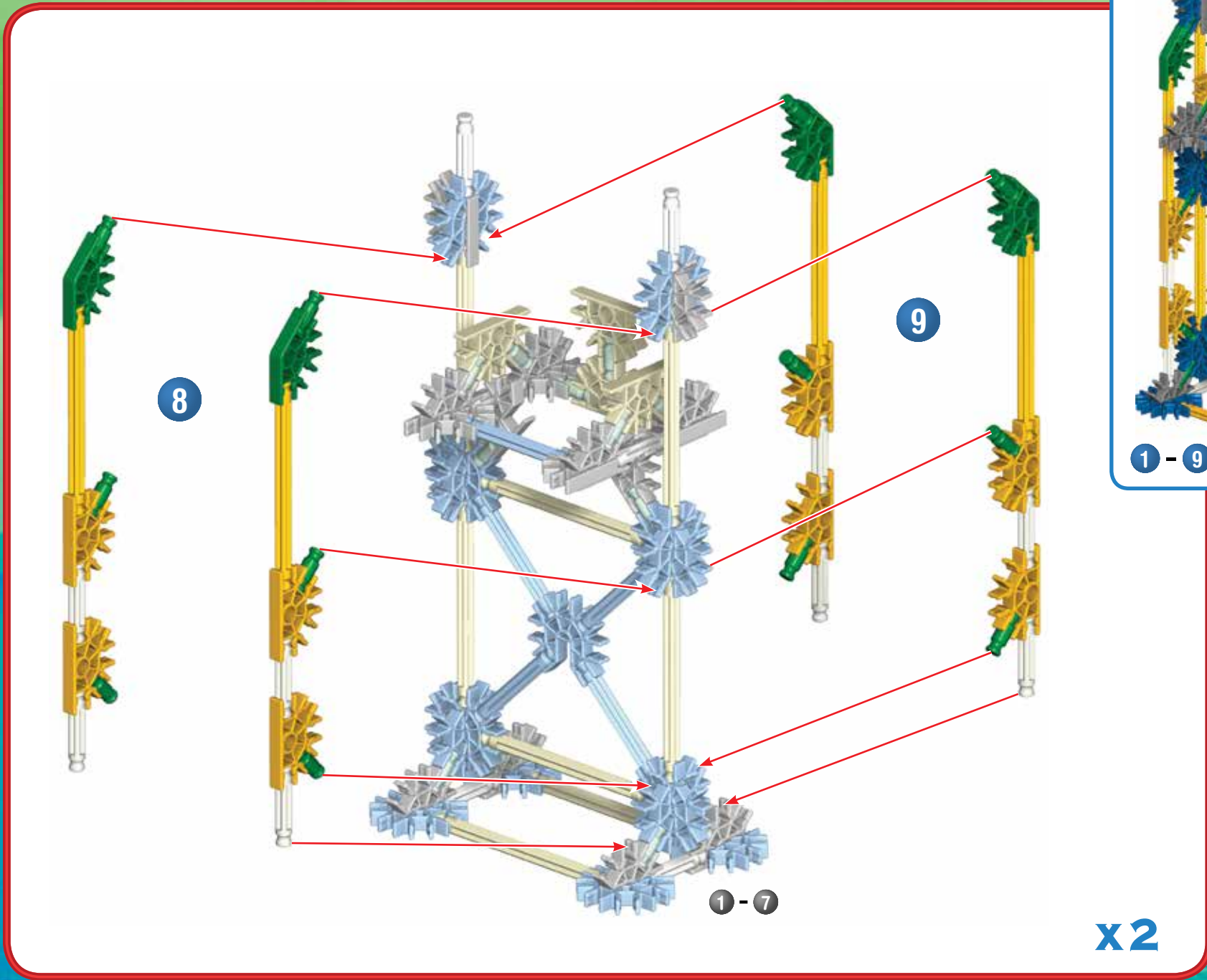
1 - 5



x2

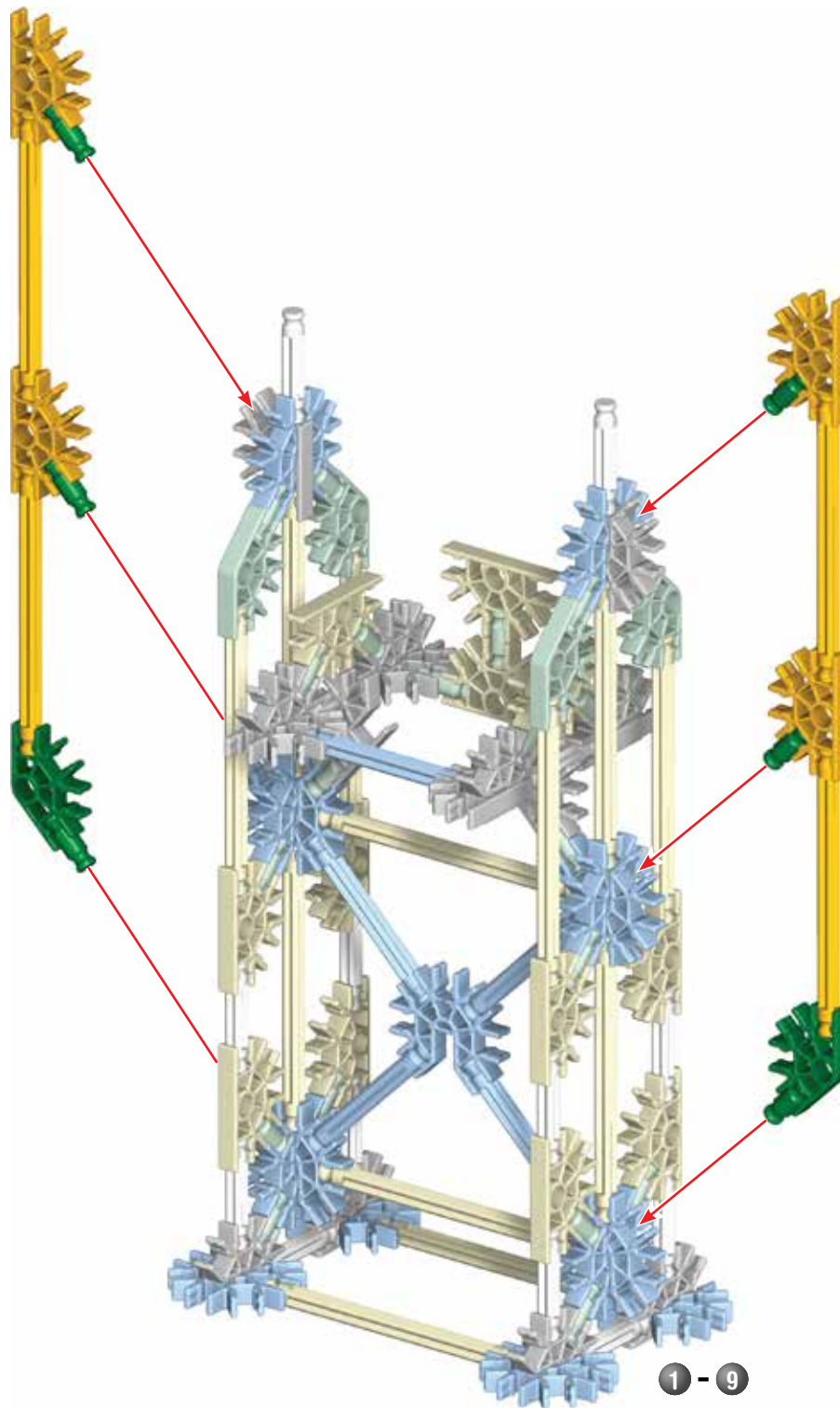
1 - 7



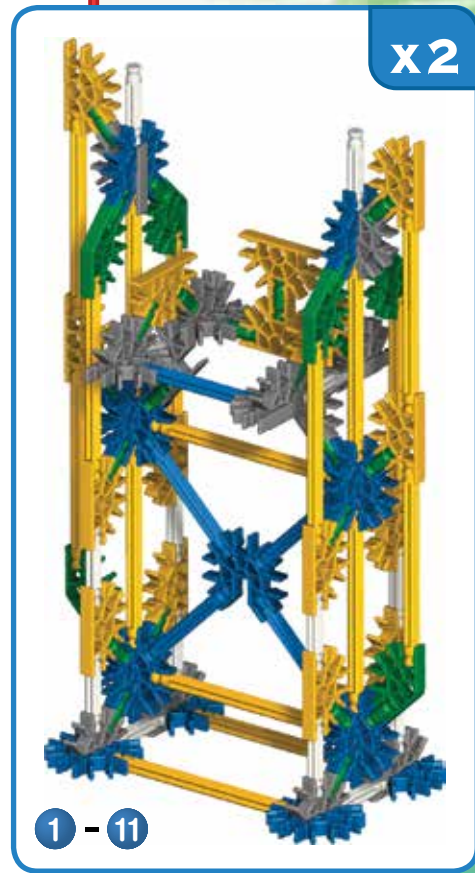


x2

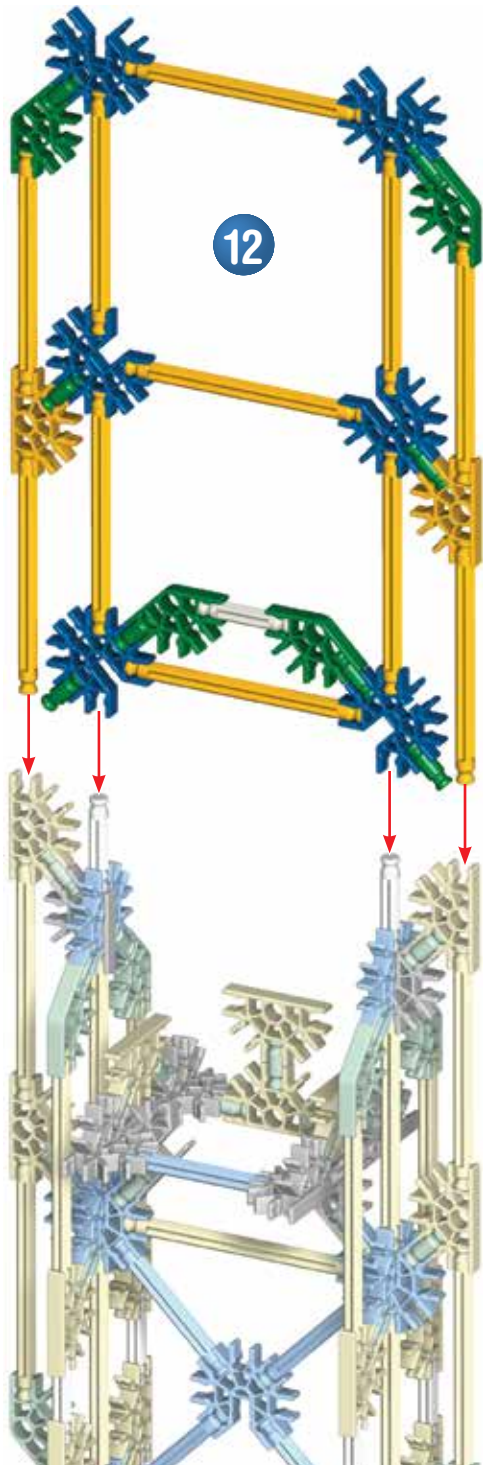
10



11



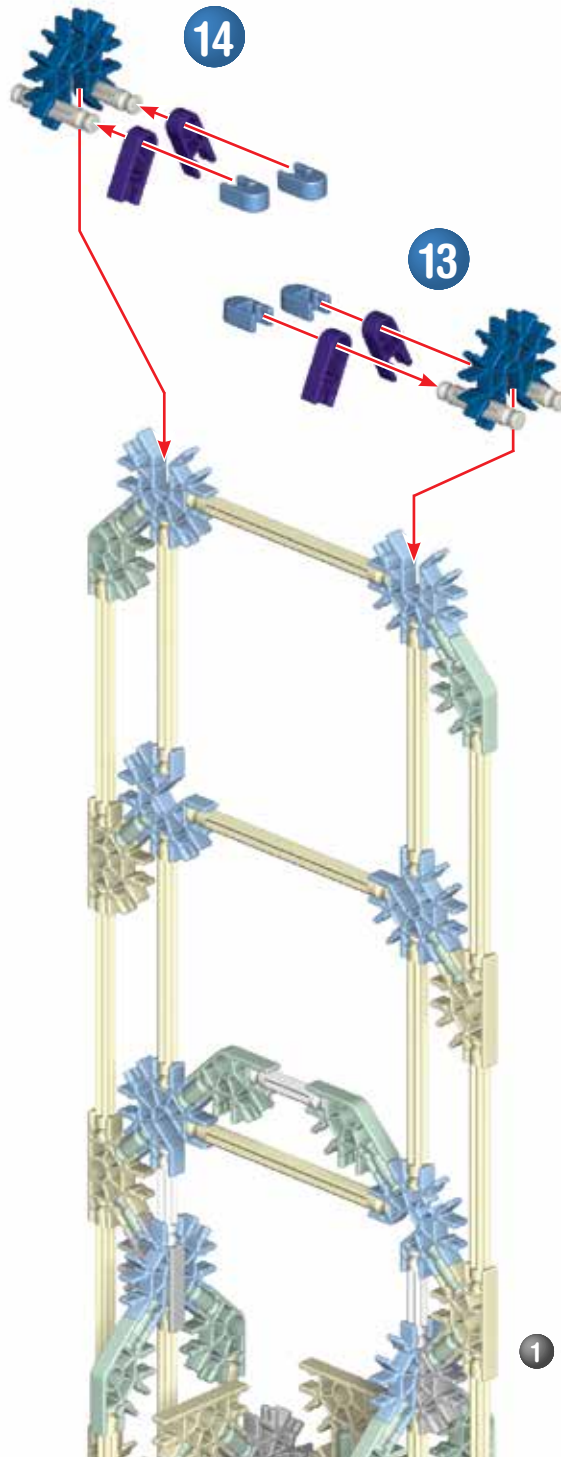
x2



x2

12

1 - 11



x2

14

13

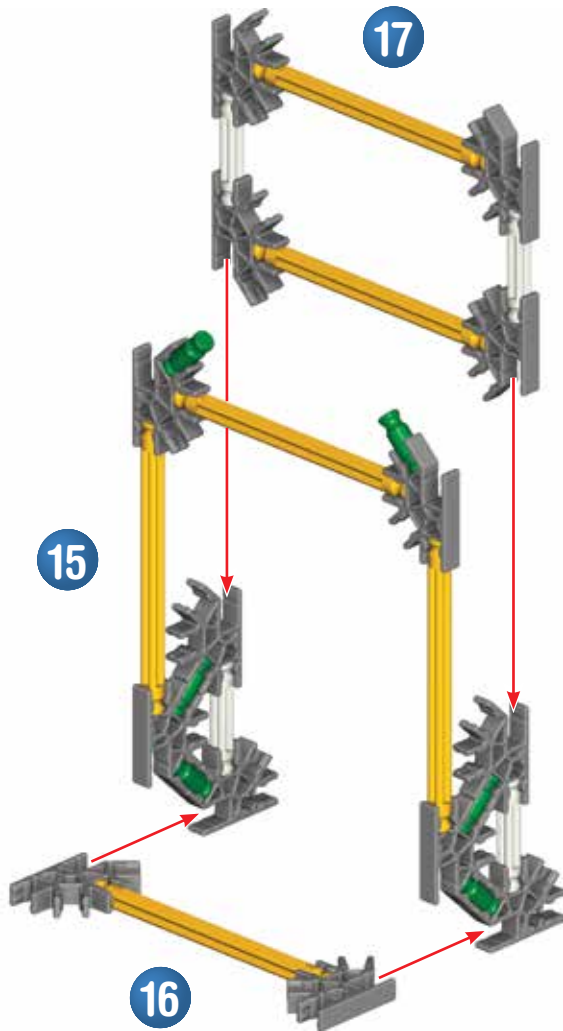
1 - 12



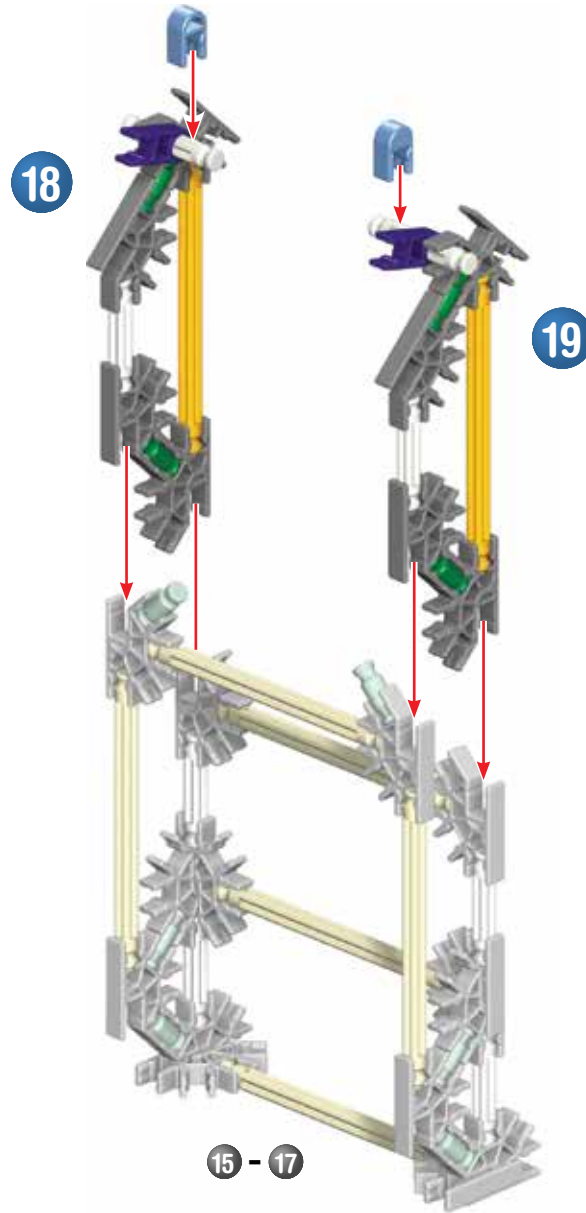
x2

1 - 14

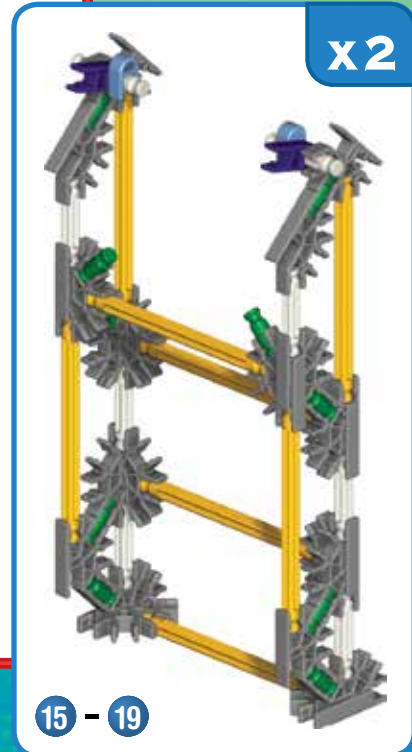
x2



x2

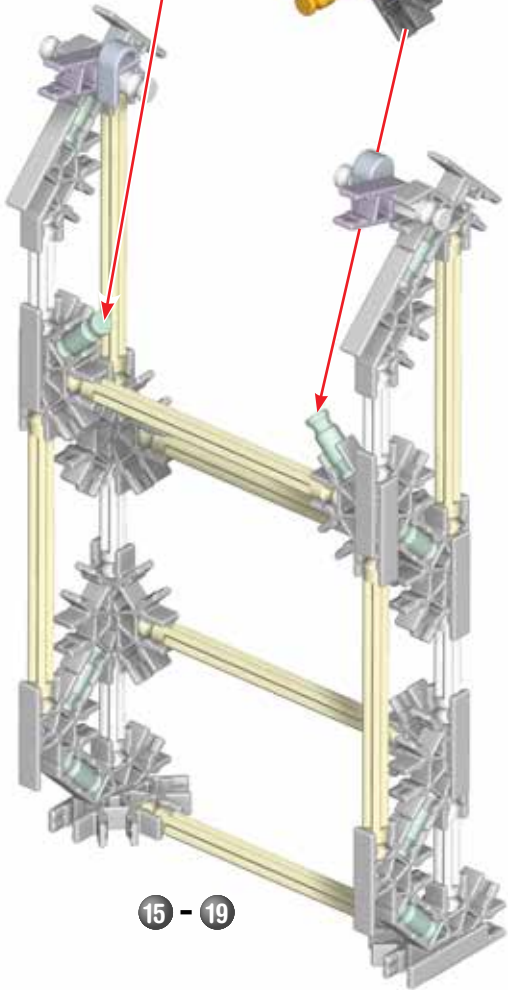
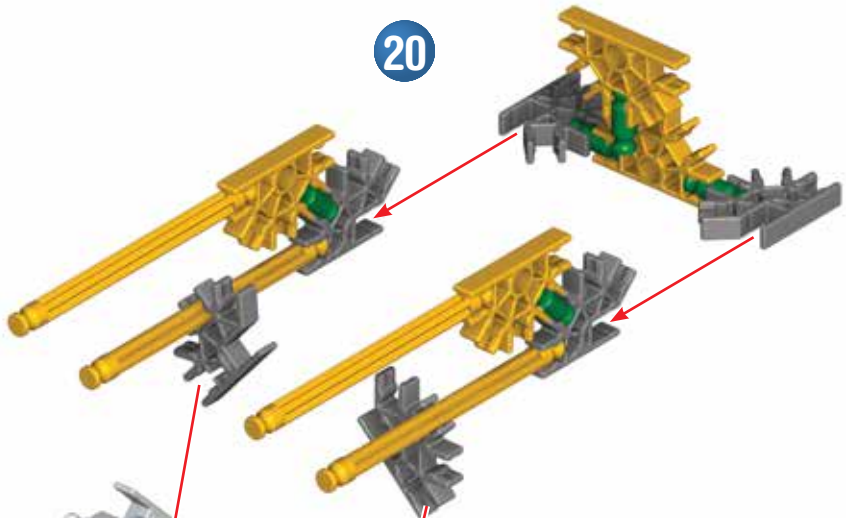


x2



20

x2

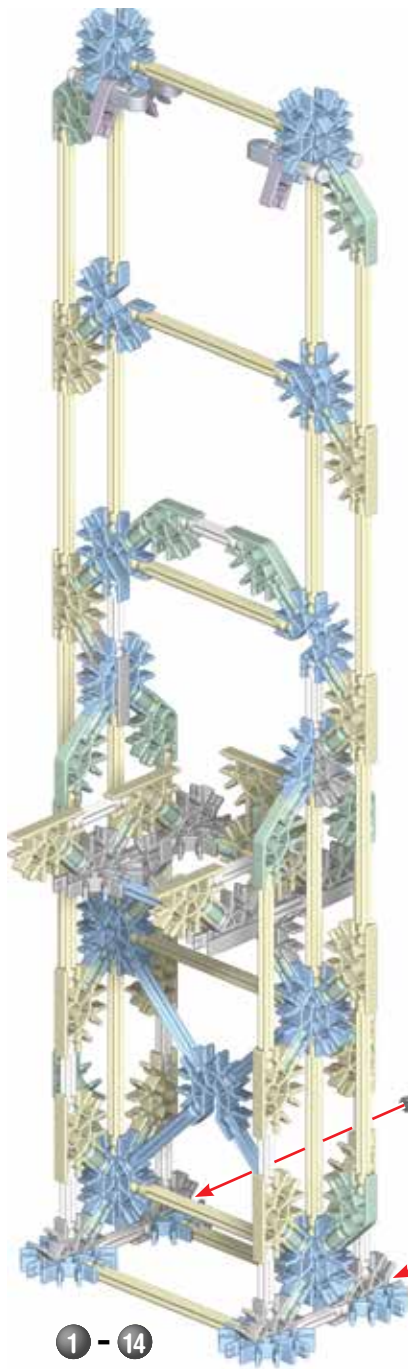


15 - 19

x2



15 - 20

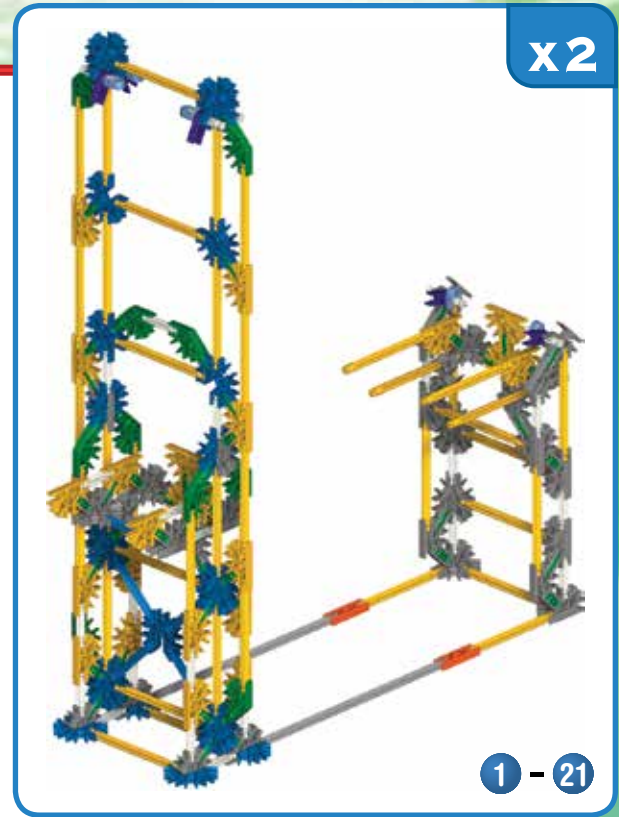


1 - 14

21

15 - 20

x2

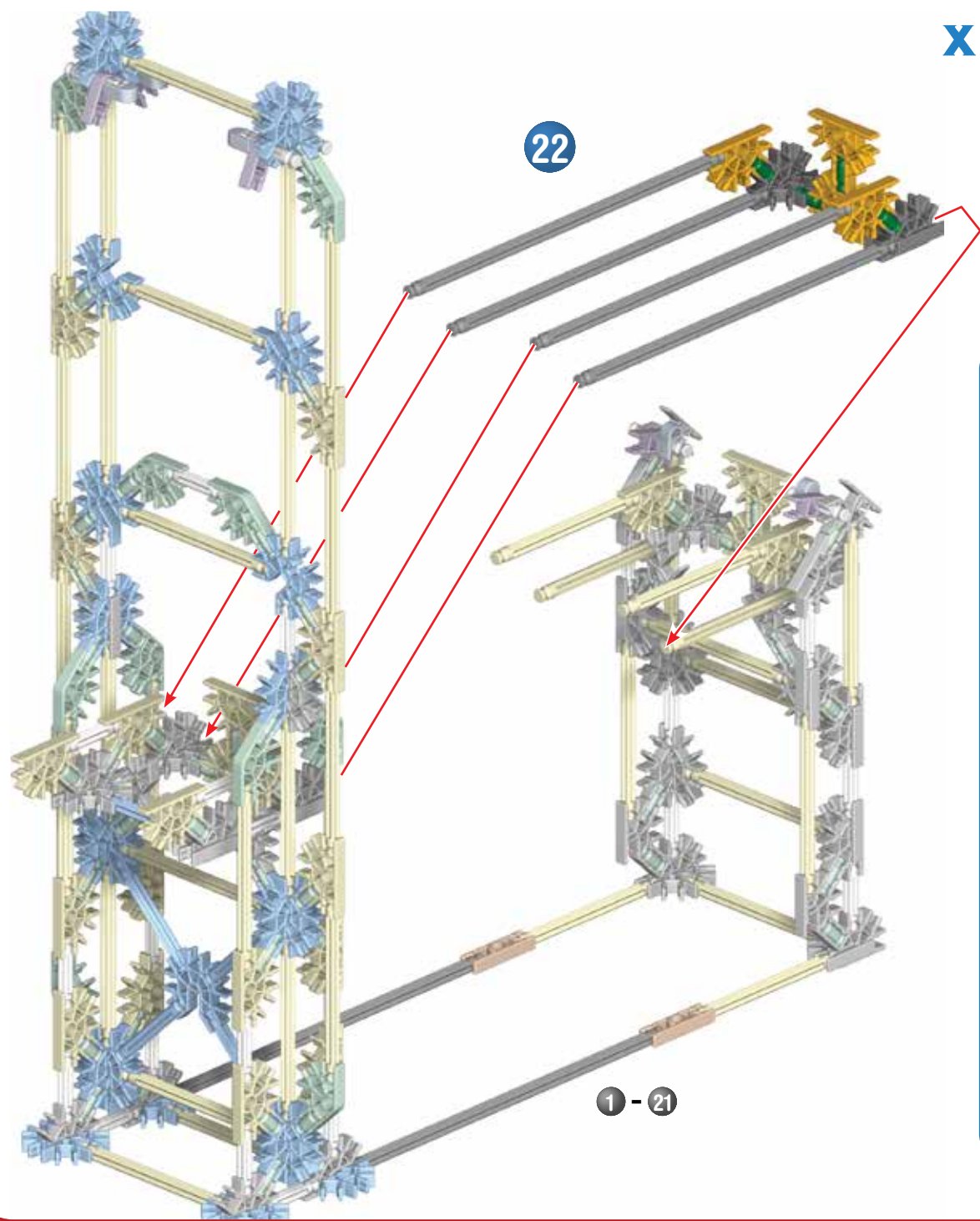


x2

1 - 21

x2

22

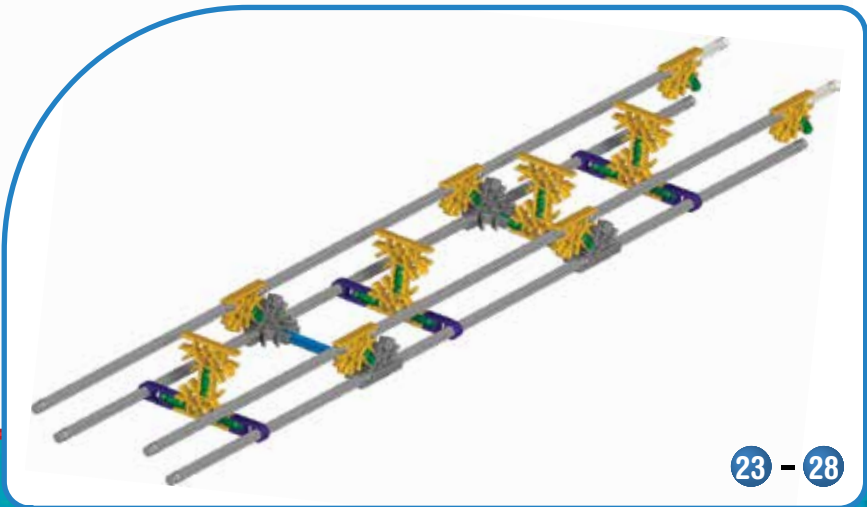
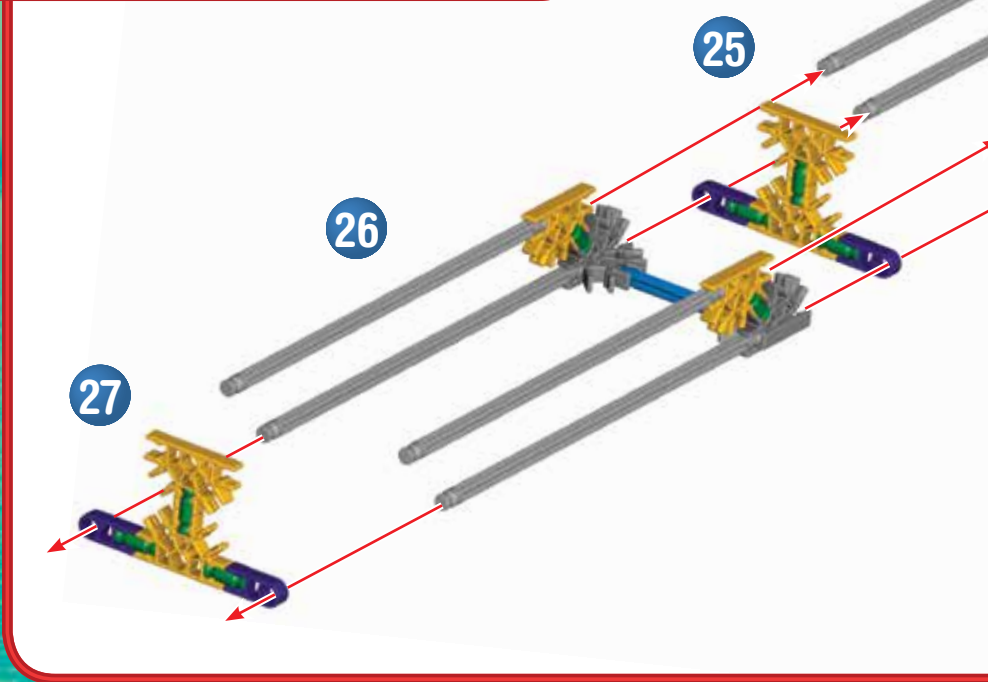
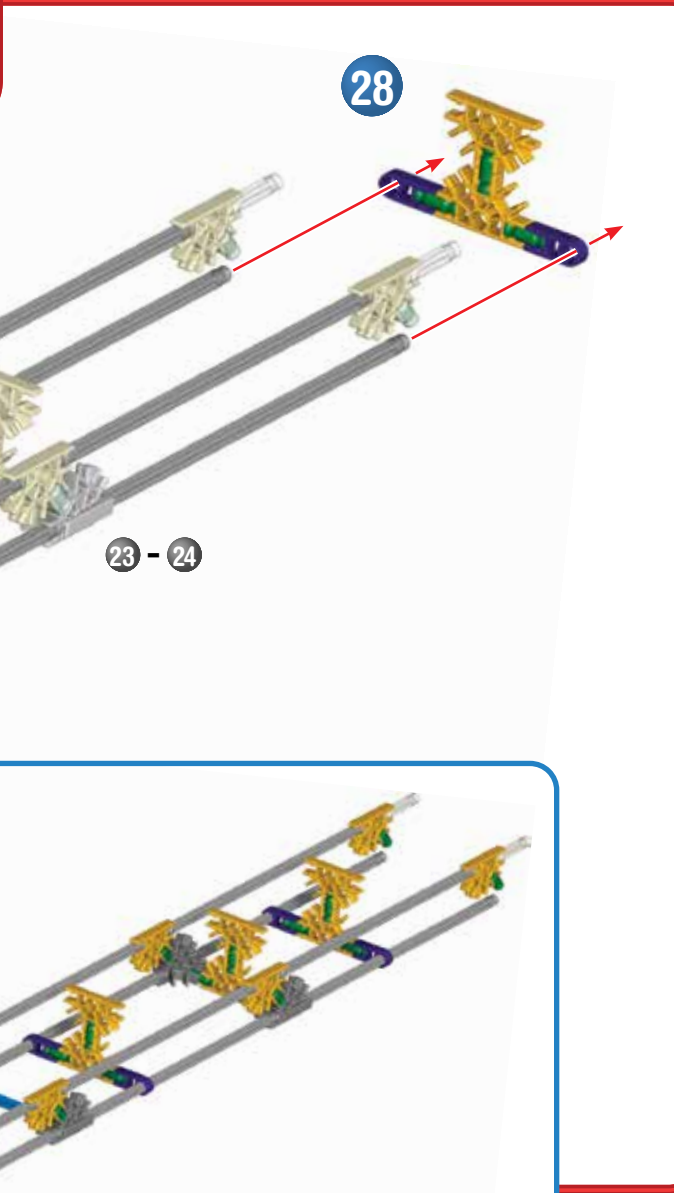
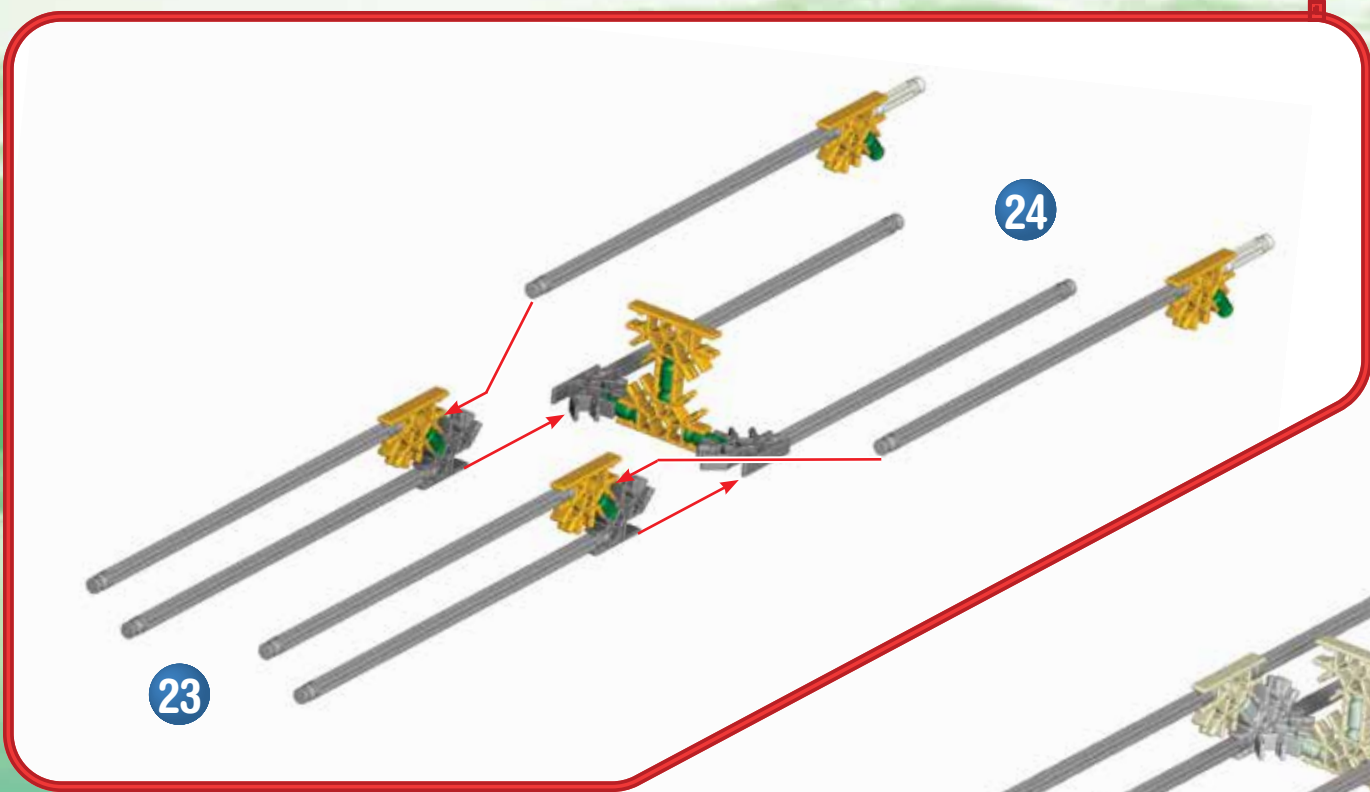


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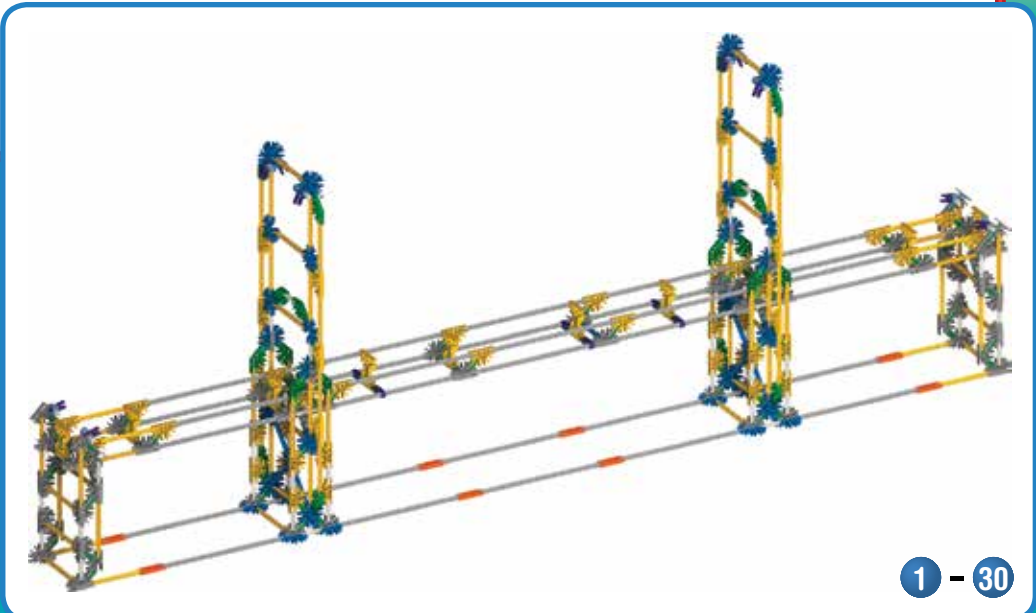
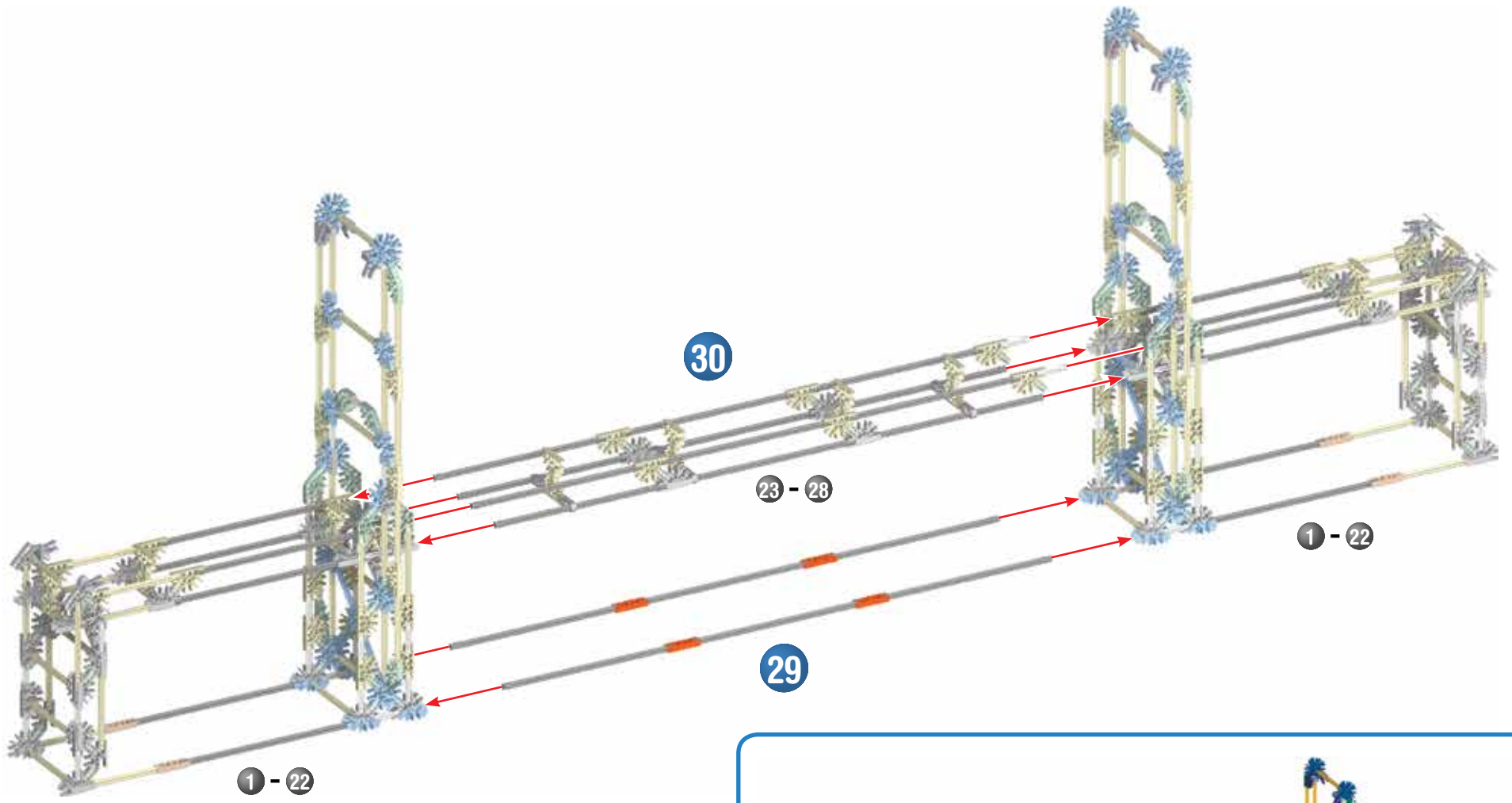
x2

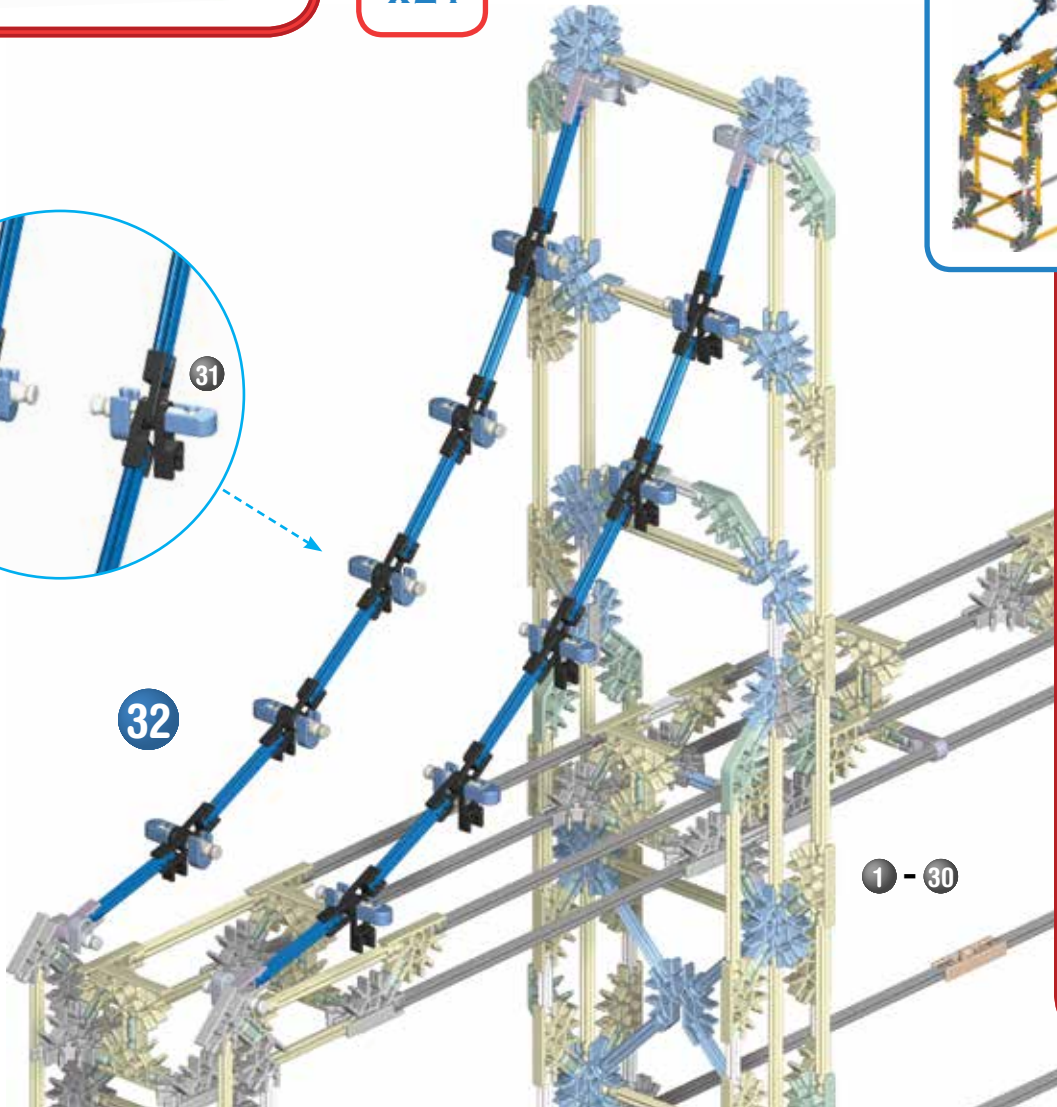
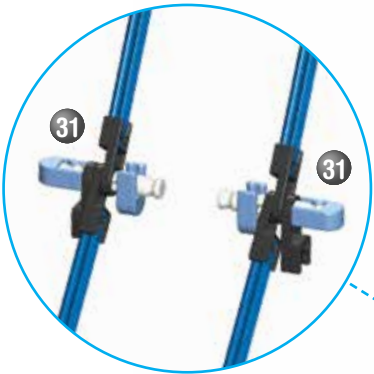
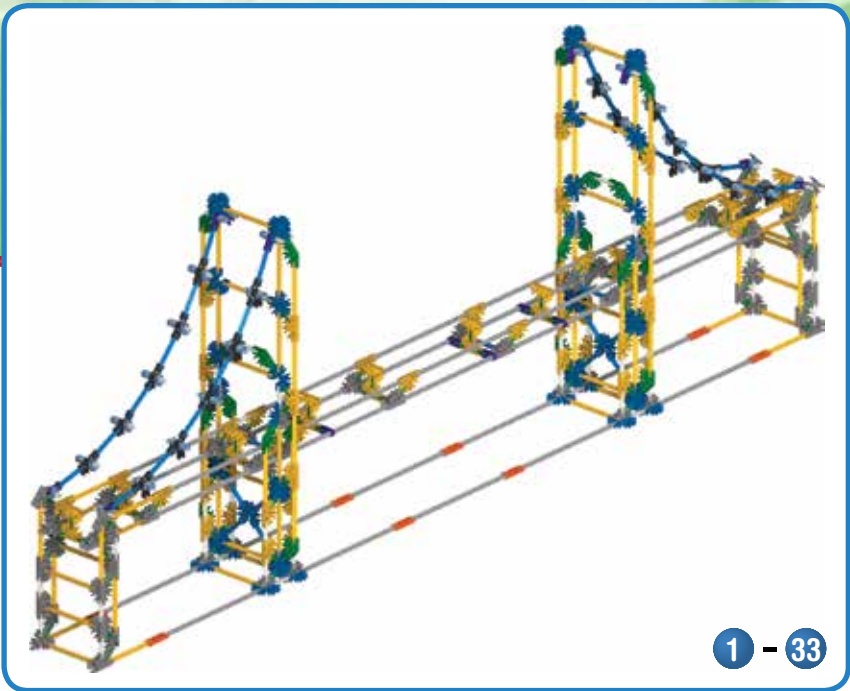
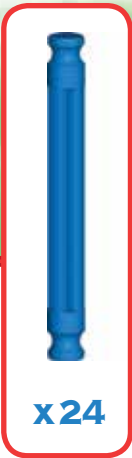
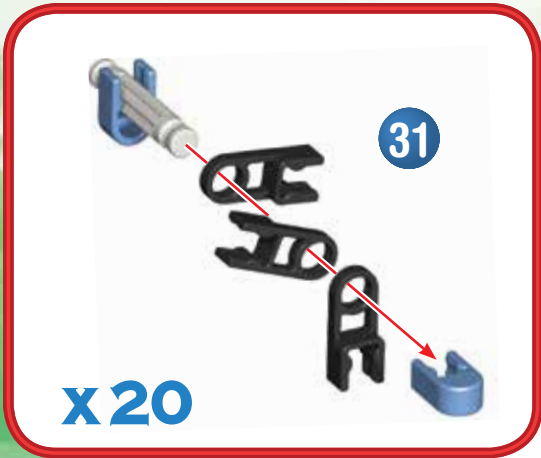


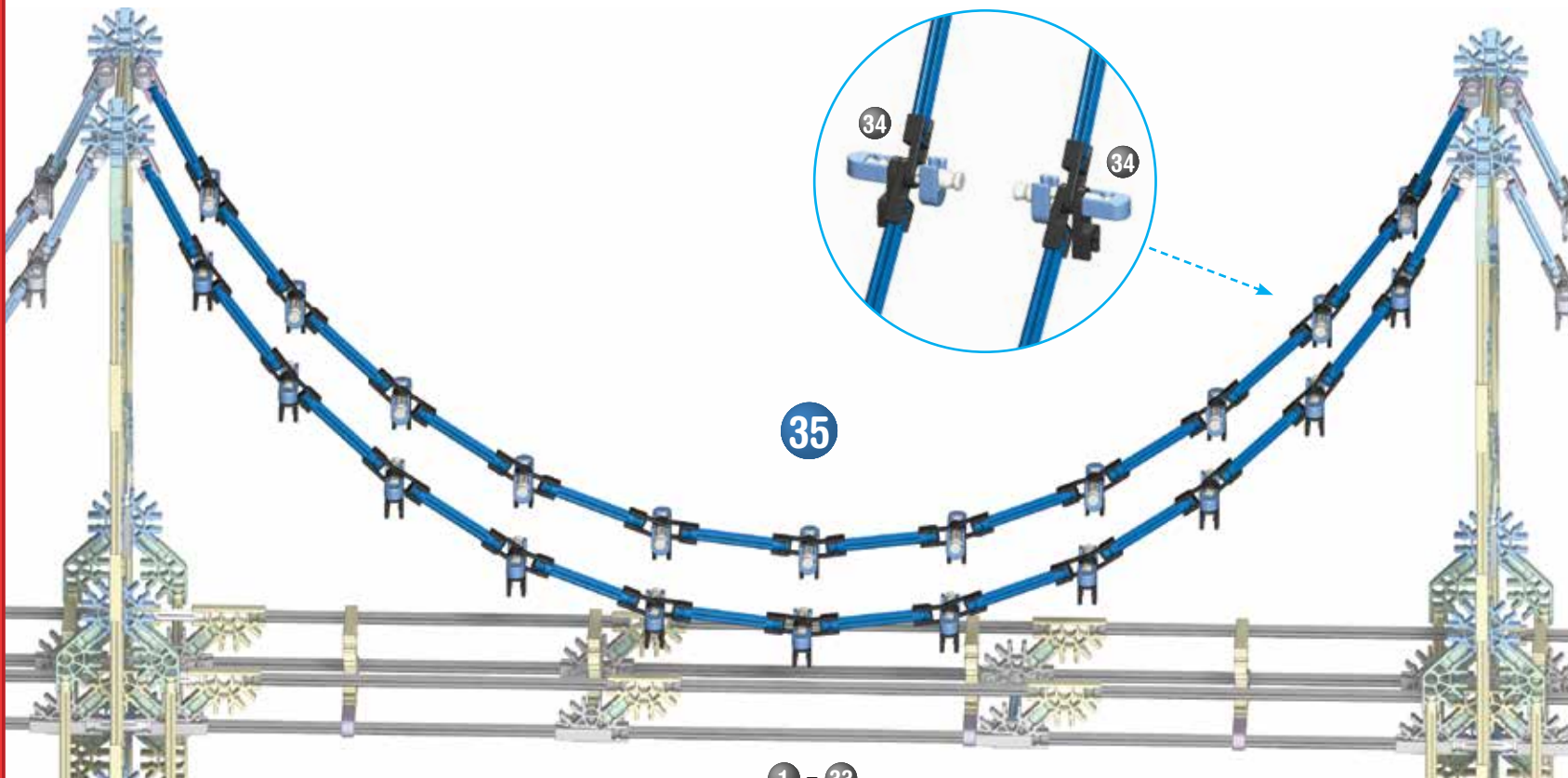
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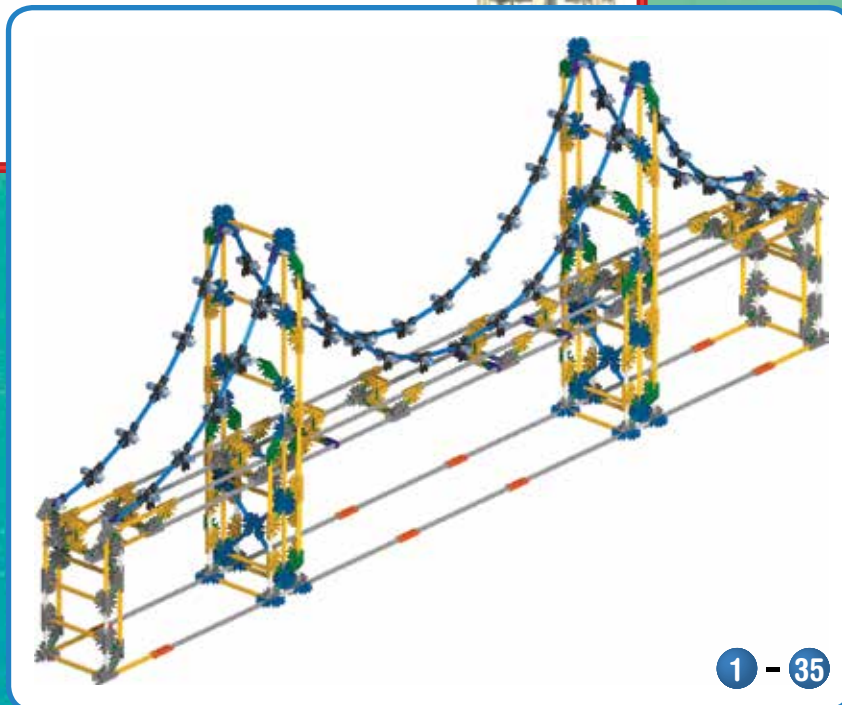
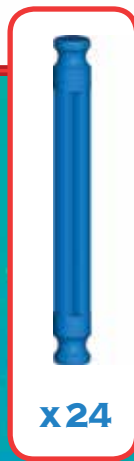
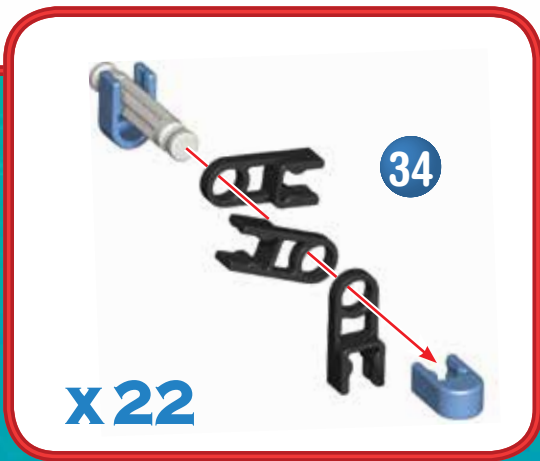
23 - 28



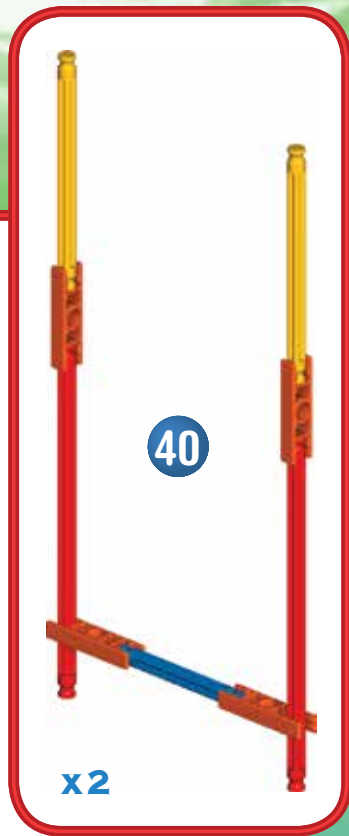
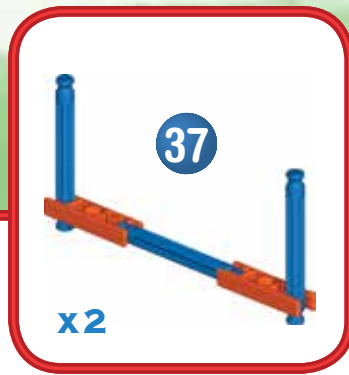
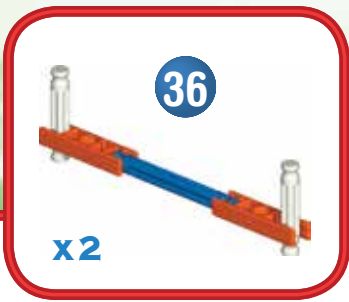




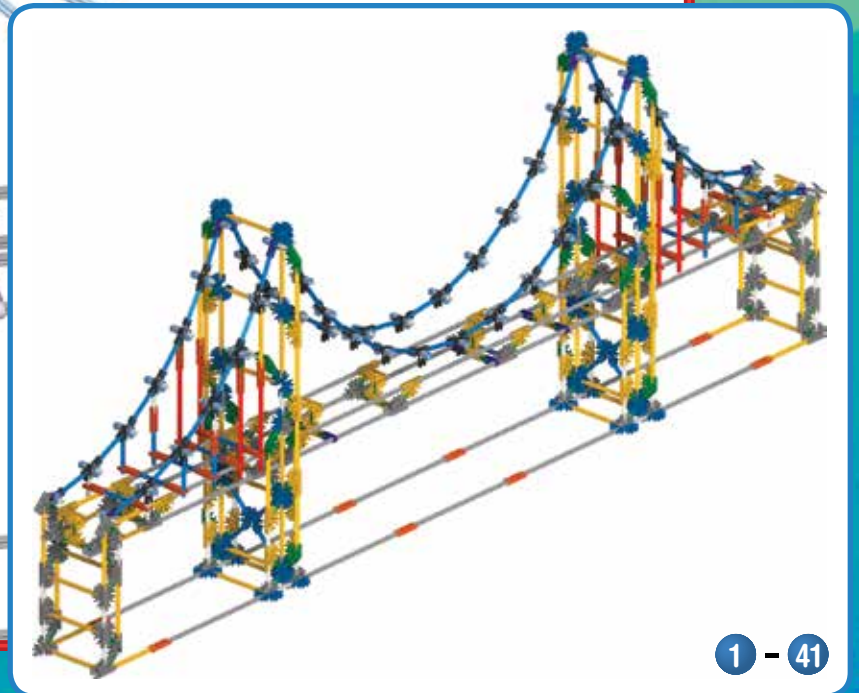
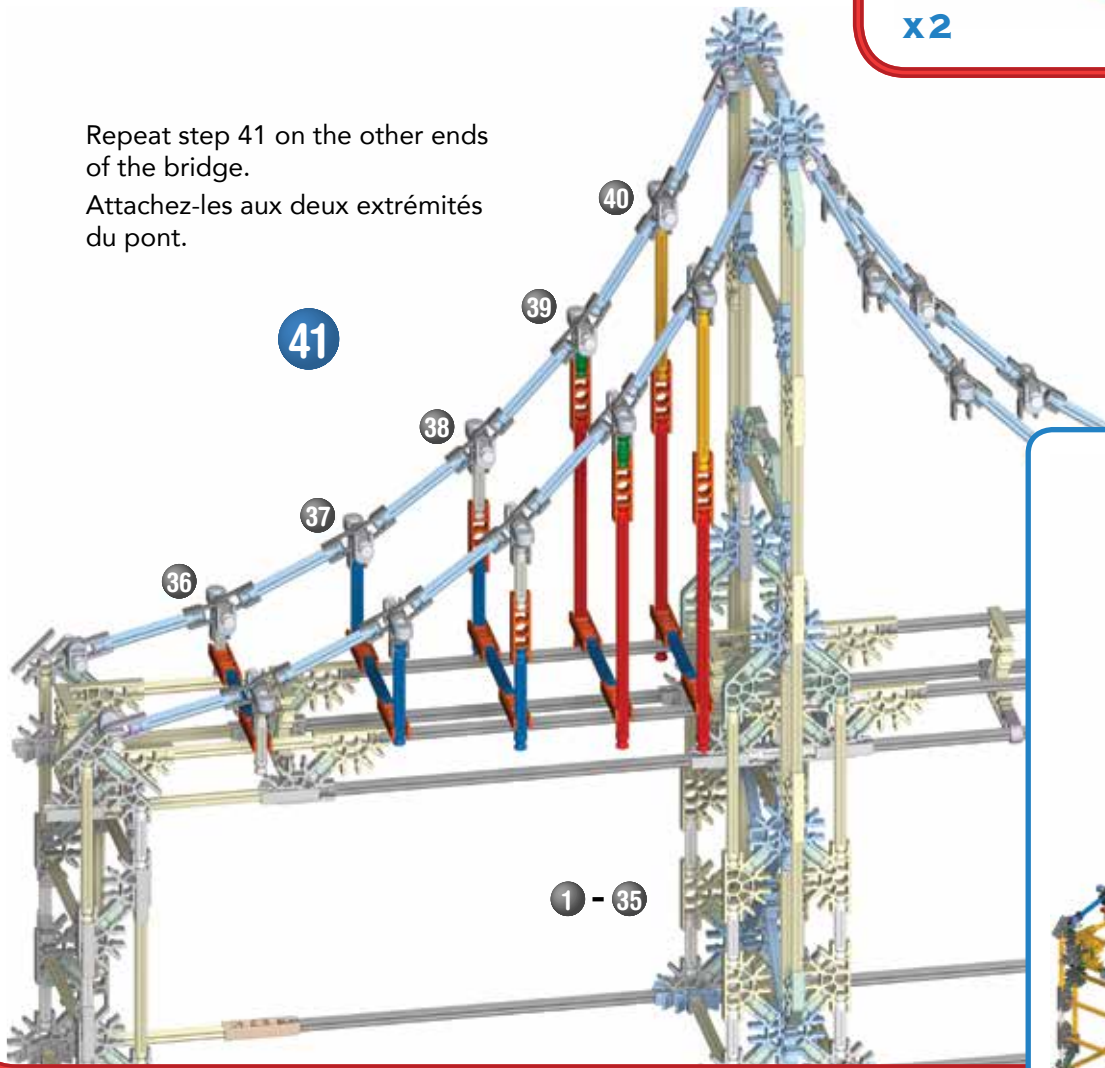
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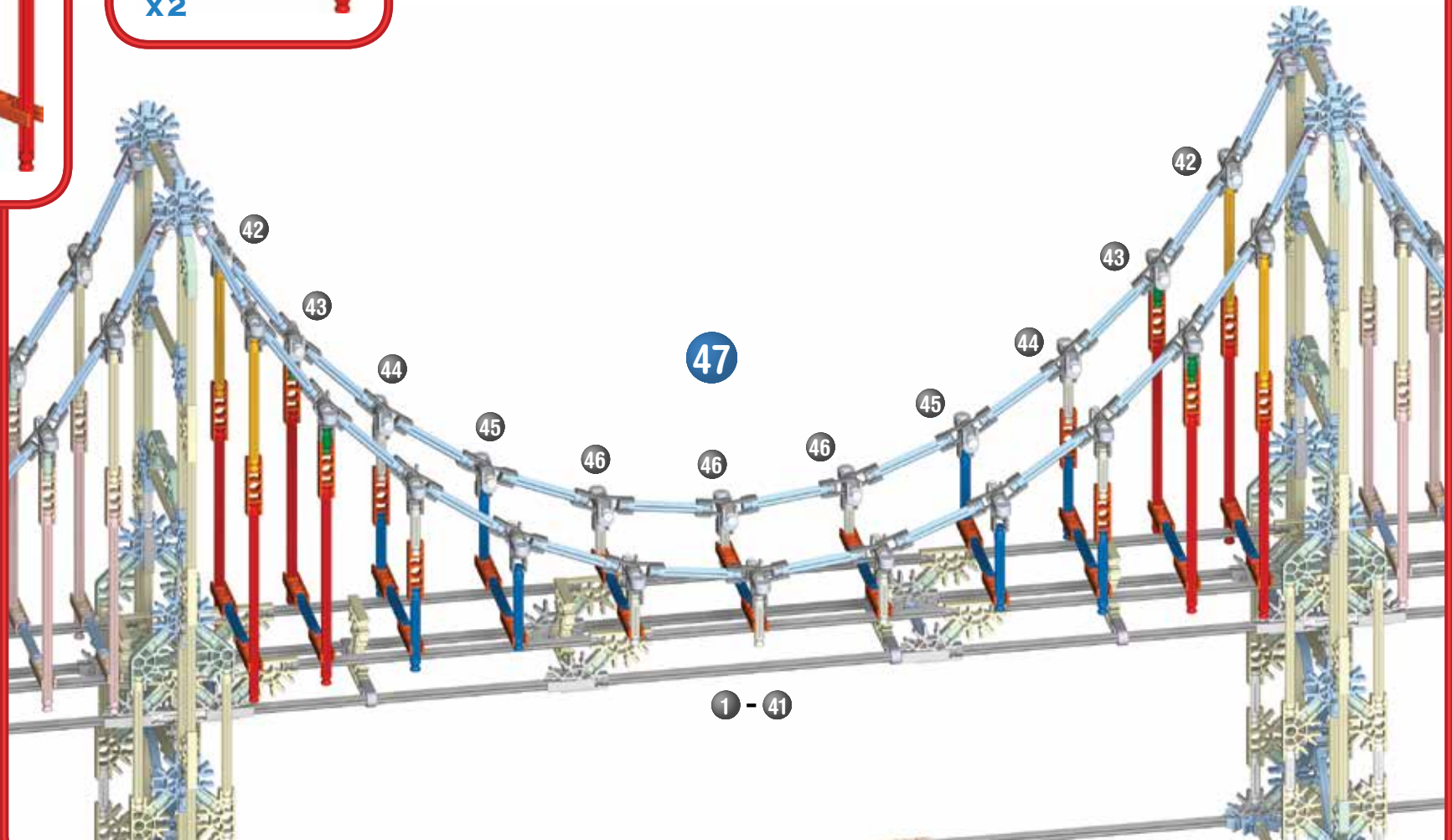
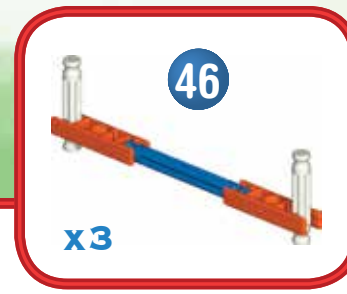
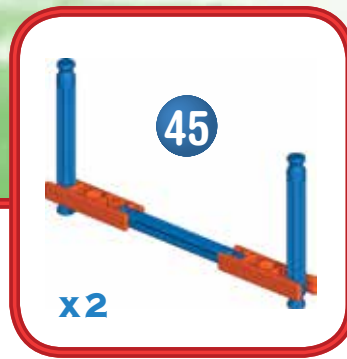
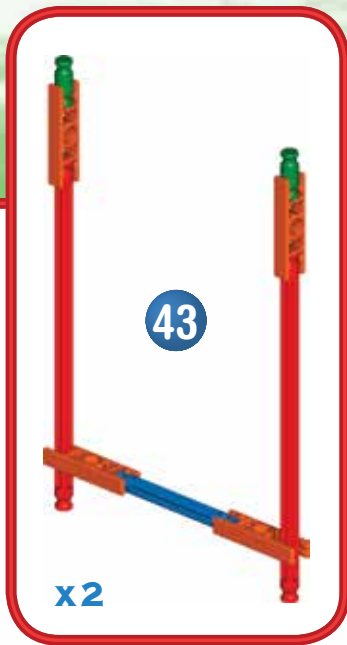
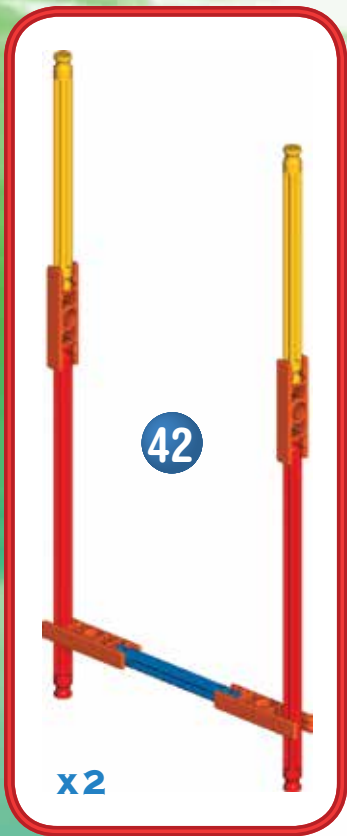


1 - 35



Repeat step 41 on the other ends of the bridge.
Attachez-les aux deux extrémités du pont.



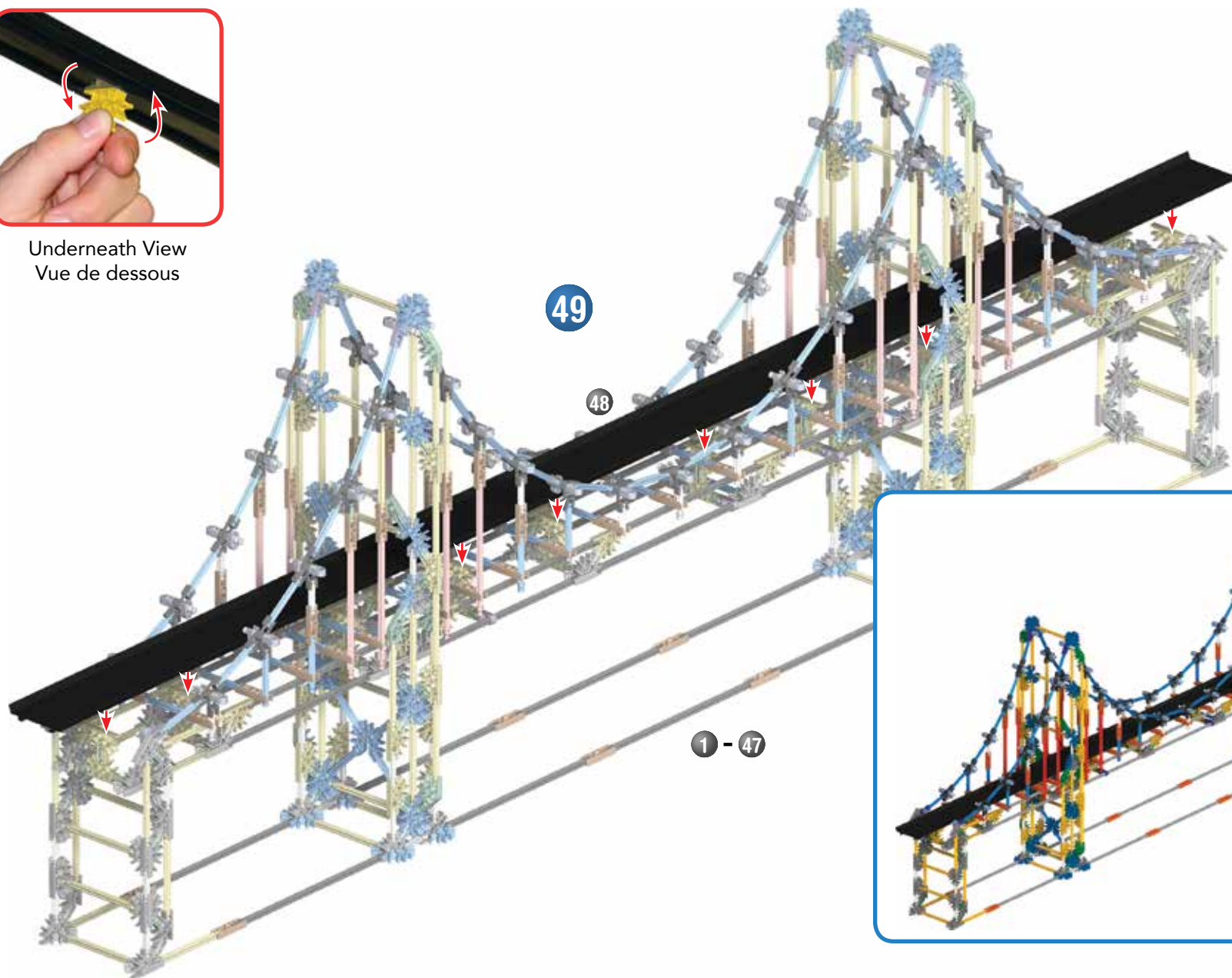




48

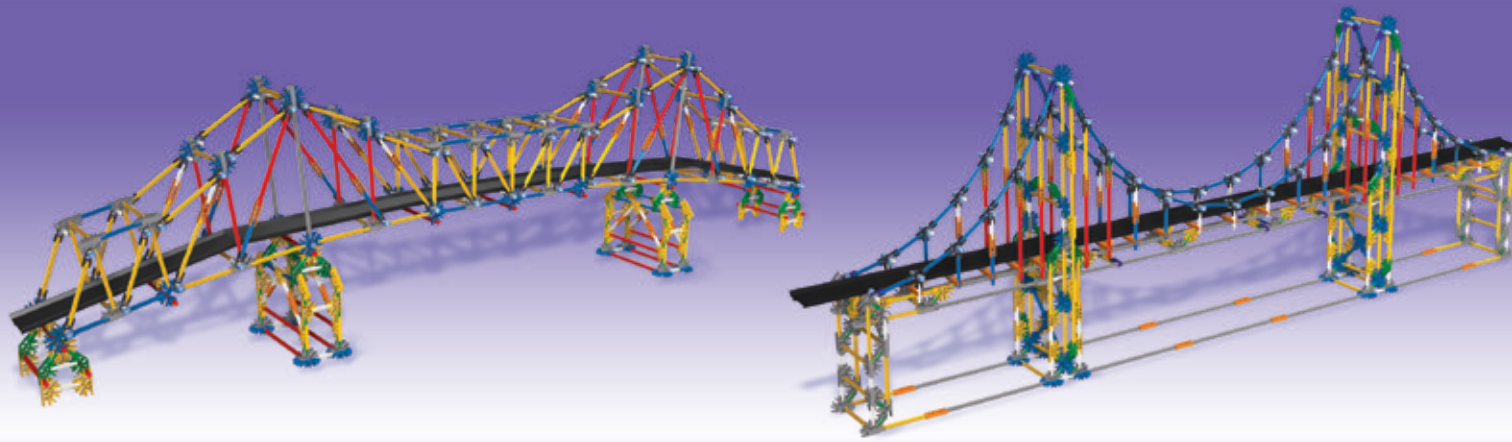
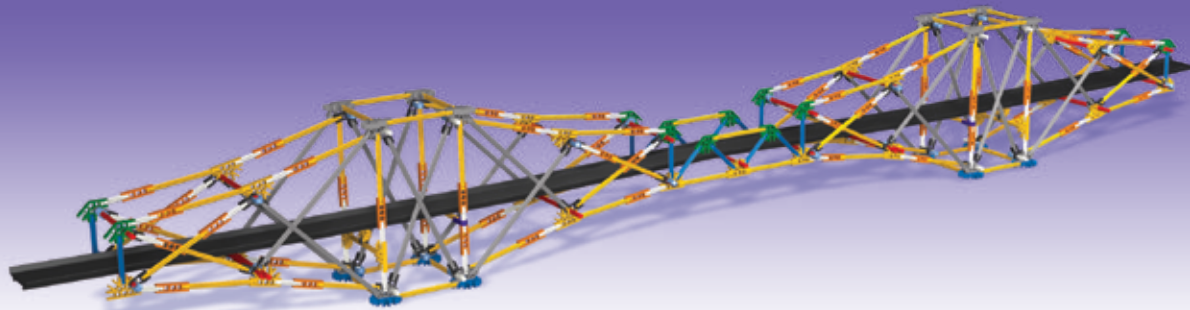


Underneath View
Vue de dessous



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