Oh! Hi **guys**! **Squeaks** *(<la mascota>)* and **I** **were** just **playing** with some **blocks**, you know. It **may** not **seem** like It but the **cities** and **towns**, that **we** **live in**, **are** all **built using** the same **rules** as our little **pretend** *(pretendido, imaginario)* **village** over here.
It's just that the real **ones** **are** bigger and one of our **viewers** *(espectadores/as)*, six-year-old **Hannah** from the **UK**, **wanted** to **know** how some of the **things** that **we** **build** **stay standing**. So **she** **sent** us a really great **question**: 'Why **are** _____ so **strong**?'. Excellent **question**!

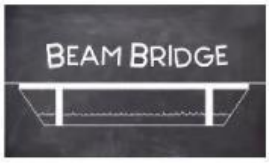


Sometimes when a **road**, or **railroad track** *(vías de tren)*, **needs** to **go** across something **big**, like a **river** or a **deep** **valley**, **experts** **called** _____ *(ingenieros)* _____ and **build** **bridges** to **do** that **job**. And **bridges** **can be** really **busy** *(concurridos)*. **Take** for example what's **said to be** the world's **busiest** **bridge**, the **George Washington Bridge** in **New York City**.

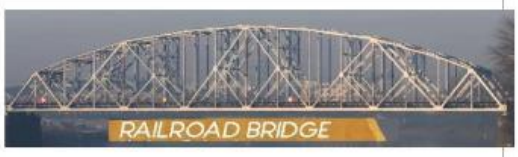


Look at all those _____ and **trucks**. It **has to be** **pretty** **sturdy** *(/estädi/, resistente)* to **carry** *(cargar, sostener)* so many **people** in **cars** for a **bridge**. To **carry** that much _____ it **has to be built** a **special** **material** like _____ and _____ but It **takes** more than **tough** *(/tof/, duros)* **materials** to **make** a **strong** **bridge**. So, **let's look** at how **bridges** _____.

One very **simple** *kind of* *(tipo de)* **bridge** **is called** a _____ **bridge**. When **we** **say** **simple**, **we** really do **mean** **simple**. A **beam** **bridge** **can be** just a **log** *(tronco)* that **you** **used to walk** across the **stream** *(arroyo)* or **put** a **long** **strip** *(tira)* of _____ between two **short** **blocks**. That's a **beam** **bridge** too.







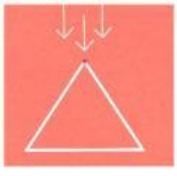
All **bridges** **can** _____ *(soportar)* a certain amount of **weight** but what **happens** if we **put** too much _____ on a **beam** **bridge**. Let's **find out**!
It _____! So a **bridge** that **carries** **trucks** and **cars**, which **are** very **heavy**, would **have to be** **stronger** than a **bridge** that **carries** _____ or **people** on foot, which **are** **lighter**. So, how do we **make** **stronger** **bridges**?

Well, over time, **people** **have learned** that certain **shapes** **can be used to** **make** **stronger** **bridges**. **Take a look** at this _____ **bridge** *(puente ferroviario)*. **It** **has to be** **strong** because **It** **carries** **trains**. What _____ do you **see**? That's right! _____ and that's not by **accident**. The fact **is** **triangles** **are** really **strong** **shapes** for **building**.



If you **put** _____ on one **side** of a **triangle** **It** _____ *(doblar, curvar)* but if **you** put _____ on its **point** **It** **keeps** its _____.



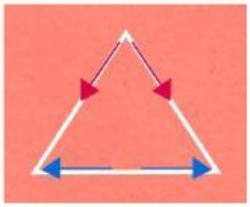


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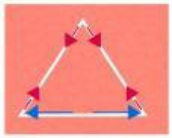
That's because the two **sides** of the _____ **are pushed down** by the _____**...**



… and the **bottom gets stretched out** *(estirar)* to both **sides**.

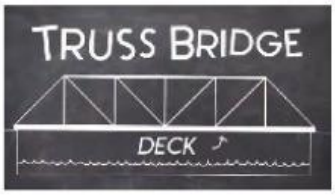


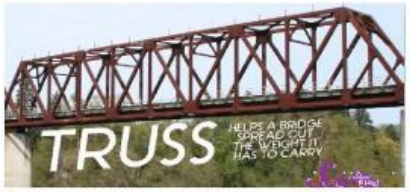
Each **side feels** the _____ but none of them **bends** and this **makes** the _____ a really **sturdy** *(/estädi/, resistente)* and **stable** _____.



This **is** why **you**'ll **see** lots of **triangles** in _____ both above the **part** that **you** actually **travel** on, **called** the **deck** *(cubierta)*, and below **It**. The **long string** of **triangles** that **you see** in a **bridge is called** a **truss** *(/träs/, entramado, cercha)*. **Trusses** *(/träsis/)* **help** a **bridge spread out** *(extender, repartir)* the _____ that **It has to** _____.

But not all **bridges are made** of **trusses** *(/träsis/)*. If a **bridge has to cross** a really **wide** *(ancho, largo)* body of _____ **It might be** too **difficult** or **expensive** to **build** a _____ **bridge** so **engineers design** another *kind of* **bridge called** a **suspension bridge**. The **Golden Gate Bridge**, in **California**, **is** a great **example** of a _____ **bridge**.

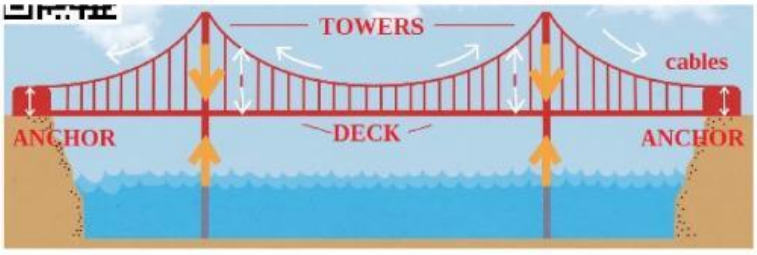






Suspension bridges work by **using** a _____ **called tension**. **Tension It's** just **pulling** something **tight** *(ajustado)*. **Suspension bridges are made** of a **deck** *(cubierta)* that's **hung** *(colgado)*, or **suspended**, from **thick** *(gruesos)* _____ that **stretch** *(estiran)* from one **side** of the **bridge** to the other. These **cables are supported** by **tall towers** and then **are held down** *(presionado)* **tightly** *(apretadamente)*, or **anchored** *(/ankëd/, anclado)*, on both **ends**. **Suspension** _____ **are strong** because the **force** on the **bridge gets spread out** *(extender, repartir)*. The **weight** of the **cars** or **trains** or **horses**, whatever **is traveling** across **It**, _____ on the **cables creating tension**.





Those _____ then **pull down** on the **towers** and also _____ on the **anchors** *(/ankës/, anclajes)*, on either end of the **bridge** to **hold up** *(mantener)* the **deck** *(cubierta)* **I can go** on and on about all *kinds of* **clever** _____ but basically **bridges are** strong. Not only because **they're** _____ of **strong materials** but also because of the **smart designs dreamed up** *(soñado)* and **planned** by _____.

So thanks for **asking**, **Hannah**, and thank **you** for **hanging out** with *(pasando el rato con)* us at **Scishow kids**. See **you** next time.

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