

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**!

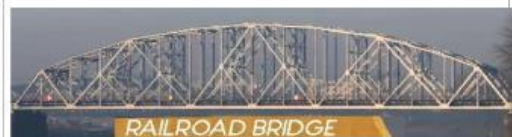
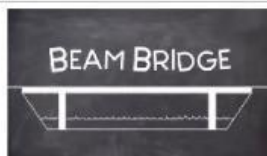


Sometimes when a **road**, or **railroad track** (*vías de tren*), **needs** to **go** across something **big**, like a **river** or a **deep valley**, experts **called** \_\_\_\_\_ (*ingenieros*) \_\_\_\_\_ and **build** bridges to **do** that **job**. And **bridges can be** really **busy** (*concurridos*). **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** (*/estádi/, 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.



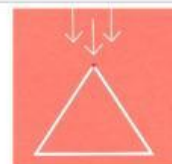
All **bridges can** \_\_\_\_\_ (*soportar*) a certain amount of **weight** but what **happens** if we **put** too much \_\_\_\_\_ on a **beam bridge**. Let's **find out**!

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**.

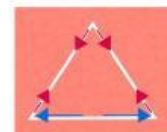
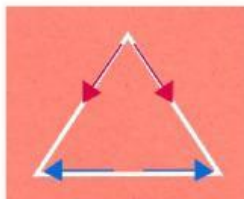


If you **put** \_\_\_\_\_ on one **side** of a **triangle** It \_\_\_\_\_ (*doblar, curvar*) but if **you** put \_\_\_\_\_ on its **point** It **keeps** its \_\_\_\_\_.



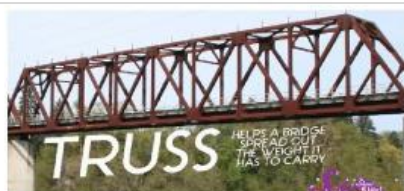


That's because the two **sides** ... and the **bottom gets** Each side **feels** the \_\_\_\_\_ but none of them **bends** and this **makes** the \_\_\_\_\_ a really **sturdy** (*/estädi/, resistente*) and **stable** \_\_\_\_\_.



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** (*/ankäd/, 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** (*/ankēs/, 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.