

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**!

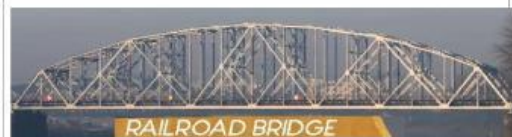
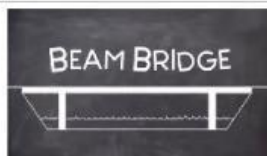


Sometimes when a **road**, or **railroad track** (*vías de tren*), **needs** to **go** across something **big**, like a **river** or a **deep valley**, experts **called** _____ (*ingenieros*) _____ and **build** bridges to **do** that **job**. And **bridges can be** really **busy** (*concurridos*). **Take**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

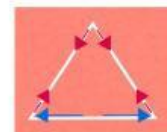
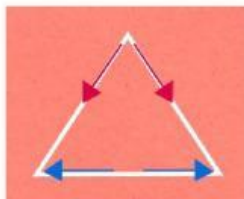
Well, over time, **people have learned** that certain **shapes can be used** to **make stronger** bridges. **Take a look** at this _____ **bridge** (*puente ferroviario*). It **has to be strong** because It **carries** **trains**. What _____ do you **see**? That's right! _____ and that's not by **accident**.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

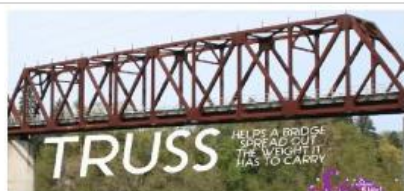


That's because the two **sides** ... and the **bottom gets** Each side **feels** the _____ but none of them **bends** and this **makes** the _____ a really **sturdy** (/estädi/, resistente) and **stable** _____.



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.