

Good Foundations!

Building Strong
Foundations

What is a foundation!



Foundations are really important for building things!



If we look at an object, there is an important part called the **Centre of Gravity**



We will look into why the centre of gravity is so important when building buildings, especially tall buildings!



A foundation is something that increases the imaginary footprint of an object, and lowers the centre of gravity more to the ground, so that it's harder to fall over!

What really is the Centre of Gravity?



The Centre of Gravity (COG) is an imaginary point in an object where gravity seems to be pulling the object from.



For example, a pencil!



A pencil's centre of gravity is right in the middle of the pencil!

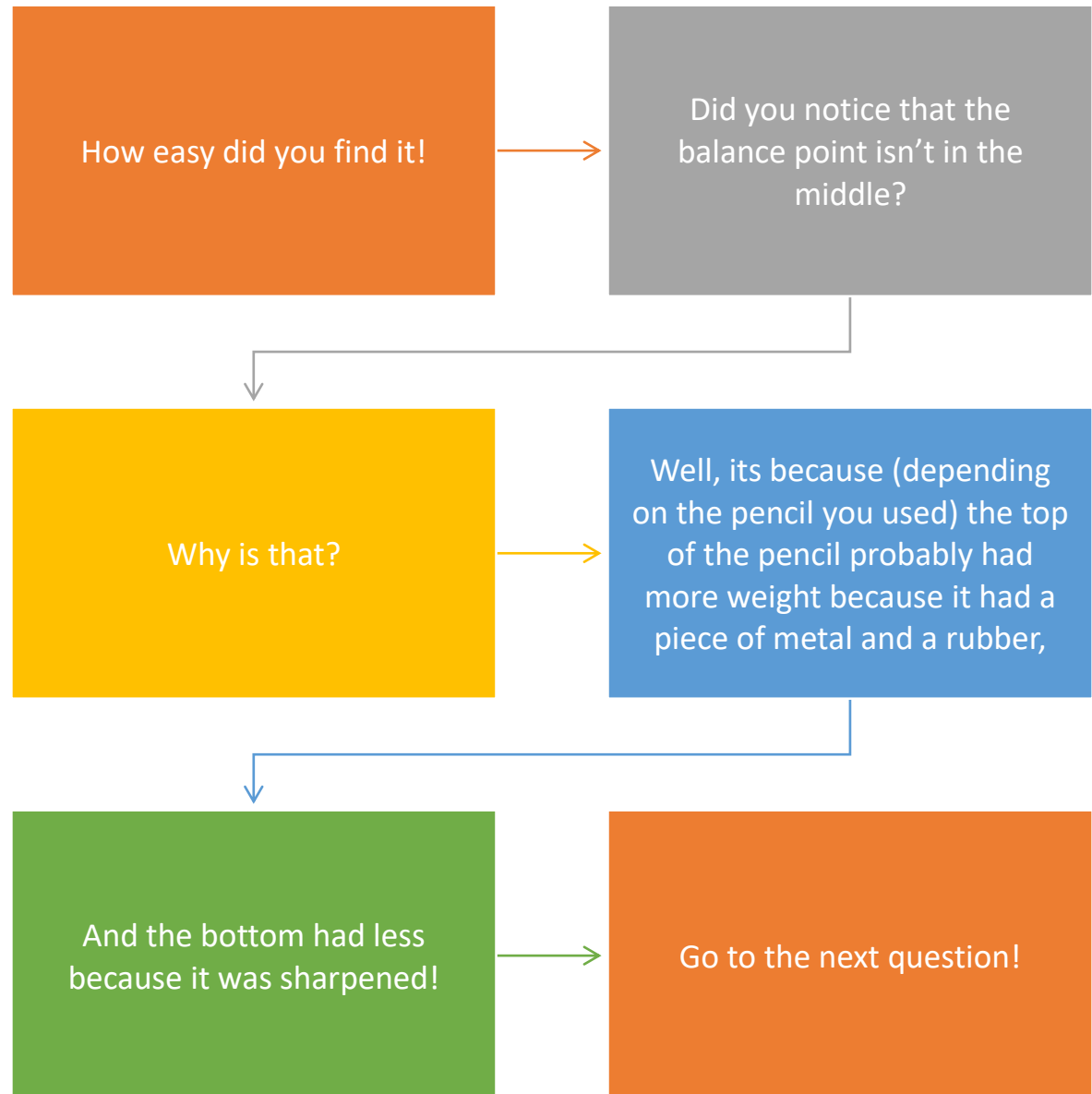


Let's do the pencil exercise in the worksheet, and see how its balanced.



Go to the next slide when you've done it!

Balancing a pencil



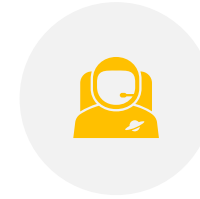
Balancing a pencil...on its point!?



WHY IS THIS SO MUCH HARDER?



WHY IS IT SO DIFFICULT TO BALANCE SOMETHING ON A SMALL POINT?



IT GOES BACK TO OUR CENTRE OF GRAVITY QUESTION, AND THE FOOTPRINT!



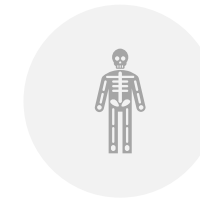
IF THE PYRAMIDS OF GIZA WERE BLOWN IN THE WIND, DO YOU THINK THEY'D FALL OVER?



NO! BECAUSE THEY HAVE A LARGE BASE, AND THEREFORE A LARGE FOOTPRINT!



A PENCIL HAS A TINY FOOTPRINT, IN OUR CASE IT'S ONLY A POINT WHEN ITS ON THE TIP



HOWEVER, WHEN IT'S ON ITS SIDE, IT'S A LONG RECTANGLE OR A LINE (IF YOU'RE USING A CIRCULAR PENCIL!) SO ITS FOOTPRINT IS MUCH BIGGER, AND EASIER TO BALANCE!

Check out this
video!



<https://www.youtube.com/watch?v=f2l8GJy1EMo>



And now watch this one (it might have stuff you can try with your parent's help!)



<https://www.youtube.com/watch?v=BMwAYJNgIwc>

Why is the COG important for buildings?



Well like we saw in the videos, having a low COG is very important in buildings! Remember when we talked about skyscrapers and how wind knocks them over sometimes?



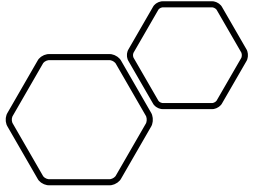
Well that's because their COG gets pushed outside of the footprint of the building, and they fall over!



So with a lower COG, it's harder for that to happen!



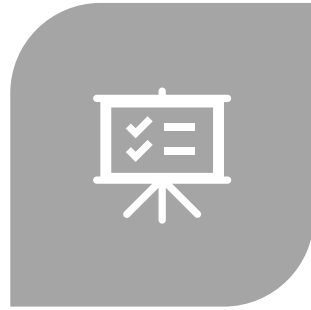
But how do we do that?



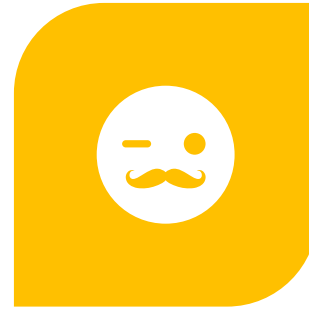
With Foundations!



FOUNDATIONS ALLOW US TO INCREASE THE SIZE OF THE FOOTPRINT OF A BUILDING, AND THEREFORE, LOWER THE COG SO IT'S HARDER TO FALL OVER!



LET'S TRY IT OURSELVES, CHECK OUT THE NEXT QUESTION ON THE ASSIGNMENT!



IF YOU'RE REALLY LOST, CHECK OUT THIS VIDEO!



[HTTPS://WWW.YOUTUBE.COM/WATCH?V=IGRLY08KN2O](https://www.youtube.com/watch?v=IGRLY08KN2O)