

# How forces work

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Ron Hitler Barrassi wrote:

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> *Kevin Gowen wrote:*

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>> *Ron Hitler Barrassi wrote:*

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>>> *Kevin Gowen wrote:*

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>>>> *Ron Hitler Barrassi wrote:*

>>>>> *Seems you have "forgotten" your chair example which means you have*

>>>>> *realised you were wrong.*

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>>>> *What's to forget? I'll repeat it again:*

>>>> *If a person with a mass of 100kg is sitting on a chair at rest, the*

>>>> *force of gravity's pull is 980 newtons. In turn, the chair pushes up*

>>>> *with 980 newtons.*

>>>

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>>>

>>> *No. You still think that gravitational force is a "downward" force.*

>>

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>> *I, like most people, tend to think of the earth's center of mass as*

>> *"down".*

>

>

> *I refer you to Newton's Law of Gravity.*

Is that the one where "m" is mass in grams?

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>>> *Read Newtons Law of Gravitation, (ignoring General Relativity) it is  
>>> a mutal force of attraction.*

>>

>>

>>

>> *Even a stopped clock is right twice a day.*

>>

>>> *Earth is pushing up.*

>>

>>

>>

>> *I thought it was attraction, not repulsion.*

>

>

> *There is a difference between attraction forces and replusion forces?*

You can confirm this empirically. Jump off a tall building. First you will feel an attractive force, followed by a repulsive force.

Could you explain some more about this mystical action-at-a-distance force through which the earth pushes masses away from it?

>> *No, the chair is pushing up. That you insist otherwise illustrates  
>> that you do not understand what force is.*

>>

>>>> *What on earth did you mean when you said "g=1"? What are the units?*

>>>>

>>>

>>> *I meant 1g. Yes, I was careless.*

>>

>>

>>

>> *I see, so you meant to say  $g=1g$ ? Alrighty then.*

So what did you mean when you said  $g=1$ ?

>> *Funny, the last time I said that, you made a wise crack about how we  
>> would lose a lot of springs that way because they would be  
>> accelerating off into infinity. That was also around the time that you  
>> said that a spring could not be used to measure a force, even though  
>> that is precisely how many forcemeters work.*

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> *A spring cannot measure one force. It can only measure two forces.*

> *Action and reaction. You went off on a semantics.*

Yes, a spring can measure two forces. That is how it can be used to measure weight.

>>>>> *How does a chair magically know when to push up?*

>>>>>

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>>>>  
>>>>  
>>>>  
>>>>  
>>>> *The chair knows nothing. It doesn't need to.*  
>>>>  
>>>>> *If you add two*  
>>>>> *equal and opposite forces they cancel each other;*  
>>>>  
>>>>  
>>>>  
>>>>  
>>>>  
>>>> *Yes, which is why the person is at rest.*  
>>>  
>>>  
>>>  
>>>  
>>> *(maybe I have to introduce time dilation)*  
>>  
>>  
>>  
>> *Maybe you have to learn about what a force is.*  
>  
>  
> *one, two.*

There's an improvement. I wonder when you'll learn the next number.

>>>>> *so why does the chair push down? (down being the null length vector*  
>>>>> *pointing to the center of the earth)*  
>>>>  
>>>>  
>>>>  
>>>>  
>>>>  
>>>> *Push down on what, the earth? Probably because it has mass.*  
>>>  
>>>  
>>>  
>>>  
>>> *As we have discussed previously it is now pushing down with a force*  
>>> *of it's own weight and yours. It doesn't seem to be pushing up at all.*  
>>  
>>  
>>  
>> *Sure it is pushing up. It is pushing up with the same force as my weight.*  
>  
>  
> *which you can't measure.*

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No, if it exists, it can be measured.

>>>> / 980newtons

>>>> \/

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>>>> /\

>>>> / 980newtons

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>>>> so we have  $f_{ab} - f_{ba} = 0$ . But yet the chair still pushes down with

>>>> a force 980newtons. Seems your highschool idea of physic is missing

>>>> something significant.

>>>>

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>>>> Maybe you should enlighten me, then.

>>>

>>>

>>>

>>>

>>> Replace the chair with a spring and it's obvious. You and the earth

>>> are compressing that spring. That pop sound is the sound of the

>>> cartoon light coming on.

>>>

>>>

>>>

>>> Sorry, no light. I have no idea what you are attempting to explain.

>>> The chair is only pushing down with 980 newtons if it is massless.

>>>

>>>

>>> That was an explicit assumption you happily accepted earlier.

What is "that"?

>>> I am glad to see that you realize that a 100kg mass on the surface of

>>> the earth is pulled down with a force of 980 newtons. Much better than

>>> your assertion that a 200kg mass was pulled down with 400 newtons of

>>> force.

>>>

>>>

>>> Except for when you lifted it.  $F=ma$ .

Maybe you should show us the numbers you are plugging in there to arrive at your answer.

>>> "You pick it up and momentarily there is 400kg [3920N] pushing downo on

>>> the chair (you + the bag + the acceleration of lifting the bag)"

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No. Again, since I am not traveling at .866c, we don't have 200kg magically appearing out of nowhere.

It is nice to see that you realized the acceleration of gravity is more than  $2 \text{ m/s}^2$ . When you said that a mass of 200kg would have a weight of 400 newtons, that really brought teh laffo.

> *Have you forgotten that when you used to weigh your self the scales would indicate very high weights initially? Can't have been that long ago.*

How could that be? After all, according to you, a scale does not measure force.

>>> *A few key points:*

>>>

>>> *Special Relativity: speed of light, observers agree, speed distorts time etc (ignores gravity)*

>>>

>>> *General Relativity: (Einstein's theory of Gravity) mass curves time/space, gravity bends light, corrects Newton etc.*

>>>

>>> *I am refering to the time dilation of mass (Gen Rel) which accounts for gravity in "normal" situations, not from speed (Spec Rel). "c" has nothing to do with it.*

>>

>>

>>

>> *I see. You did some Googling after the whooshing. Good on you, as you Commonwealth folk say.*

>

>

> *You think I had to google for that?*

Or you skimmed through A Brief History of Time, or perhaps The Physics of Star Trek. I can think nothing else, as your persistence in confusing force with work labels you a scientific ignoramus.

> *You are projecting again. Admit it*

> *Gowen, you had no idea what General Relativity is. I hope you do now.*

Yes, I had no idea what it was.

> *5en:*

> *"Why did you mention Einstein when relativistic physics had nothing to do with your hypothetical? Was I traveling at 87% the speed of light?"*

Yes, I said that because you magically added 200kg to the system. What other explanation could there be?

>> *By the way, I hope you aren't under the impression that relativistic physics is more advanced than Newtonian physics.*

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> *Advanced? No it is simpler, but it required non-Euclidian geometry.*

Actually, it's not simpler, either. Science is not like technology. No branch is more or less advanced than another.

> *Maybe you should jump Newton and go directly to Einstein. Tensors shouldn't be a problem for you.*

Given your ignorance as to what a force is, I question your ability to determine the difficulty level of other concepts.

This page is your only hope:

<http://www.physicsclassroom.com/Class/circles/U6L4d.html>

Start reading at the part that has a cartoon of a man sitting in a chair.

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FAB = -FBA

It's not just a good idea; it's the law.