

## Day 73

1. d. Work
2. a joule or d. newton•meter
3. d. the rate at which work
4. Power is the rate at which work is done. The two machines are doing the same amount of work, yet doing the work at different rates. One machine might do the job very quickly and the other very slowly. The machine that does the work in the least amount of time (quickly) is most powerful.
5. a. Watt, c. Joule/second and d. hp
6. They do the same work. Ben is most powerful. The two students are doing the same task – thus, the same work. Yet Ben does this work at a much higher rate; as such, Ben is most powerful.
7. Jack does more work. Their power is the same. These two students are not doing the same task – their work is not the same. Jack must lift twice the mass as Jill; so Jack does twice the work – maybe 1000 J as opposed to Jill's 500 J (just as an example). But since Jill does one-half the work in one-half the time (perhaps 2.0 seconds as opposed to Jack's 4.0 seconds), the ratio of work to time ends up being the same for each. Do the math – it's 250 Watts for each student.
8. When you own your first NFL football team, select players who are strong (exert large forces) and fast (have high velocities). According to this physics equation, these players will be the most powerful linemen. Now that's physics for better living!