

Planet Holloway **websheet 4.2**

AP Physics C - Chapter 4

You may print this out and write on it or work on your own paper.

Show all work.

1. A flamingo of mass 6 kg, is coming in for a landing and forgets to land in water, but instead lands in the mud along the edge of the marsh. If the mud provides a constant frictional force of 24 N, and the flamingo arrives going 7 m/s, how far does the flamingo slide before stopping?
2. A squash player hits the squash ball ferociously, sending the ball, which came in going 14 m/s, back out going a mind numbing 23 m/s. If the racket contacted the ball for a mere 0.3 seconds, what was the force exerted on the 0.2 kg ball?
3. A biologist in Antarctica is trying to fudge some penguin data by moving the cute little guys across the ice. The evil biologist ties three, 4 kg penguins together such that there is a one meter length of rope between each penguin. The evil biologist then pulls the first penguin with a force of 24 N. What is the tension in the cord between the last two penguins?
4. A skateboarder is accelerating toward a ramp in order to perform the sickest trick anyone has ever seen, the McLevitation 911 with a fakie rodeo side rollo kick out bare handed double touch on the backside, no grind. If he has a mass of 60 kg and his board has a mass of 3 kg, how hard does he have to push back on the ground with his foot to reach the required 15 m/s in 36 m. Assume he is in contact with the ground for 0.6 seconds and gets in three pushes with his foot before reaching the trick starting area?
5. Three apples each 0.5 kg hang in a vertical line suspended by strings, such that there is a 30 cm piece of string between each apple and one connecting the top apple to a branch. What is the tension in the three strings from top to bottom?
6. After perform the worlds greatest yo-yo trick, Annie McYo pulls up on the yo-yo string giving the 0.12 kg yo-yo an acceleration of 1.3 m/s/s upward. What is the tension in the string to accomplish this?

Answers:

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| 1. 6.125 m | 4. 525 N |
| 2. 24.67 N | 5. 15 N, 10 N, 5 N |
| 3. 8 N | 6. 1.356 N |