

P4.2 Vertical Acceleration Questions

Use the convention that up is positive. The assessments will have each only one problem with kinematics.

<p>+96.1 N +44.9 N +10.8 m/s/s +85.0 N -35.1 m</p>	<p>1. A 6.32 kg flour baby hangs on a cord.</p> <p>a. What is the tension in the cord if the flour baby is accelerating upwards at 5.40 m/s/s?</p> <p>b. If the flour baby is accelerating downwards at 2.70 m/s/s, what is the tension in the cord?</p> <p>c. If the tension in the cord is 130. N, what is the acceleration of the flour baby?</p> <p>d. If the flour baby is moving downwards at 5.50 m/s, and stops in 1.51 s, what was the tension in the cord during this time?</p> <p>e. There is a tension in the cord of 40.0 N. If the flour baby is initially at rest, what is the displacement of the flour baby 4.50 s later?</p>
<p>+32.5 m/s/s +19.5 N +9.82 N +3.60 N 1.20 s</p>	<p>2. A 1.30 kg giant gerbil hangs on a cable.</p> <p>a. If the upward force exerted by the cable is 55.0 N, what is the acceleration of the giant gerbil?</p> <p>b. What tension in the cable would cause the giant gerbil to accelerate upwards at 5.20 m/s/s?</p> <p>c. What is the tension in the cable if the giant gerbil has a downward acceleration of 2.26 m/s/s?</p> <p>d. The giant gerbil accelerates from rest to a downward velocity of 9.56 m/s in a distance of 6.50 m. What was the tension in the cable as it was doing this?</p> <p>e. There is a tension of 32.0 N in the cable. In what time can the giant gerbil change its velocity from rest to 17.8 m/s upwards?</p>
<p>+29.7 N +5.58 m/s/s +84.6 N +28.4 N +6.37 m/s</p>	<p>3. A 5.20 kg baby koala hangs from a rope.</p> <p>a. What is the tension in the rope if the koala is accelerating downwards at 4.10 m/s/s?</p> <p>b. If the tension in the rope is 80.0 N, what is the acceleration of the koala?</p> <p>c. What tension in the rope would effect an upward acceleration of 6.45 m/s/s?</p> <p>d. From rest, the koala displaces itself downward 7.20 m in 1.82 s. What is the tension in the rope as this is happening?</p> <p>e. If there is a tension of 58.0 N in the rope, what is the final velocity of the koala when it has risen 15.0 m if the koala started from rest?</p>
<p>-2.07 m/s/s +8.60 N +53.9 N +37.4 m/s +7.17 N</p>	<p>4. A 2.20 kg giant cockroach rappels on a very strong string.</p> <p>a. What is the acceleration of the cockroach if the tension in the string is 17.0 N?</p> <p>b. If the cockroach is accelerating downwards at 5.90 m/s/s, what is the tension in the string?</p> <p>c. What tension in the string would cause an upward acceleration of 14.7 m/s/s?</p> <p>d. If the tension in the string is 38.0 N, and the cockroach is initially at rest, what is the final velocity of the cockroach after 5.00 s?</p> <p>e. The cockroach is moving upwards at 6.45 m/s and stops in a distance of 3.18 m. What is the tension in the string as he is stopping?</p>
<p>+55.9 N -3.50 m/s/s +16.7 N -11.6 m +72.3 N</p>	<p>5. A 4.60 kg gourd hangs on a cord.</p> <p>a. What is the tension in the cord if the gourd is accelerating upwards at 2.35 m/s/s?</p> <p>b. What is the acceleration of the gourd if the tension in the cord is 29.0 N?</p> <p>c. If the gourd is accelerating downwards at 6.19 m/s/s, what is the tension in the cord?</p> <p>d. If the gourd starts from rest, and the tension in the cord is 28.0 N, what is the displacement of the gourd in 2.50 s?</p> <p>e. If the gourd accelerates from an upward velocity of 1.12 m/s to 6.57 m/s in a distance of 3.54 m, what is the tension in the cord?</p>