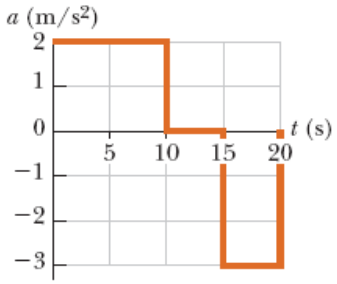
**PHYS141 Homework #2 - Due Friday Sep. 13, 2013**

Question 1 2 3 4 5 6 7 8 9 10

**1.** Question Details SerCP9 2.P.020. [1608089]

A particle starts from rest and accelerates as shown in the figure below.




(a) Determine the particle's speed at $t$ = 10.0 s and at $t$ = 20.0 s.

$t$ = 10.0 s _____ m/s

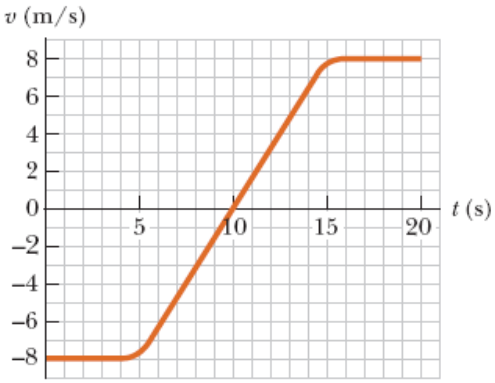
$t$ = 20.0 s _____ m/s

(b) Determine the distance traveled in the first 20.0 s. (Enter your answer to one decimal place.)

_____ m

**2.** Question Details SerCP9 2.P.024. [1624612]

The velocity vs. time graph for an object moving along a straight path is shown in the figure below.




(i) Find the average acceleration of this object during the following time intervals.

0 s to 5.0 s _____ $m/s^2$

5.0 s to 15 s _____ $m/s^2$

0 s to 20 s _____ $m/s^2$

(ii) Find the instantaneous accelerations at the following times.

2.0 s _____ $m/s^2$

10 s _____ $m/s^2$

18 s _____ $m/s^2$

**3.** Question Details SerCP9 2.P.028.WI. [1588601]

In 1865, Jules Verne proposed sending men to the Moon by firing a space capsule from a 220-m-long cannon with final speed of 10.97 km/s. What would have been the unrealistically large acceleration experienced by the space travelers during their launch? (A human can stand an acceleration of 15*g* for a short time.)

[ ] $m/s^2$

Compare your answer with the free-fall acceleration, 9.80 $m/s^2$ (i.e. how many times stronger than gravity is this force?).

[ ] *g*

**4.** Question Details SerCP9 2.P.029.soln. [1624616]

A truck covers 40.0 m in 7.50 s while uniformly slowing down to a final velocity of 2.05 m/s.

(a) Find the truck's original speed.

[ ] m/s

(b) Find its acceleration.

[ ] $m/s^2$

**5.** Question Details SerCP9 2.P.032. [1588505]

An object moves with constant acceleration 4.35 $m/s^2$ and over a time interval reaches a final velocity of 13.8 m/s.

(a) If its initial velocity is 6.9 m/s, what is its displacement during the time interval?

[ ] m

(b) What is the distance it travels during this interval?

[ ] m

(c) If its initial velocity is −6.9 m/s, what is its displacement during the time interval?

[ ] m

(d) What is the total distance it travels during the interval in part (c)?

[ ] m

**6.** Question Details SerCP9 2.P.046. [1588419]

A ball is thrown directly downward with an initial speed of 8.55 m/s, from a height of 29.6 m. After what time interval does it strike the ground?

[ ] s

**7.** Question Details SerCP9 2.P.054.WI. [1588420]

A baseball is hit so that it travels straight upward after being struck by the bat. A fan observes that it takes 3.10 s for the ball to reach its maximum height.

(a) Find the ball's initial velocity.

[ ] m/s upward

(b) Find the height it reaches.

[ ] m

**8.** Question Details SerCP9 3.P.006. [1631970]

An airplane flies 200 km due west from city A to city B and then 250 km in the direction of 35.5° north of west from city B to city C.

(a) In straight-line distance, how far is city C from city A?
[ ] km

(b) Relative to city A, in what direction is city C?
[ ]° north of west

(c) Why is the answer only approximately correct?

**9.** Question Details SerCP9 3.P.016.soln. [1588646]

A quarterback takes the ball from the line of scrimmage, runs backwards for 9.0 yards, then runs sideways parallel to the line of scrimmage for 11.0 yards. At this point, he throws a 60.0-yard forward pass straight downfield, perpendicular to the line of scrimmage. What is the magnitude of the football's resultant displacement?
[ ] yd

**10.** Question Details SerCP9 3.P.026. [1588763]

The record distance in the sport of throwing cowpats is 81.1 m. This record toss was set by Steve Urner of the United States in 1981. Assuming the initial launch angle was 45° and neglecting air resistance, answer the following.

(a) Determine the initial speed of the projectile.
[ ] m/s

(b) Determine the total time the projectile was in flight.
[ ] s

(c) Qualitatively, how would the answers change if the launch angle were greater than 45°? Explain.

Assignment Details

Name (AID): **PHYS141 Homework #2 - Due Friday Sep. 13, 2013**
Submissions Allowed: **5**
Category: **Homework**
Code:
Locked: **No**
Author: **Segre, Phil (** psegre@physics.emory.edu **)**
Last Saved:
Permission: **Protected**
Randomization: **Person**
Which graded: **Last**

**Feedback Settings**
Before due date
Question Score
Assignment Score
Publish Essay Scores
Question Part Score
Mark
Add Practice Button
Help/Hints
Response
Save Work
After due date
Question Score

Assignment Score
Publish Essay Scores
Key
Question Part Score
Solution
Mark
Add Practice Button
Help/Hints
Response