Wednesday, November 3

Warm Up

Agenda
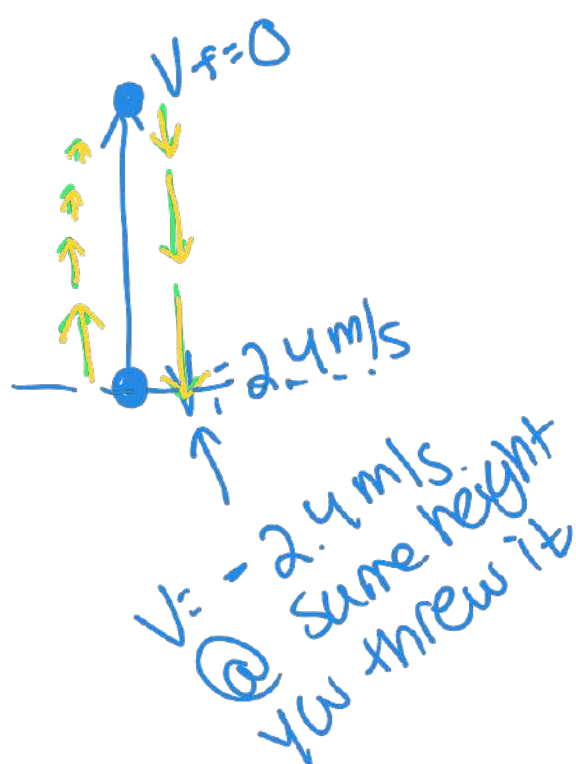
1. Warm Up
2. Review Calendar and Final
3. Class Leaders
4. White Board Review

A ball is thrown upwards from your hand with a velocity of 2.4 m/s. Determine the time it takes to reach the top and how high it goes.

Reminders

- Motion Basics and Kinematics Assessment **Thursday.**

$V_f = 0$

$V_i = 2.4 \text{ m/s}$

$V_i = -2.4 \text{ m/s}$
@ Same height
you threw it

$V_i = 2.4 \text{ m/s}$
$a = -9.8 \text{ m/s}^2$
$V_f = 0$
$t = ?$
$d = ?$

$V_f = V_i + at$
$0 = 2.4 + (-9.81)t$
$-2.4 - 2.4$

$\dfrac{-2.4}{-9.81} = \dfrac{-9.81t}{-9.81}$

$t = 0.24 \text{ sec}$

$V_f^2 = V_i^2 + 2ad$
$0^2 = 2.4^2 + 2(-9.81)d$
$0 = 5.76 + (-19.6)d$
$-5.76 \quad -5.76$

$\dfrac{-5.76}{-19.6} = \dfrac{-19.6d}{-19.6}$ $d = 0.3 \text{ m}$

Calendar, Class Leaders and Expectations

- 3 Class Leaders per hour: helps to make sure the class is on task- indicate on the quiz tomorrow if you'd like to be a class leader and why
- Students are following the daily calendar posted on Google Classroom and all materials on Google Classroom
- All in class assignments are posted as materials on Google Classroom
- Students are completing all work to prepare for the assessments

What is the final?

- A reassessment of standards from Semester 1. YOU CHOOSE what to reassess.
- Anything with a 3.5 or under can reassess.
- You will ALL participate in a review the week before created by students. More information to come closer to finals.
- **Only seniors with an A after the Unit 3 test can be exempt.**
- You must reassess at least 1 standard on the final. If you have all 4's, you will have a different prompt.
- Your grade cannot go down, only stay the same and go up.

White Board Practice

1. You walk 100 m north in 3 minutes, stop for 4 minutes and then walk south 300m for 10 minutes.
   a. Draw it out.
   b. Determine your distance, displacement, speed and velocity.
2. Create a situation where your distance and displacement are the same.
3. Create a situation where you have distance but no displacement.
4. What is the difference between distance and displacement? Speed and velocity?

① ↑100m | 300m ↓
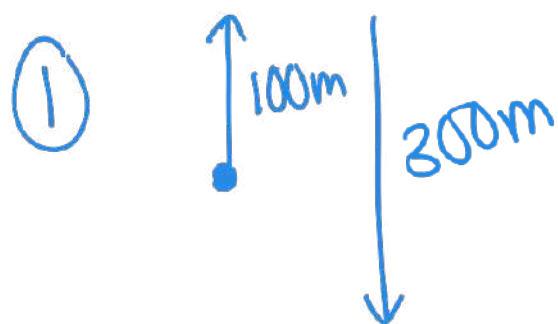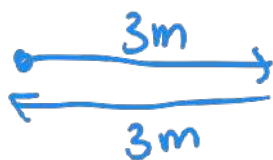
total time: 17 min

dis = 400m
disp = -200m

speed = $\frac{400m}{17\ min}$ = 23.5 m/min

vel = $\frac{-200m}{17\ min}$ = -11.8 m/min

② straight line

⟵————— 3m —————⟶

③ same start + end

⟵—— 3m ——⟶
⟵—— 3m ——

④ dis → path
disp → shortest dis from start to finish
speed = dis/time
vel = disp/time

White Board Practice

1. You from rest for 60 seconds and travel a distance of 300m. What is your acceleration? Final velocity?
2. A car sees a red light and slows down to a stop with an acceleration of -30 m/s/s over 200m. What is the initial velocity?

① $V_i = 0$
$t = 60s$
$d = 300m$
$a = ?$
$V_f = ?$

② $V_i = ?$
$V_f = 0$
$a = -30 m/s/s$
$d = 200m$

$d = \cancel{V_i t} + \frac{1}{2}at^2$
$300 = \frac{1}{2}a(60)^2$
$300 = \frac{1}{2}(3600)a$
$300 = 1800a$
$a = 0.17 \ m/s^2$

$V_f = \cancel{V_i} + at$
$V_f = (0.17)(60)$
$V_f = 10 \ m/s$

$V_f^2 = V_i^2 + 2ad$
$0 = V_i^2 + 2(-30)(200)$
$0 = V_i^2 + -12000$
$\underset{+12000}{} \quad \underset{+12000}{}$
$\sqrt{V_i^2} = \sqrt{12000} \quad V_i = 109 \ m/s$

White Board Practice

1. A ball is dropped off a building and it takes 5 seconds to hit the ground. What is the height of building?
2. The same ball is thrown downward from the same height (you just found) but it takes 4 seconds to hit the ground. What is the initial velocity?
3. If you throw a ball straight up in the air, what is the velocity at the top? Acceleration? Velocity when you catch it?
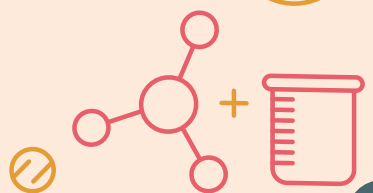
① $V_i = 0$
$t = 5\, sec$
$a = -9.81\, m/s^2$
$d = ?$

$d = \cancel{V_i t} + \frac{1}{2}at^2$
$d = \frac{1}{2}(-9.81\, m/s^2)(5)^2$
$d = -123\, m$

② $V_i = ?$
$t = 4\, sec$
$a = -9.81\, m/s^2$
$d = -123\, m$

$d = V_i t + \frac{1}{2}at^2$
$-123 = V_i(4) + \frac{1}{2}(-9.81)(4)^2$
$-123 = 4V_i + (-78.48)$
$+78.48 \qquad\qquad +78.48$
$\dfrac{-44}{4} = \dfrac{4V_i}{4} \qquad V_i = -11\, m/s$

③ $V\, @\, top = 0$
$a = -9.81\, m/s^2$
V_f in hand → negative initial velocity

Practice Packet
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