

STAND BACK



I'M GOING TO TRY
SCIENCE

STAND BACK

**"So, What's All This
HONORS Fizzix
Bru-Ha-Ha?"**



09/01/11

©2010, 2011, 2012 (Just in case...)

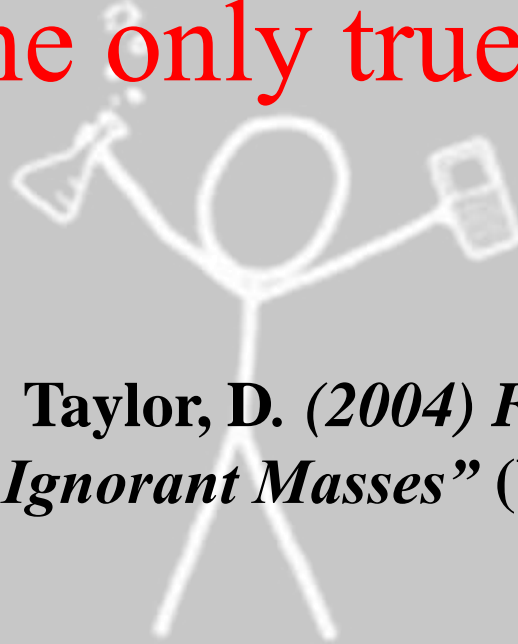
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Daryl Taylor, Fizzix & Astro Guy
Greenwich HS, CT

SCIENCE

Just What IS FIZZIX?

“Fizzix is the only true science.”



Taylor, D. (2004) *Fizzix in perspective*.
In “*Fizzix for the Ignorant Masses*” (Unpublished work)

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Just What IS FIZZIX?

- Study of all things “*Physical*”.
 - Matter & Energy
 - Big (Universe) & small (Strings)
- Compare to others?
 - Bio →
 - *Chemistry of Life*
 - Chem →
 - *Physics of Atomic Interactions*
 - Fizz → *All!*

Just What IS FIZZIX?

- Topics include:
 - Motion (Kinematix)
 - Forces (Dynamix)
 - Heat (Thermodynamix)
 - Waves (Electromagnetix)
 - Atomic & Nuclear (Weird Stuff)

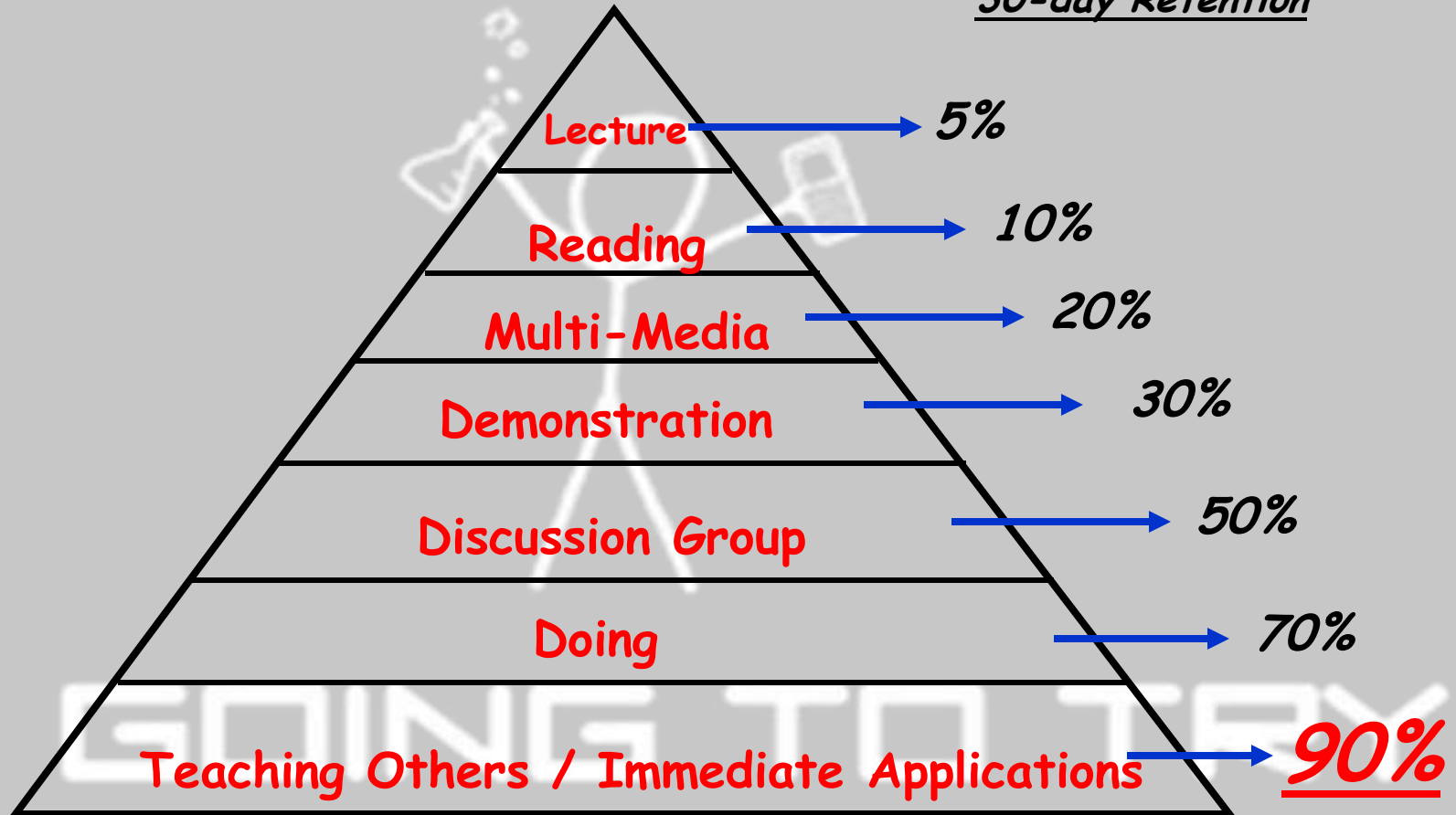
Commander David Scott: Apollo 15

26 July, 1971



The Learning Triangle - FYI

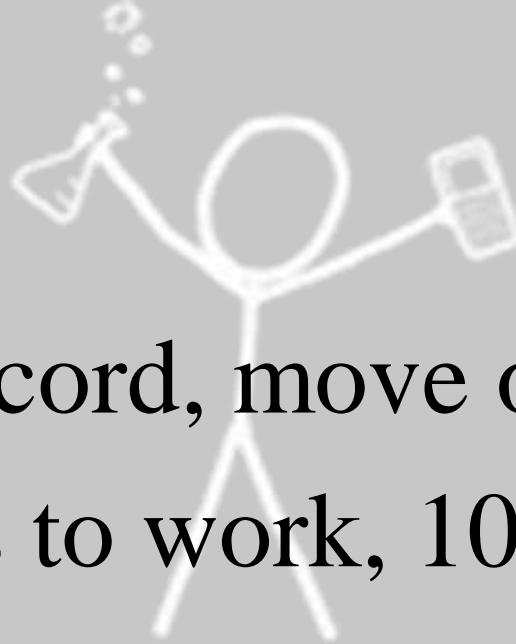
30-day Retention



National Training Labs, Bethel, MD 2003

STAND BACK

LAB-A-PALOOZA #1



- 5 Stations
- Answer, record, move on.
- 15 Minutes to work, 10 minutes to collab
- **NOW!**

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LAB-A-PALOOZA #1

- Didja doit?
 - Then ya got credit.
- Let's go through them...



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Intro LAB #1?

- Little Red Fishes

- Curled up and told your “fortune”...
- How did they work their little magic?
 - *Answer????*
 - Heat?
 - Obviously...
 - Heat will make certain things expand more than others, so edges expand and curl.

Intro LAB #1?

- WRONG!!!!!!

- *Real Answer????*

- It's moisture!
 - One side absorbs moisture from your palm and swells while top side doesn't.
- WON'T curl on most other parts of your body. Why?
(Long Chain polymer they put in *baby diapers...*)



Intro LAB #2?

- MICKEY EARS





Intro LAB #2?

- MICKEY EARS

- *Answer?????*

- Inertia: Newton's 1st Law; an object at rest....



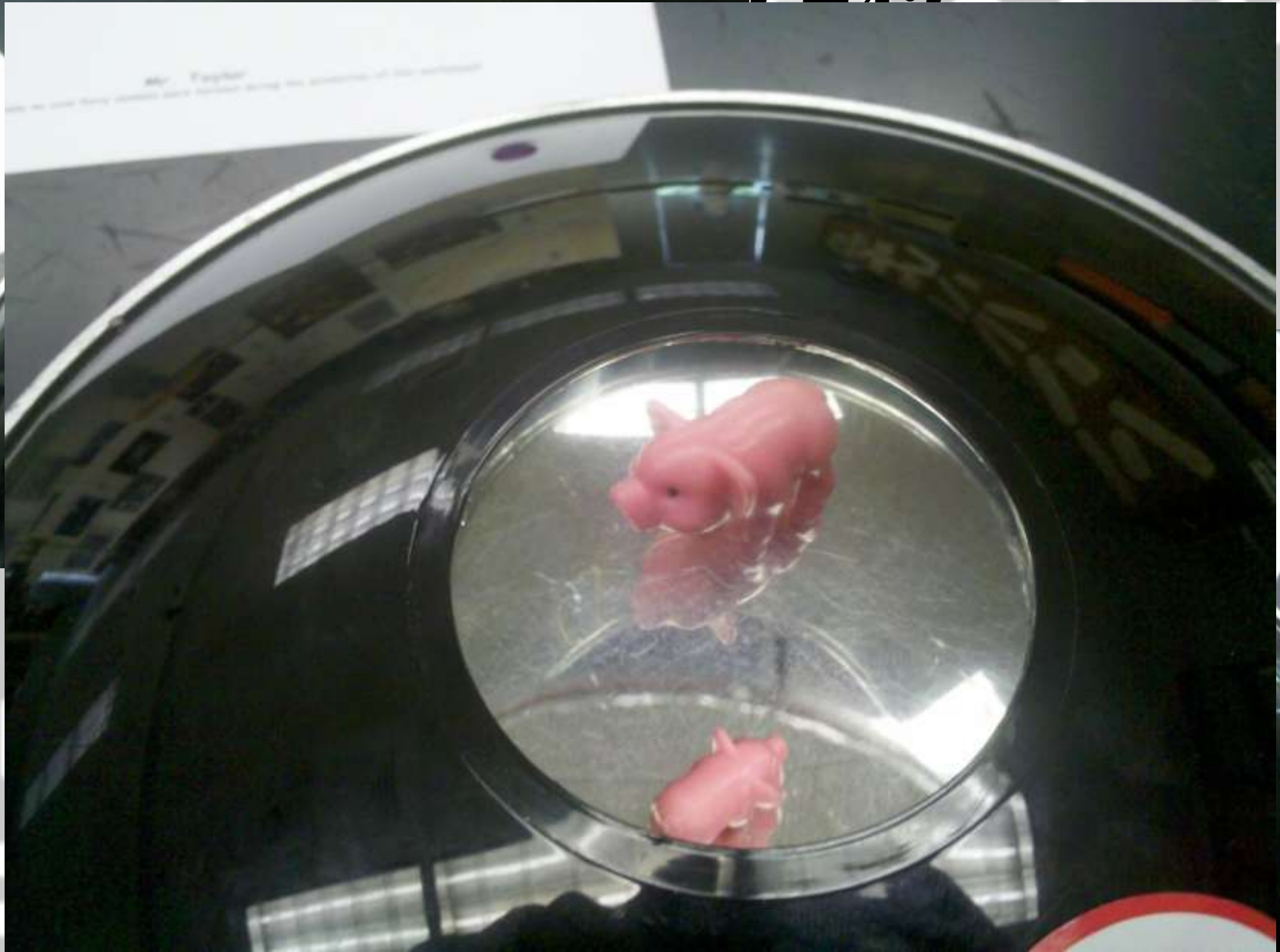
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Intro LAB #3?

- BODE's LAW

- *Answer?????*

- Planets have affected each other's motion in the 4.5 BILLION yrs we've been here...
- Right?
- WRONG!
- Just a curious mathematical coincidence, regardless of what V says...



Intro LAB #5?

- VCR Remote

- *Answer????*

- IR; infrared radiation.
- Invisible to human eye
- Digital cameras, CCD, is sensitive to IR
- That's why most digital photos look a little "off" from a 35mm film photo.



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Boring STUFF CONTINUED...



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STANDING ON THE
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Just **HOW** IS FIZZIX?

• **GRADES?**

–60% Exams

–30% Labs

–10% HW

Just **HOW** IS FIZZIX?

- EXAMS?

- Yep! 60%!

- 3 / Q

- #1 is basic in-class paper boring test (100 “pts)

- #2 is exciting ONLINE test

- 3 days (110 “pts)

- #3 is downright fun TakeHome X

- 5-7 days w/MC in class. (120 “pts)

STANDING BACK

Just **HOW IS FIZZIX?**

- DTFizzix thingee



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Just **HOW** IS FIZZIX?

- LABS

- 30% of Grade

- Most are “Discovery” type like you just did

- One sentence or question with little or no directions

- Can be re-done as often as you WANT! (50% Min)*

Just **HOW** IS FIZZIX?

• HOMEWORK?

– Yep! 10%!

– Posted @ DTFIZZIX.COM & the infamous “portal”

– Basic is ONLINE (BU1 & BU2)! (Giancoli - BU)

• Available NAME [AT] DTFizzix [dotty] com

– Regular HW already posted online

Updates:

- ISS Sightings (On Door)
- Supernova *PTF 11kly* viewing this week!
 - Once in lifetime opportunity!
 - Just discovered Aug 25
 - 21 Million *ly* away (Galactic backyard sorta thing...)
 - Good binoculars or **ANY** telescope!
 - Will be night viewing here if...

Just **HOW** IS FIZZIX?

- **DT LABS:**

- **Gather OWN data!**

- Not someone else's

- Sorta what you already did in here...

- **Analyze your OWN data!**

- Solution not predetermined, so cheating by working backwards ain't happnin'!

FIZZIX Notes

- Class Notes:
 - [Posted daily at DTFizzix.com](http://DTFizzix.com)
- Class PPT's
 - [Posted daily at DTFizzix.com](http://DTFizzix.com)
- Fizzix Blog
 - Taylor's SciNews Forum

Just WHY IS FIZZIX?

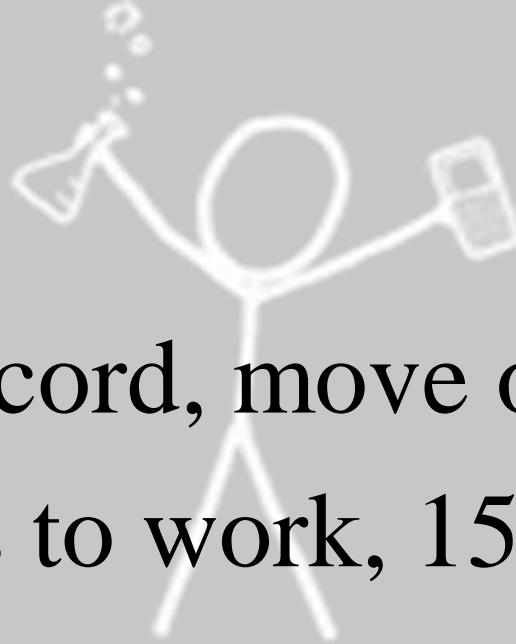
- Basic Taylor-Rools
 - Be on time!
 - Given ~3 extra since Sci is ~2.5mi
 - 1st : Stern look!
 - 2nd : Stern look & a scream!
 - 3rd (and each subsequent LATE)
 - 1 pt off total grade for Quarter.
 - Each 3rd counts as 1 A-U

Just WHY IS FIZZIX?

- Basic Taylor-Rools
 - Take NOTES!
 - ***EACH exam is open-NOTE!***
 - All year. ALL year.
 - Watch Taylor-Sites for
 - Class notes on TabletPC
 - All WS's, quizzes, Labs, Class Schedule....

STAND BACK

LAB-A-PALOOZA #2



- 5 Stations
- Answer, record, move on.
- 15 Minutes to work, 15 minutes to collab
- **NOW!**

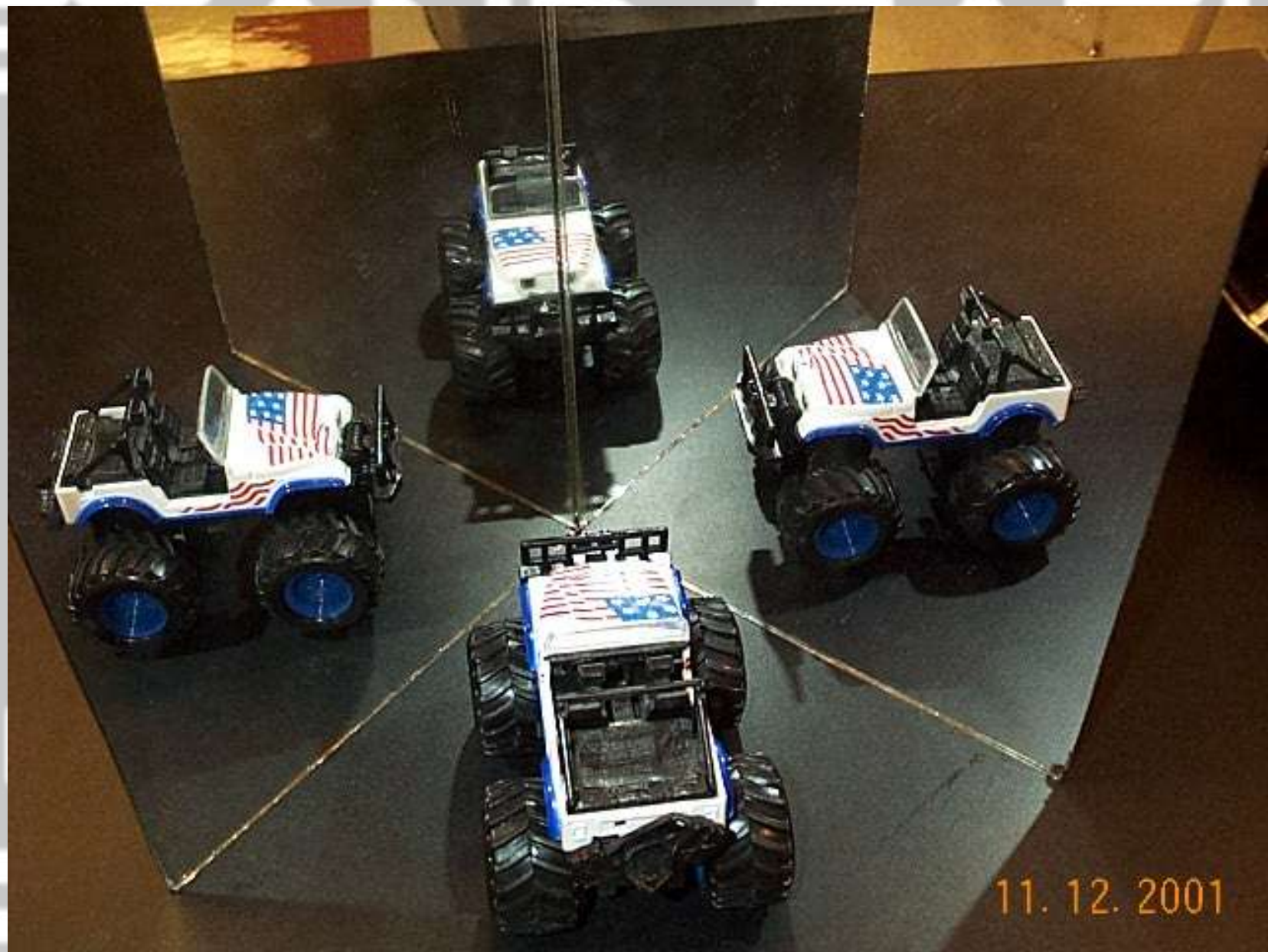
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Intro LAB #6?

- True Image Mirror
 - *Answer?????*
 - Double Reflection
 - Rt to Lft, Lft to Rt



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11. 12. 2001

Intro LAB #7?

- Ye Old Granny Problem

- *Answer?????*

- She's a gonner! You ran outta time!
- ALWAYS look at the BIG PICTURE and don't get bogged down in the details.
- $\frac{1}{2} d$ @ 45 km/hr when 1d @ 90 km/hr is needed?

$$t_{Total} = \frac{d}{v} = \frac{d}{90}$$

$$t_1 = \frac{\cancel{1} d}{\cancel{1} 2 v} = \frac{d}{v} = t$$

Intro LAB #8?



- UFO Balls

- *Answer?????*

- Pizo-electric – Field Effect Transistor (FET)...

- CREATES an ubber-small current when contacts are “connected”; can pick up any drop in resistance ($V=IR$).
- Same technology used in gas grill starters.

Intro LAB #9?

- Shrinking Moneys
 - *Answer????*
 - Concave lens, duh



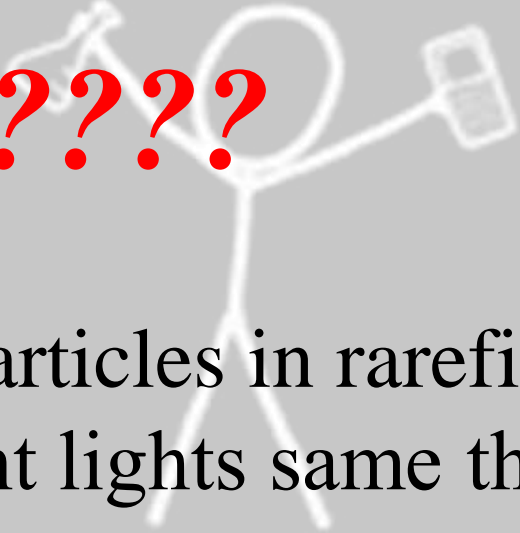
Intro LAB #10?

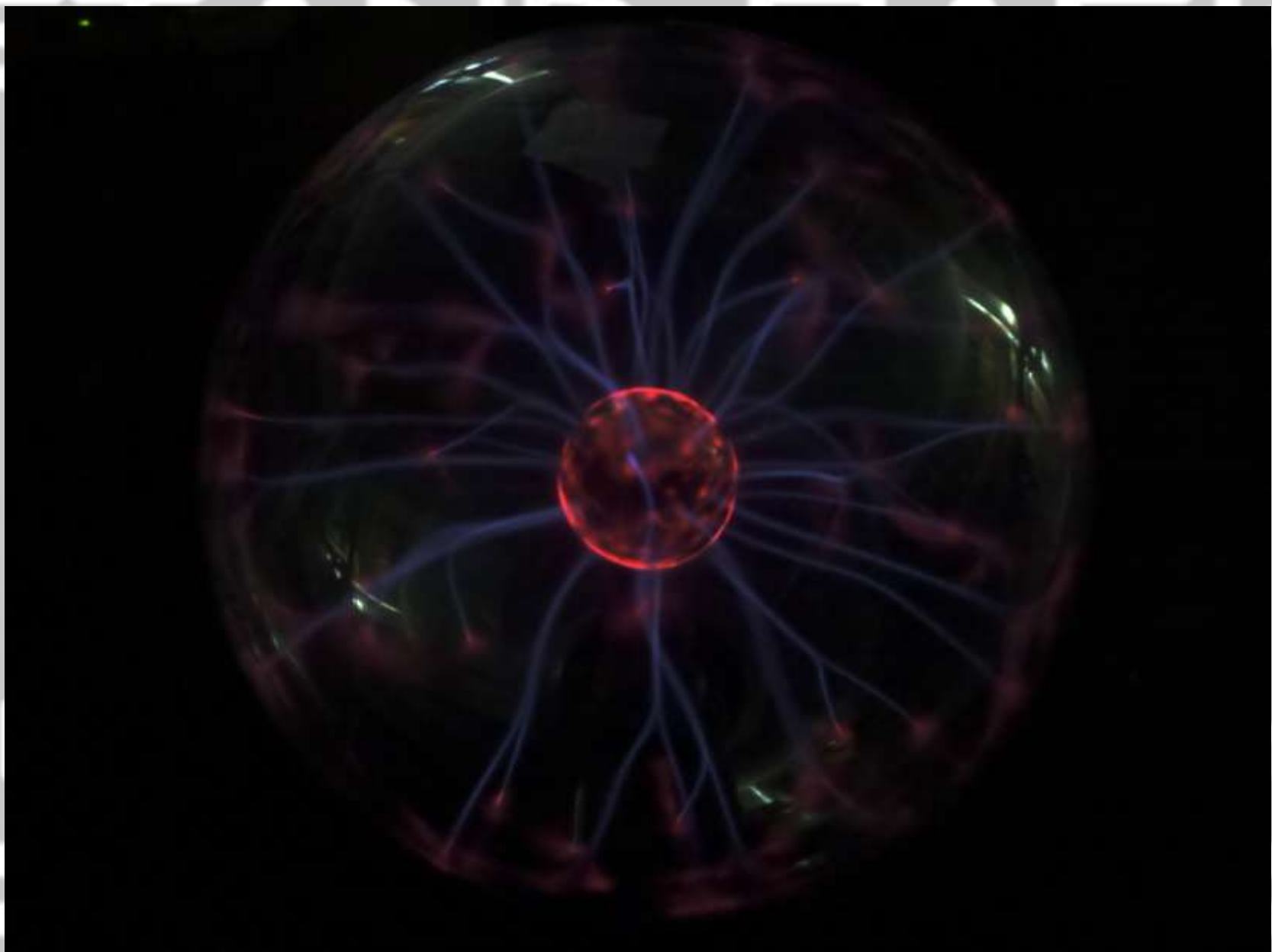
- Freaky Ball:

- *Answer?????*

- Plasma.

- Charged particles in rarefied gas (fluorescent lights same thing...)
- YOU are the ground, so the charged particles are attracted to you.





STAND BACK

HW Tonight

- Look at the pictures in Ch 1 & 2
- Submit *Info2011* w/text number
 - Where? [Thanks for asking...](#)
 - [Backup Plan](#)
- Root around DTFizzix.com

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Just WHY IS FIZZIX?

- Basic Misc-Rools:
 - *NO FOOD OR DRINK!*
 - *Free Potty Pass*
 - *1st Lunch*

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Just WHY IS FIZZIX?

- Help/Tutoring/Bribing?

–Before school

- *M-F 6:15AM...*

–Tues & Thurs After School

- *2:30-3:00pm*

–Official PeerStudy

STAND BACK

FCI Pre-Assess

1. A large truck collides head-on with a small compact car.

During the collision:

- (A) the truck exerts a greater amount of force on the car than the car exerts on the truck.
- (B) the car exerts a greater amount of force on the truck than the truck exerts on the car.
- (C) neither exerts a force on the other, the car gets smashed simply because it gets in the way of the truck.
- (D) the truck exerts a force on the car but the car does not exert a force on the truck.
- (E) the truck exerts the same amount of force on the car as the car exerts on the truck.

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FCI Pre-Assess

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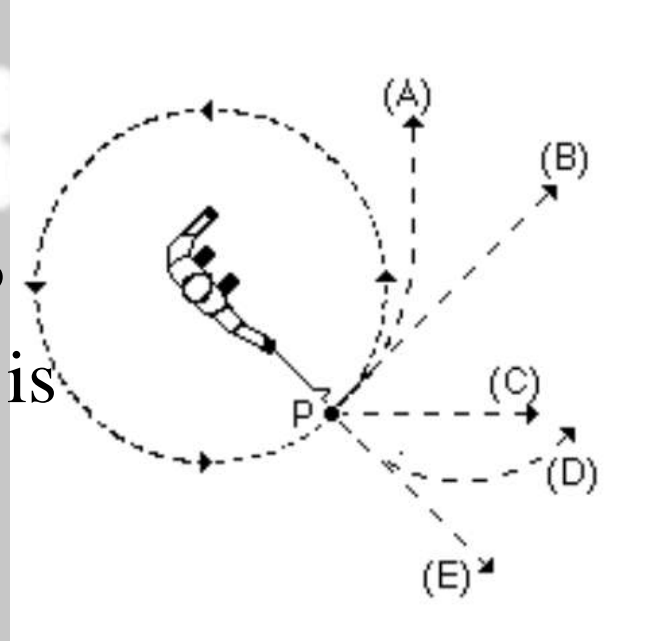
- (A) the truck exerts a greater amount of force on the car than the car exerts on the truck.
- (B) the car exerts a greater amount of force on the truck than the truck exerts on the car.
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FCI Pre-Asses

2. A steel ball is attached to a string and is swung in a circular path in a horizontal plane as illustrated in the accompanying figure.

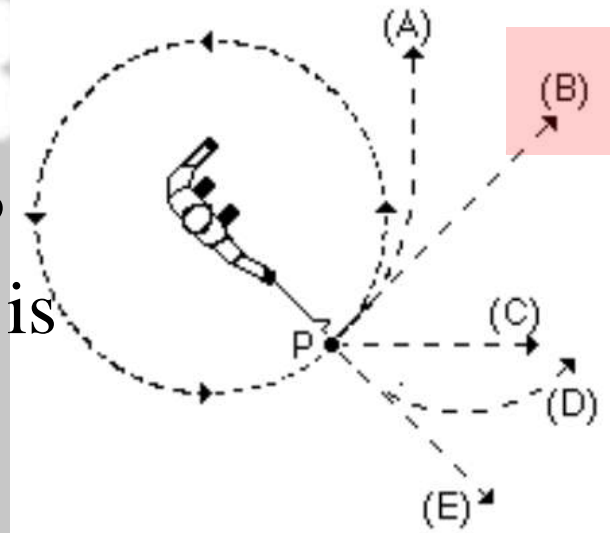


At the point P indicated in the figure, the string suddenly breaks near the ball.

If these events are observed from directly above as in the figure, which path would the ball most closely follow after the string breaks?

FCI Pre-Asses

2. A steel ball is attached to a string and is swung in a circular path in a horizontal plane as illustrated in the accompanying figure.



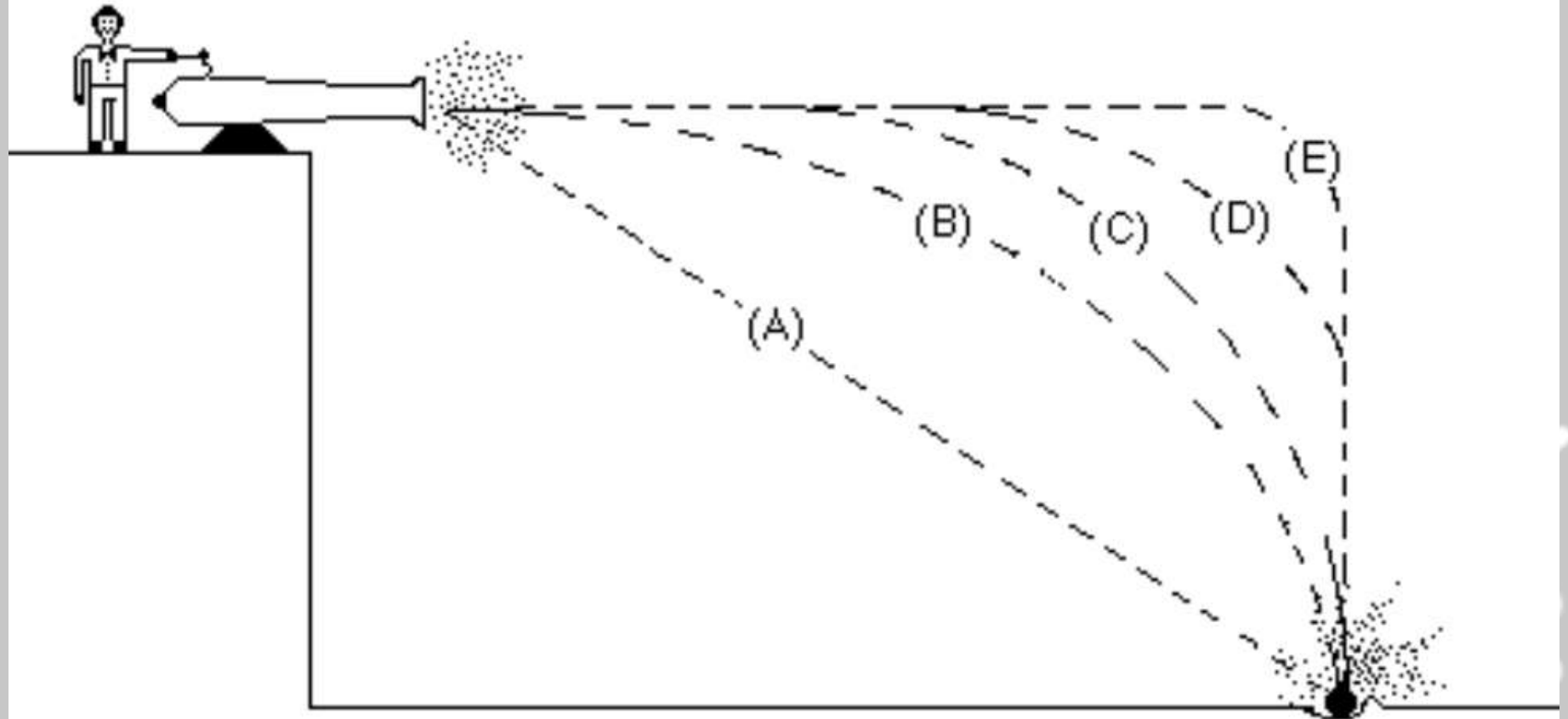
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FCI Pre-Assess

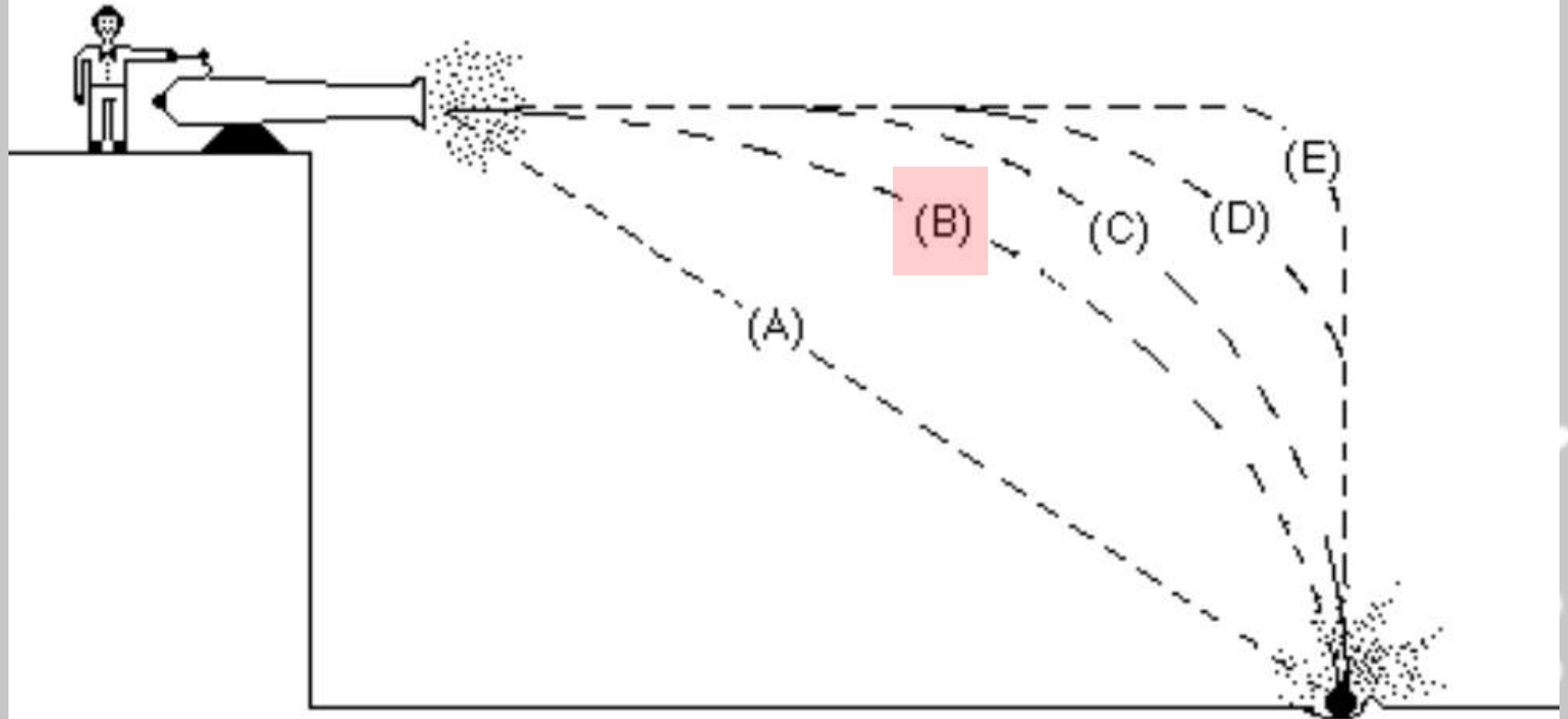
A ball is fired by a cannon from the top of a cliff as shown in the figure below. Which of the paths would the cannon ball most closely follow?



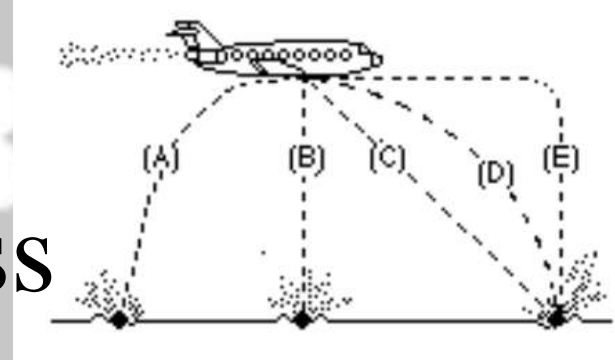
STAND BACK

FCI Pre-Assess

A ball is fired by a cannon from the top of a cliff as shown in the figure below. Which of the paths would the cannon ball most closely follow?



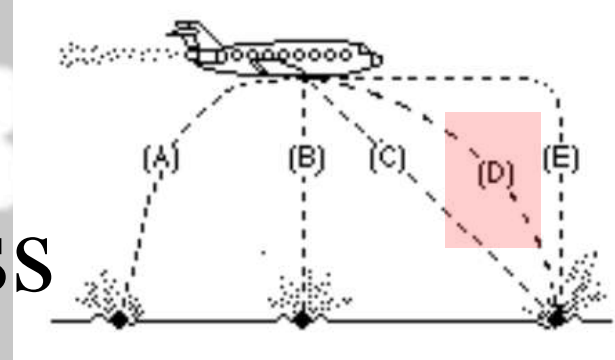
FCI Pre-Assess



A bowling ball accidentally falls out of the cargo bay of an airliner as it flies along in a horizontal direction.

As observed by a person standing on the ground and viewing the plane as in the figure at right, which path would the bowling ball most closely follow after leaving the airplane?

FCI Pre-Assess



A bowling ball accidentally falls out of the cargo bay of an airliner as it flies along in a horizontal direction.

As observed by a person standing on the ground and viewing the plane as in the figure at right, which path would the bowling ball most closely follow after leaving the airplane?



aybgerra...

Resolved Question

Which is worse?

Ignorance or Apathy?

1 month ago

 Report It



October

Best Answer - Chosen by Asker

I don't know and I don't care

1 month ago

41 

4 

 Report It

Asker's Rating: *********

You got it ;)

Ch 1 Stuff

A space shuttle is shown in the process of launching, angled upwards from the bottom left towards the top right. The shuttle is white with a red nose cone and a yellow/orange section. A massive, bright orange and yellow plume of fire and white smoke trails behind it, filling the lower-left portion of the frame. The background is a clear, light blue sky.

- Scientific Method?
 - Observation
 - Hypothesis
 - Experiment
 - Theory
 - Conclusion
- Over-rated & Over-Emphasized

STAND BACK

Overrated Sci Method?

"Ask a scientist what he conceives the scientific method to be and he adopts an expression that is at once solemn and shifty-eyed: solemn, because he feels he ought to declare an opinion; shifty-eyed because he is wondering how to conceal the fact that he has no opinion to declare."

- Sir Peter Medawar

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Overrated Sci Method?

“If I had thought about it, I wouldn't have done the experiment. The literature was full of examples that said you can't do this.”

Spencer Silver on the work that led to the unique adhesives for 3-M Post-It Notepads.

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Overrated Sci Method?

"Why should there be the method of science? There is not just one way to build a house, or even to grow tomatoes. We should not expect something as motley as the growth of knowledge to be strapped to one methodology."

-Ian Hacking

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Overrated Sci Method?

“That's the way all the school books were:
They said things that were useless,
mixed-up, ambiguous, confusing, and
partially incorrect. How anybody can
learn science from these books, I don't
know, because it's not science.”

- [Dr. Richard Feynman](#),

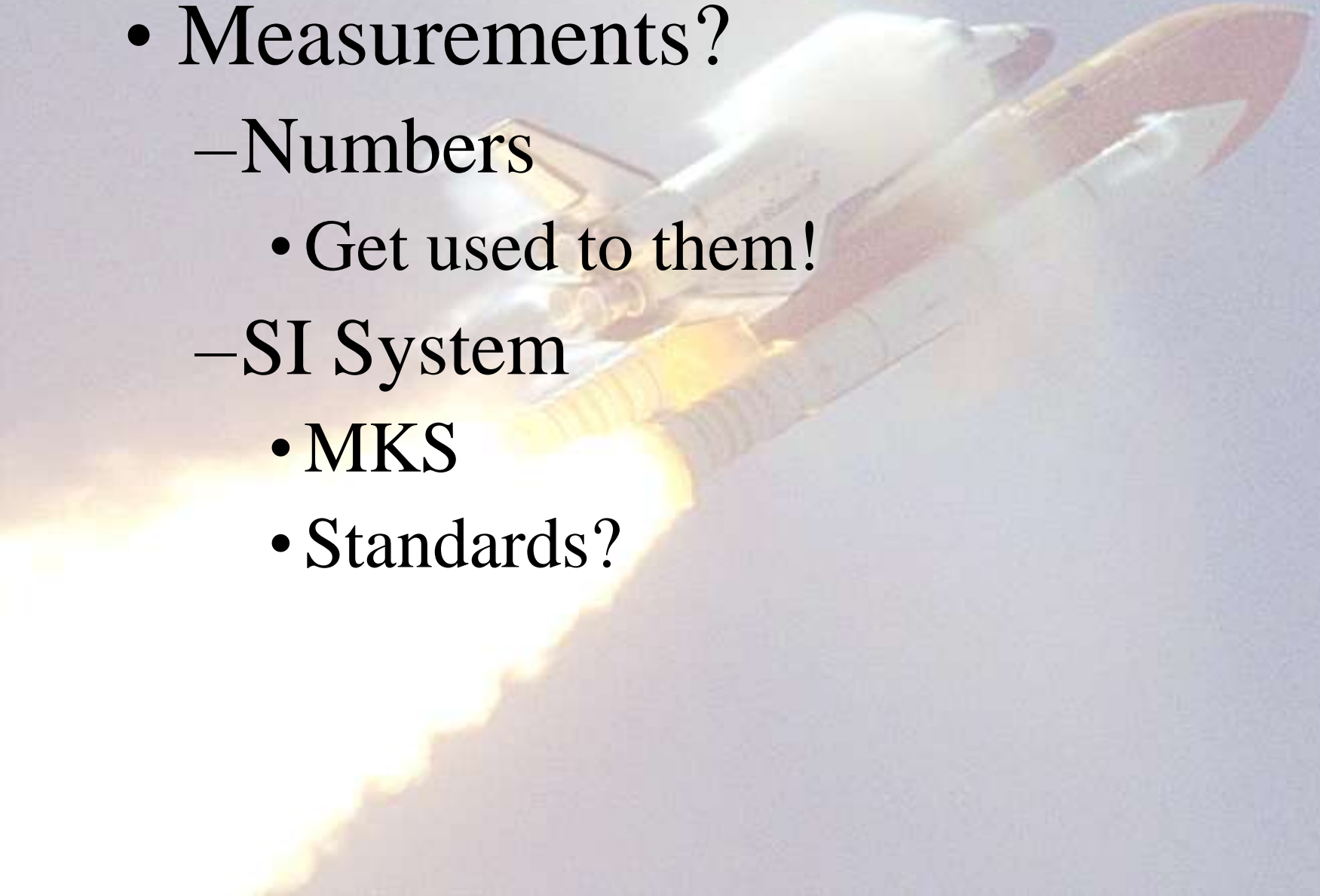
- in "Surely you're Joking, Mr. Feynman"

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Ch 1 Stuff

- Measurements?
 - Numbers
 - Get used to them!
 - SI System
 - MKS
 - Standards?



Ch 1 Stuff

Unit	Original Definition	Current Definition
Meter	1/10,000,000 distance from Eq to NP along Prime Meridian	D light travels in 3.3×10^{-9} sec
Kilogram	Mass of 0.001 m ³ of water	Mass of cylinder in France
Second	1/86,400 of a solar day	9,192,631,700 times T of Ce ¹³³ atom

ST

Jupiter

Saturn



Uranus

Neptune



Earth

Pluto



Earth



Mars



Mercury



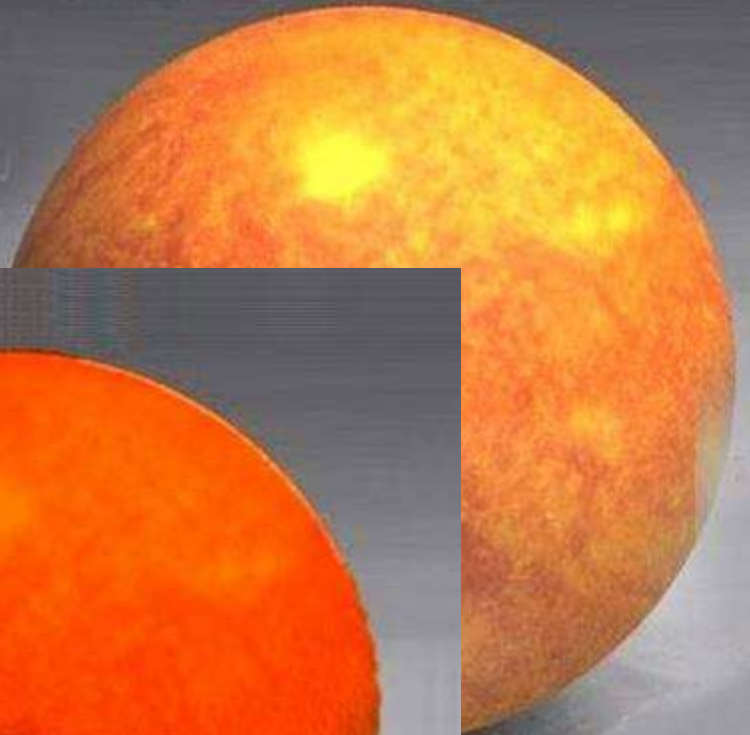
Pluto



TRY

CE

ST



Antares

Betelgeuse



Rigel

Aldebaran

Sun (1 pixel)

Sirius Pollux

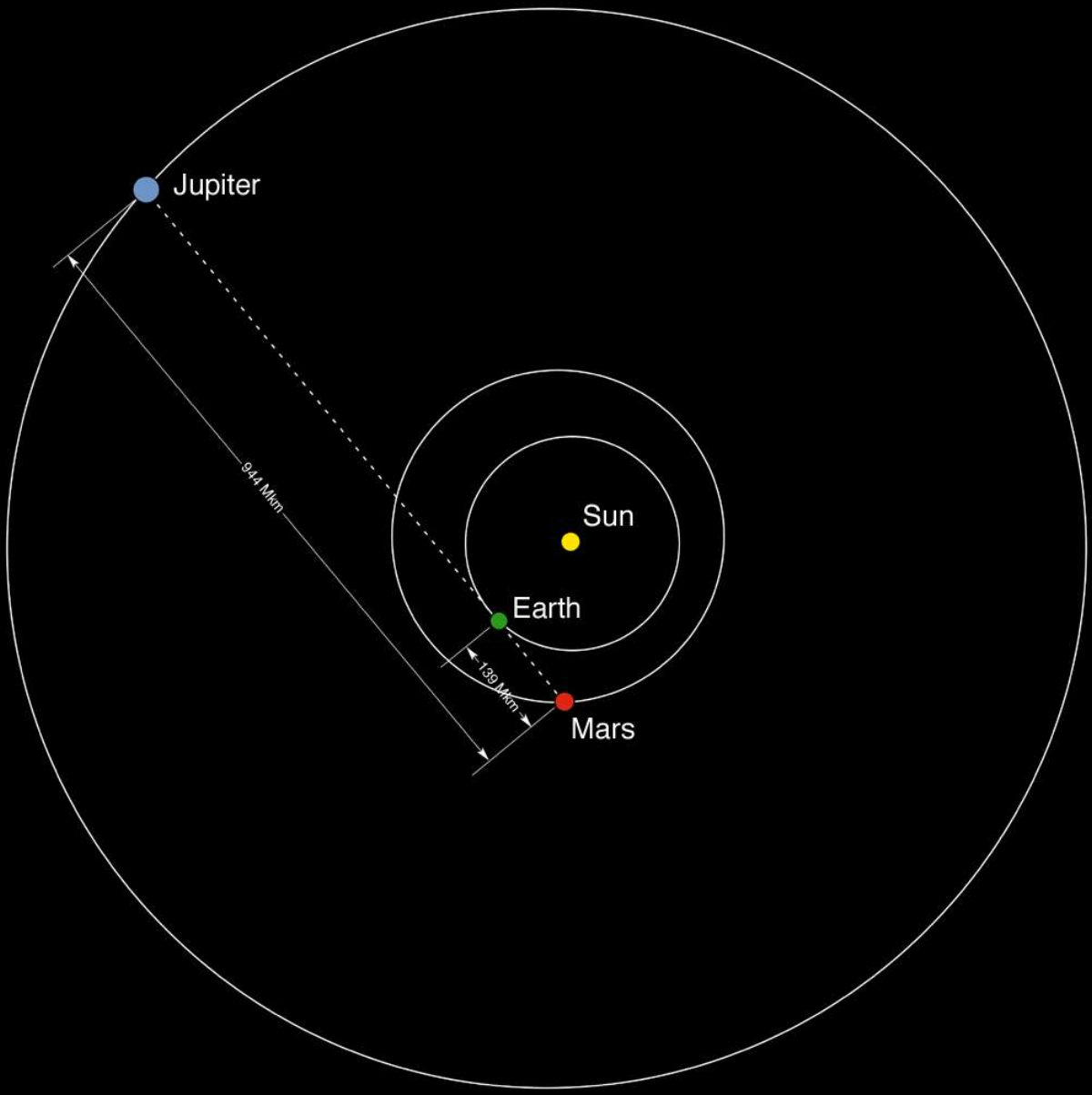
Arcturus

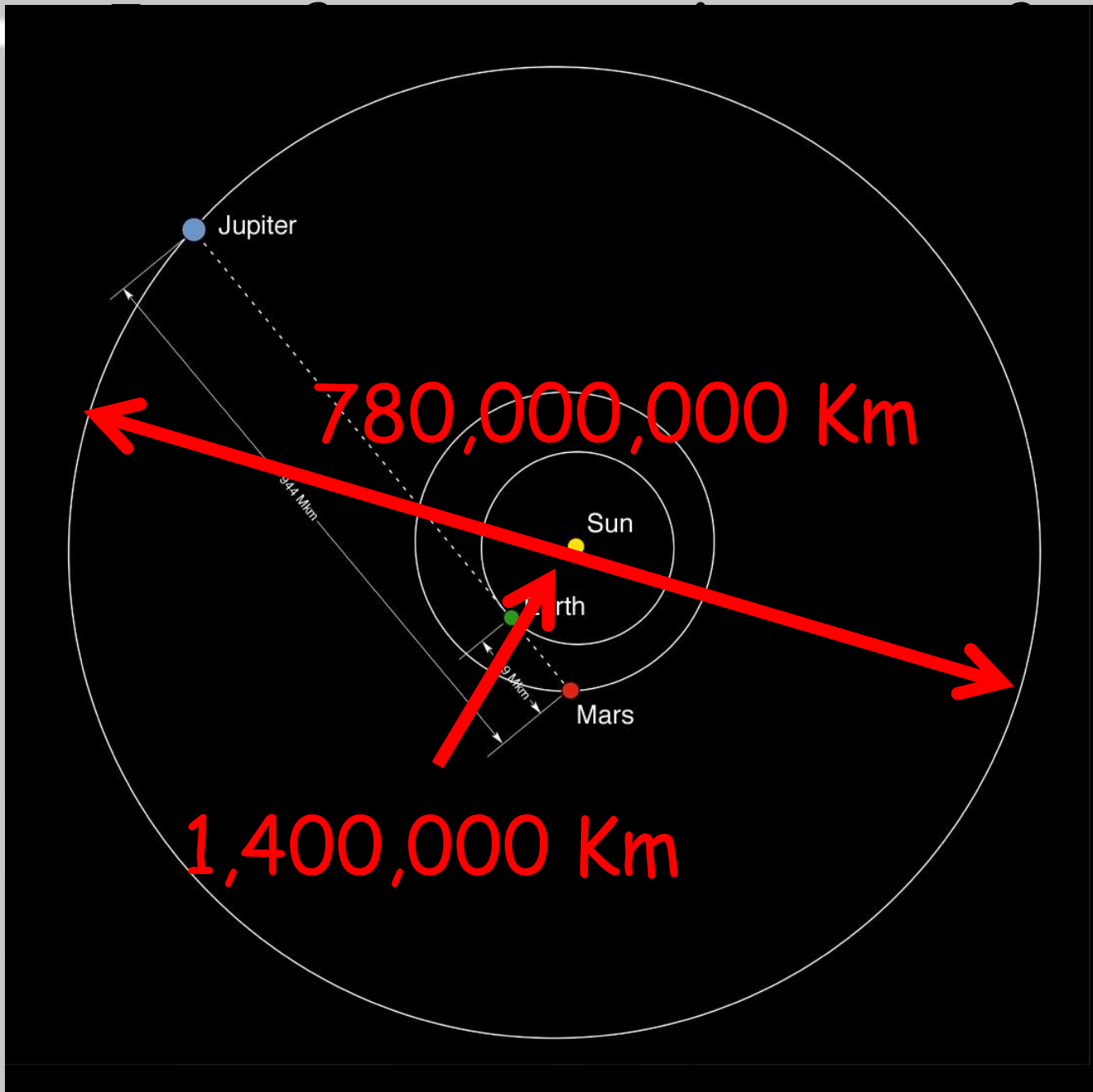
Jupiter is invisible at this scale

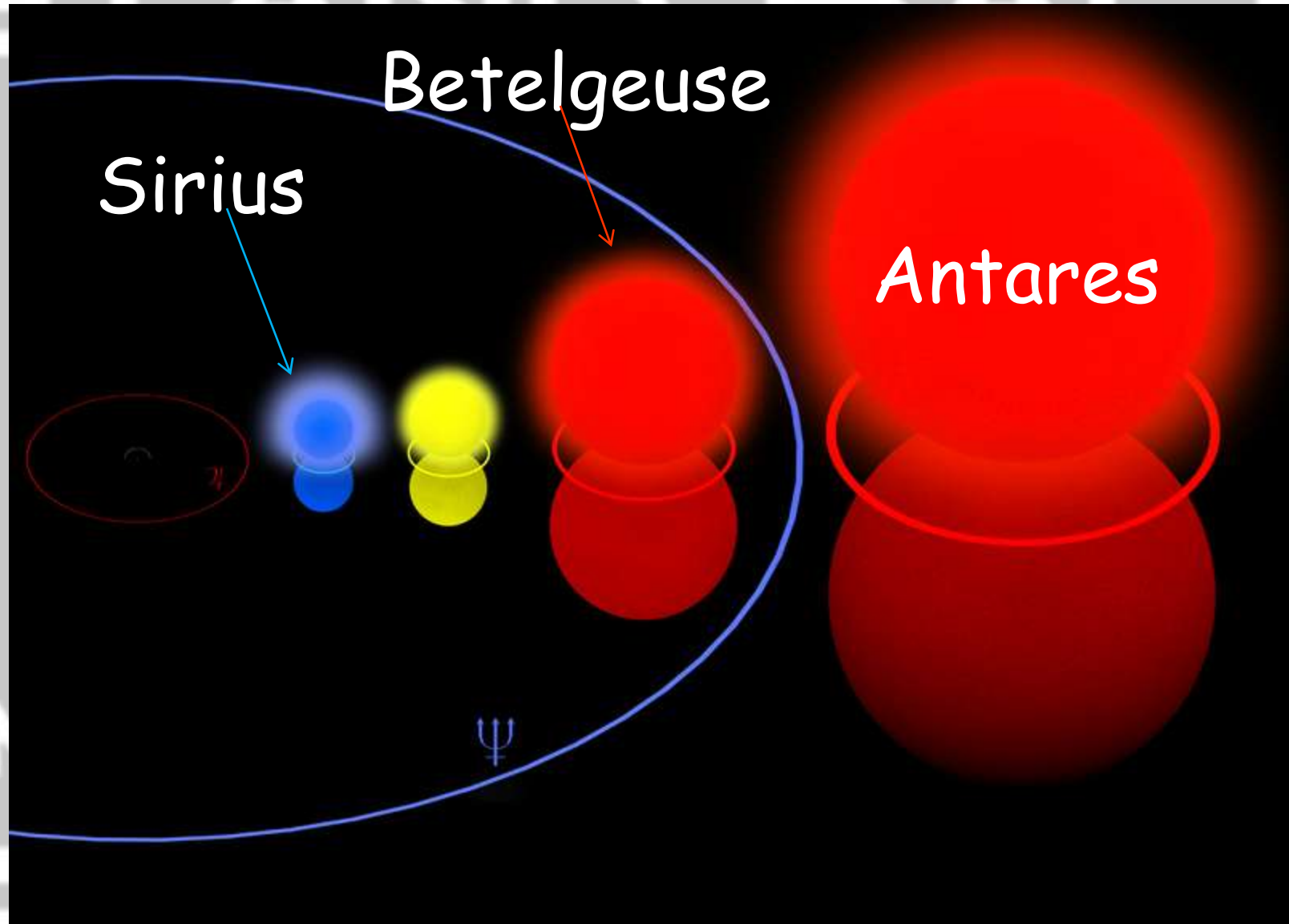
S



The Extreme Universe: The Dark Side







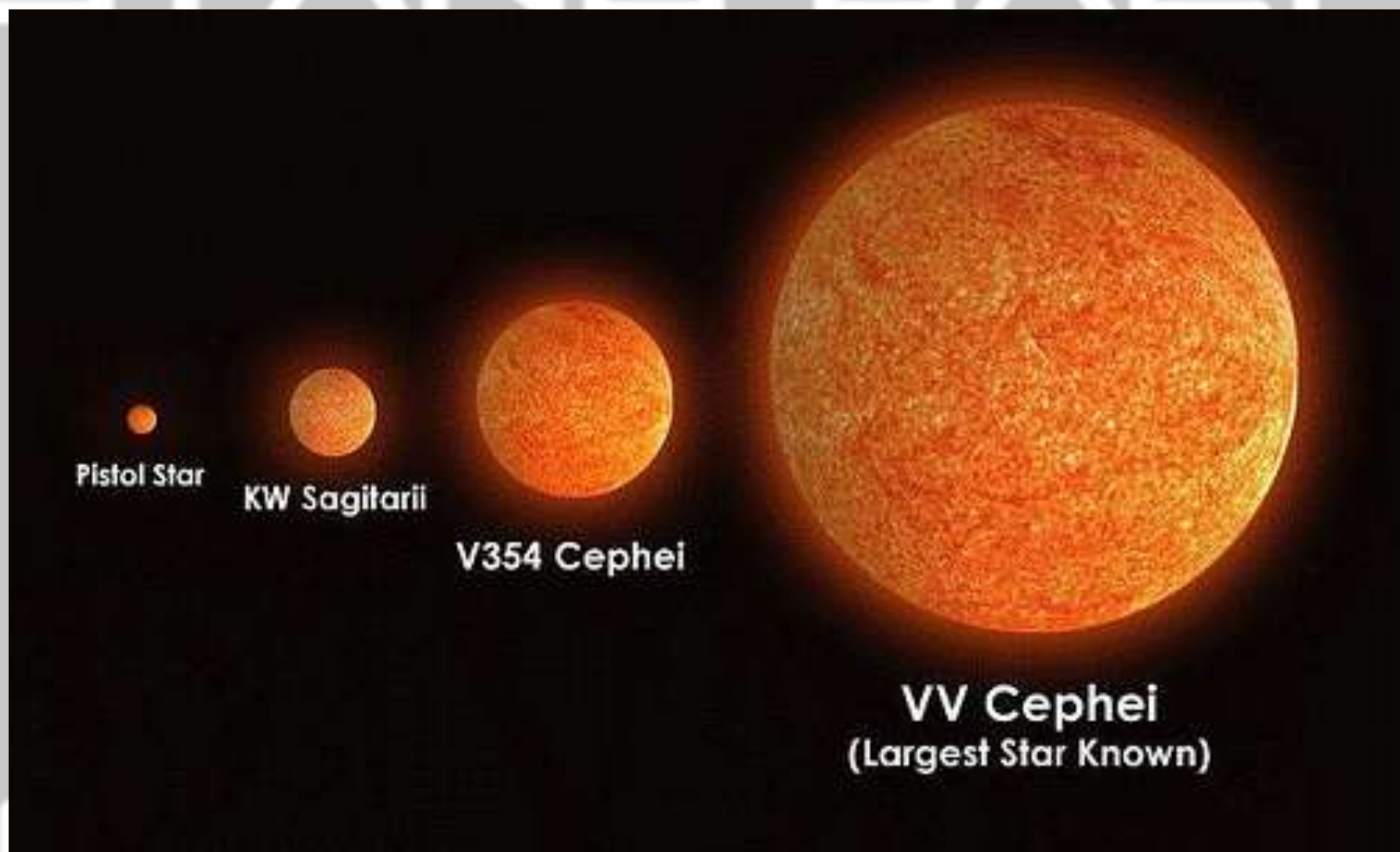


Antares



Pistol Star

STAND BACK



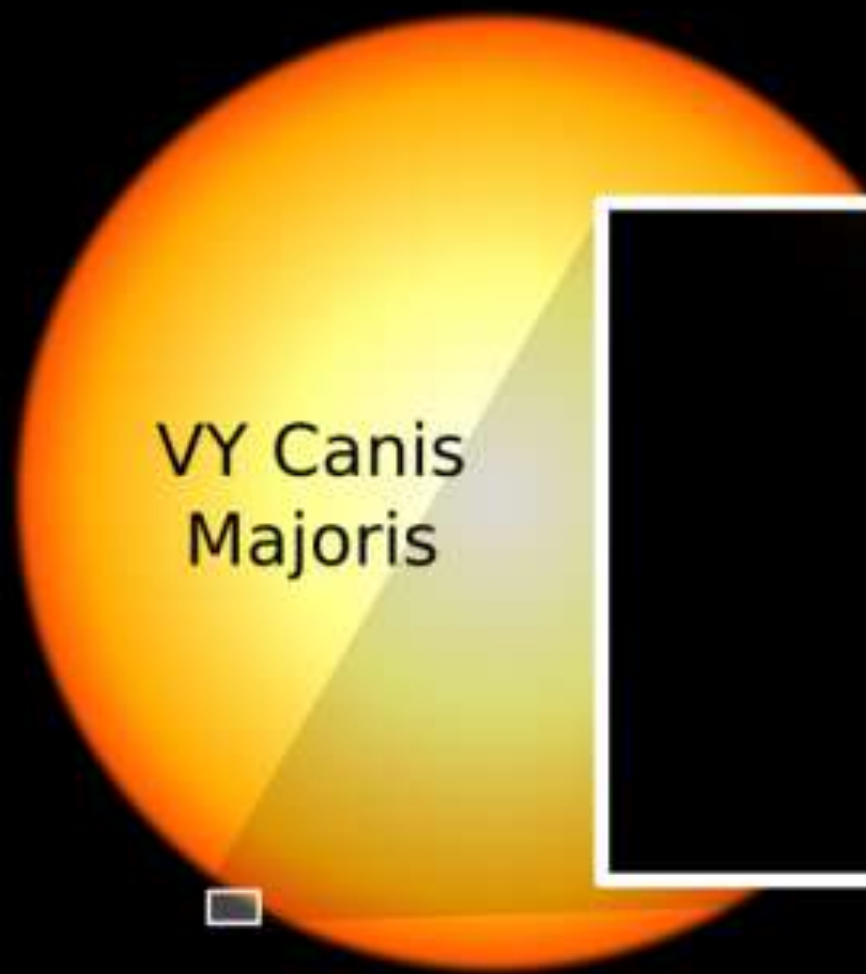
Pistol Star

KW Sagittarii

V354 Cephei

VV Cephei
(Largest Star Known)

SCIENCE



VY Canis
Majoris



•
Sun

STAND BACK

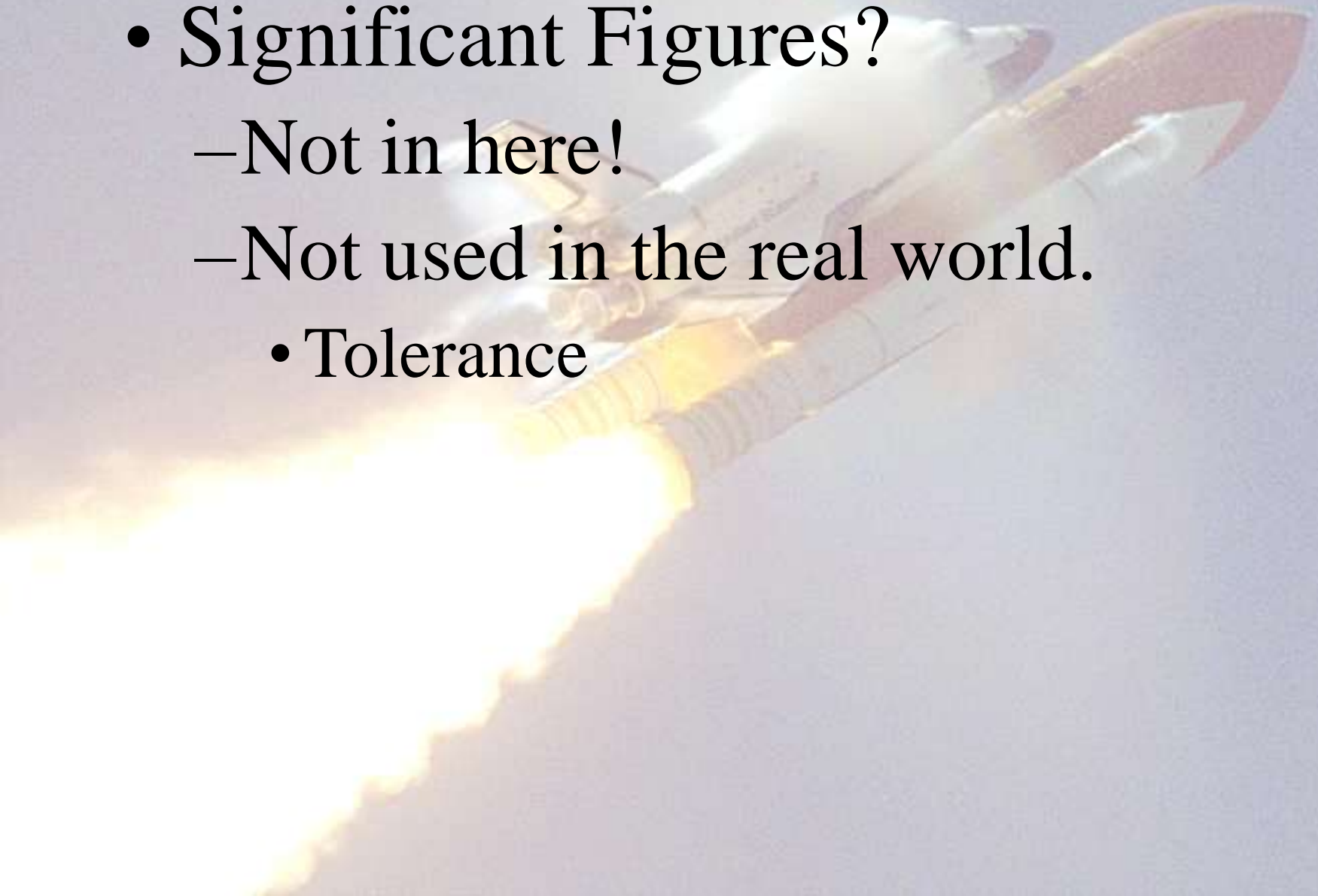
Scale of the Universe???

- Video Uno
- Video Three-o

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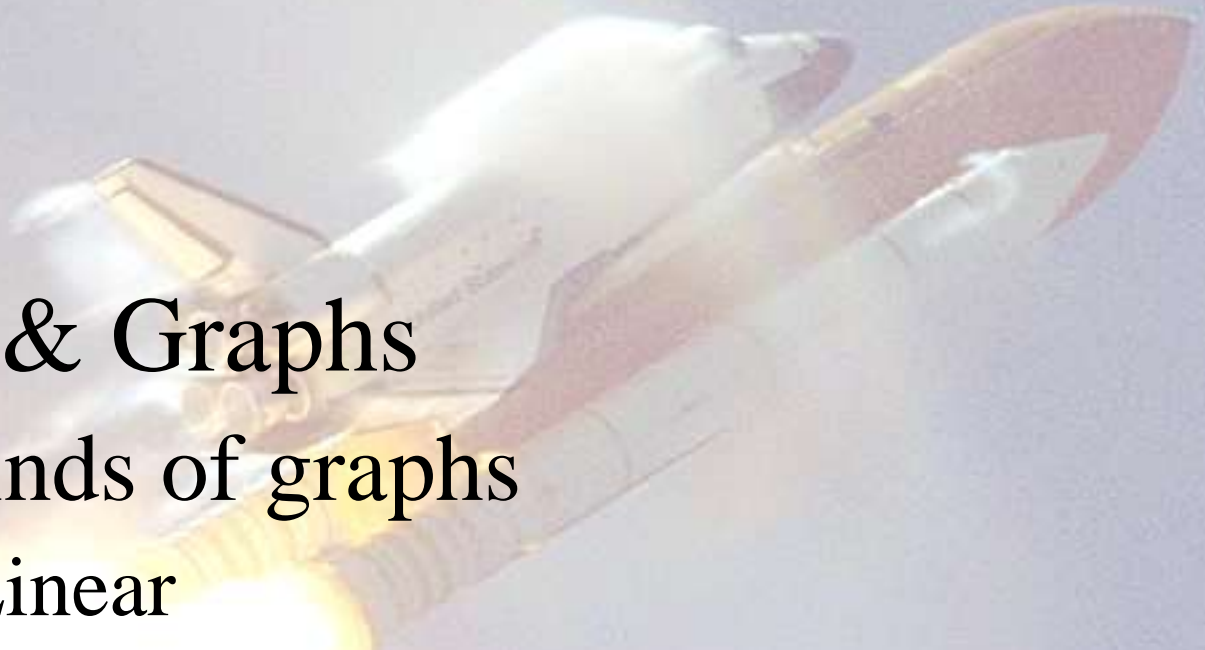
Ch 1 Stuff

- Significant Figures?
 - Not in here!
 - Not used in the real world.
 - Tolerance

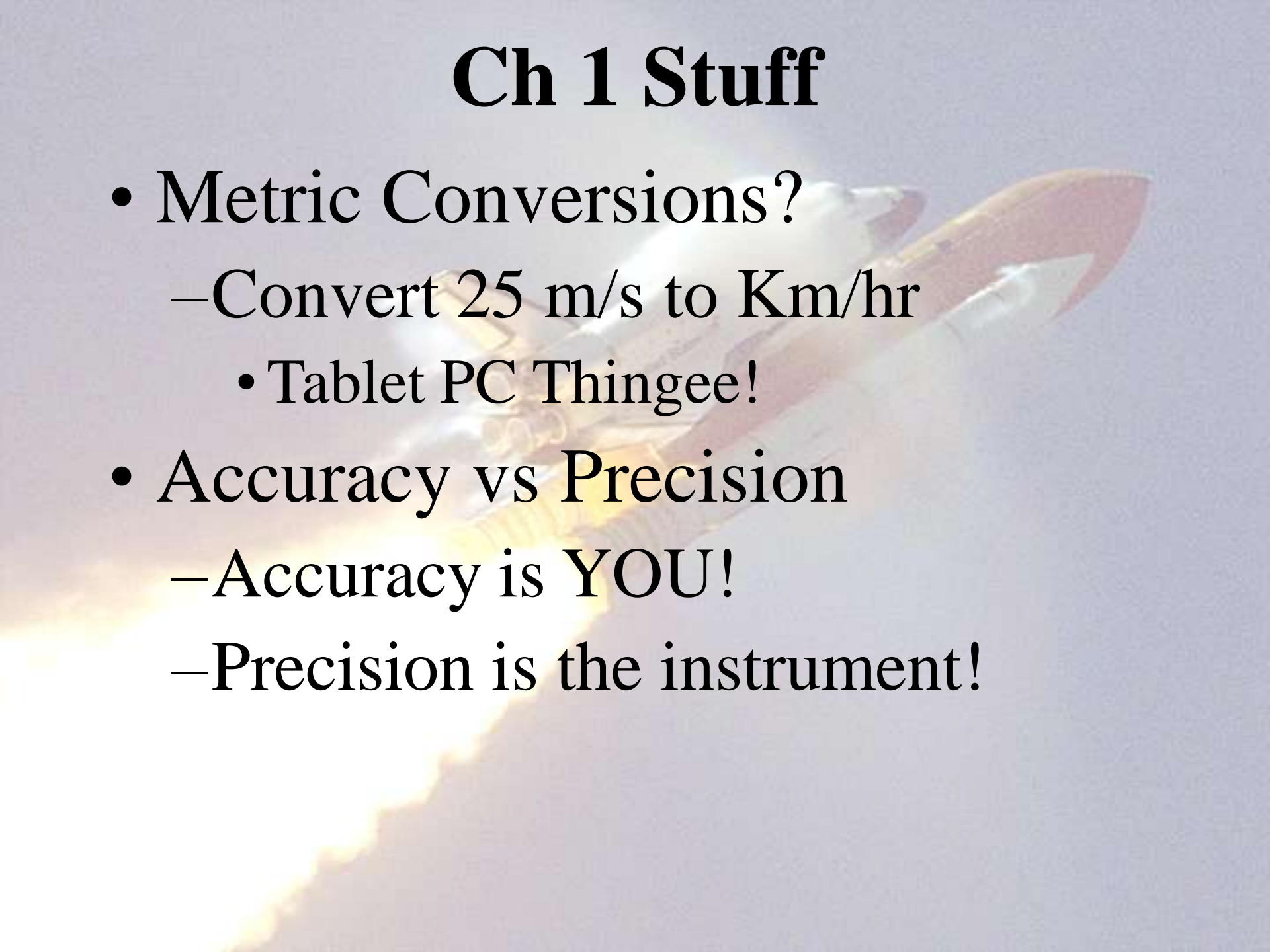


Ch 1 Stuff

- Math?
 - Lots
 - Data & Graphs
 - 3 kinds of graphs
 - Linear
 - Parabolic
 - Hyperbolic
 - Tablet PC Thingee



Ch 1 Stuff

- Metric Conversions?
 - Convert 25 m/s to Km/hr
 - Tablet PC Thingee!
 - Accuracy vs Precision
 - Accuracy is YOU!
 - Precision is the instrument!
- 
- A background image of a rocket launch. The rocket is white with a red nose cone and is ascending diagonally from the bottom left towards the top right. A large, bright orange and yellow plume of fire and smoke is visible at the base of the rocket, indicating the point of launch. The sky is a clear, light blue.