

STAND BACK



I'M GOING TO TRY
SCIENCE

STAND BACK

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

09/01/2011

Daryl Taylor, Fizzix Guy
Greenwich HS, CT

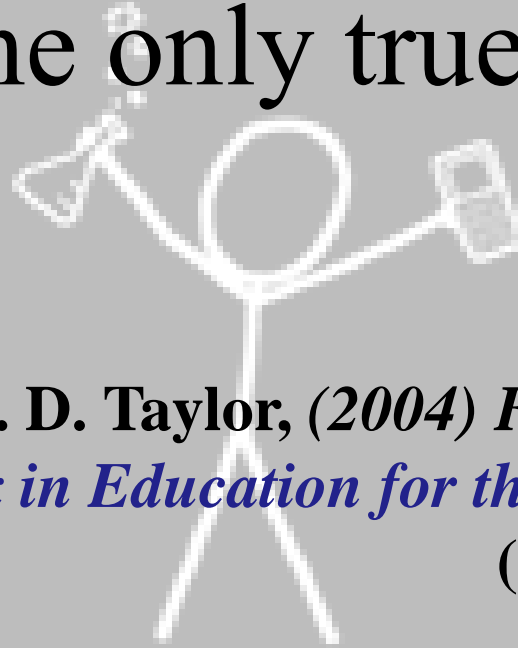
©2010, 2011, 2012 (Just in case...)

I'M GOING TO TRY
SCIENCE

STANDS BARCK

Just What IS FIZZIX?

“Fizzix is the only true science.”

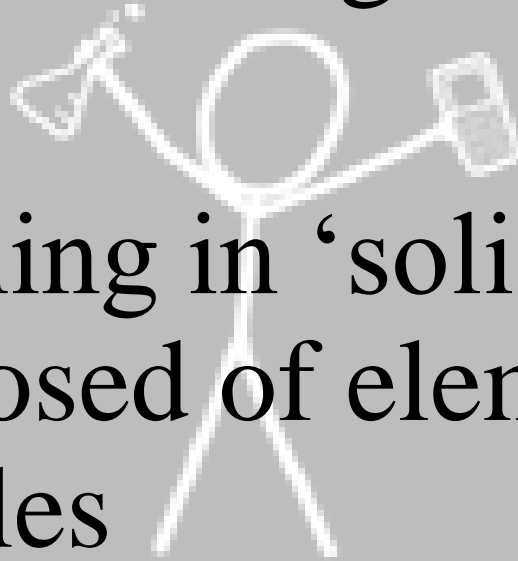


Dr. D. Taylor, (2004) *Fizzix in perspective*.
From “*Fizzix in Education for the Ignorant Masses*”
(Unpublished work)

I'M GOING TO TRY
SCIENCE

Just What IS FIZZIX?

- Study of two things
 - *Matter*
 - Anything in ‘solid’ state composed of elementary particles
 - Leads to more questions...
 - *Energy*
 - Matter *Huh?*

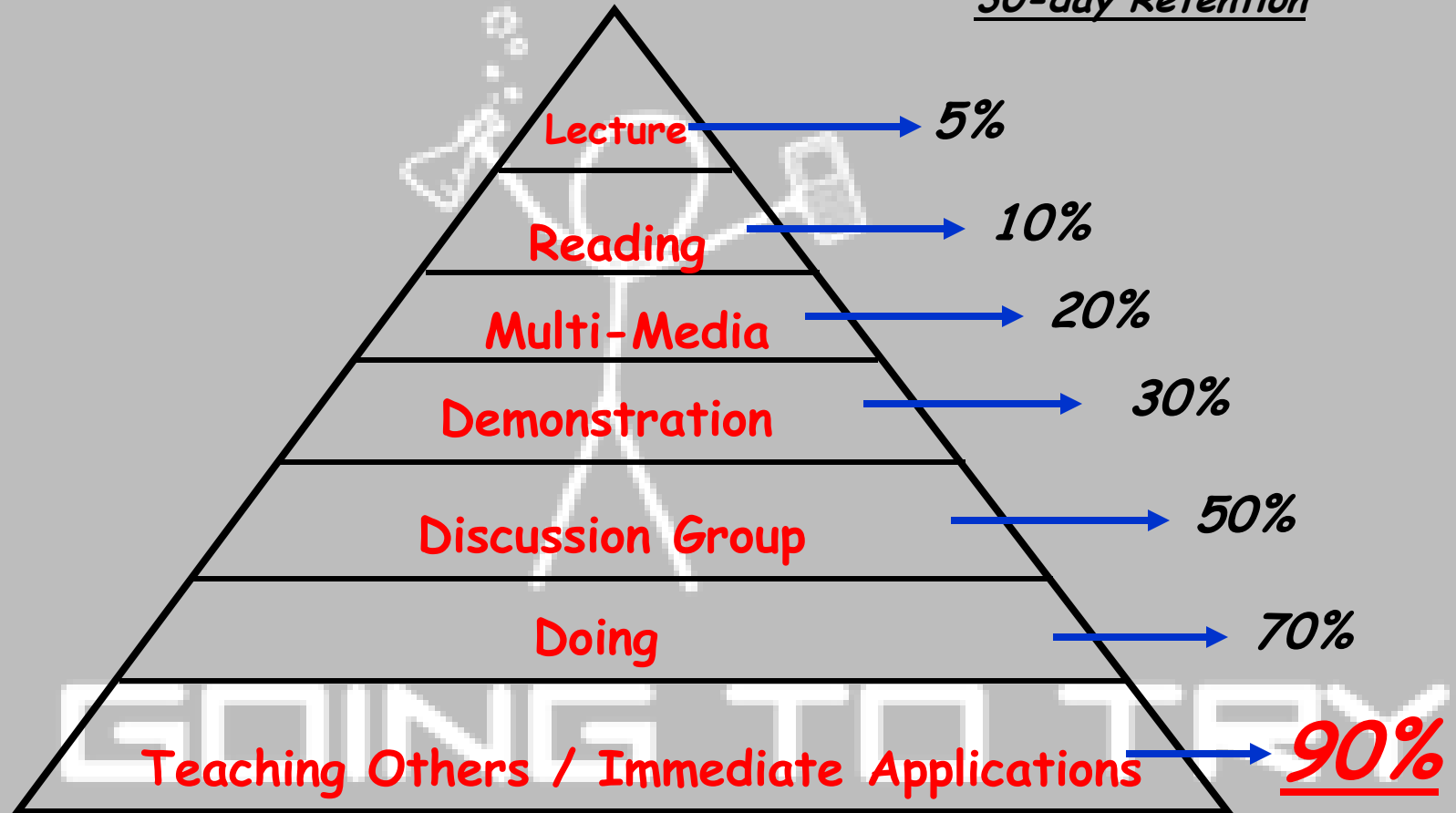


Just What IS FIZZIX?

- 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!

The Learning Triangle - FYI

30-day Retention



National Training Labs, Bethel, MD 2003

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



I'M
SLIENLE
RY
EY

STAND BACK



I'M

TRY

SCIENCE

STANDS BACK

Just What IS FIZZIX?

- Topics breakdown for 'B':
 - Mechanics – 35%
 - Fluid & Thermo – 15%
 - E&M – 25%
 - Waves & Optics – 15%
 - Atomic & Nuclear – 10%

I'M GOING TO TRY

SCIENCE

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?

- LABS

- 20% of Grade

- Most are “Design” type

- “Design an investigation to determine the properties of Conservation of Energy for a ‘Jumping Icky”.

- Cannot be redone...

- 1st one tomorrow

Just HOW IS FIZZIX?

- HOMEWORK?

- Yep! 20%!

- Regular HW is on AP Calendar

- Initial grade is **100%**; *-5% each missed HW assignment.*

I'M GOING TO TRY
SCIENCE

Just HOW IS FIZZIX?

- EXAMS?

- Yep! 60%!

- 3 / Q

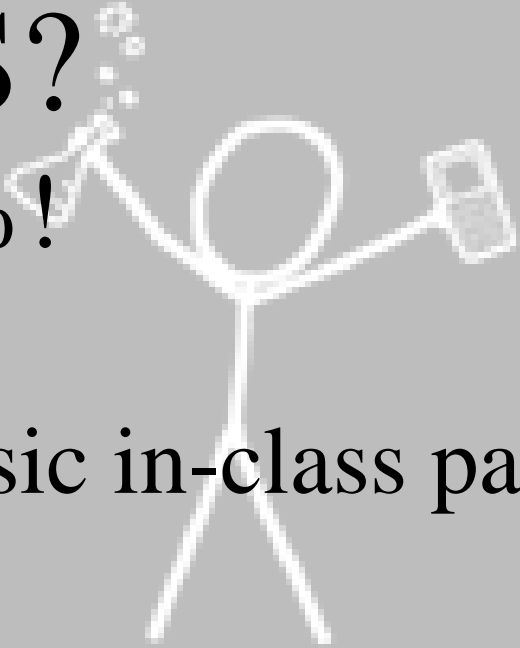
- #1 is basic in-class paper boring test

- #2 is exciting test

- 2-3 days (SA). MC: in class!

- #3 be fun Take-home test

- 5-7 days w/ MC in class



STANDING BACK

FIZZIX Notes

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

I'M GOING TO TRY
SCIENCE

Just WHY IS FIZZIX?

- Basic Taylor-Rools

- Be on time!

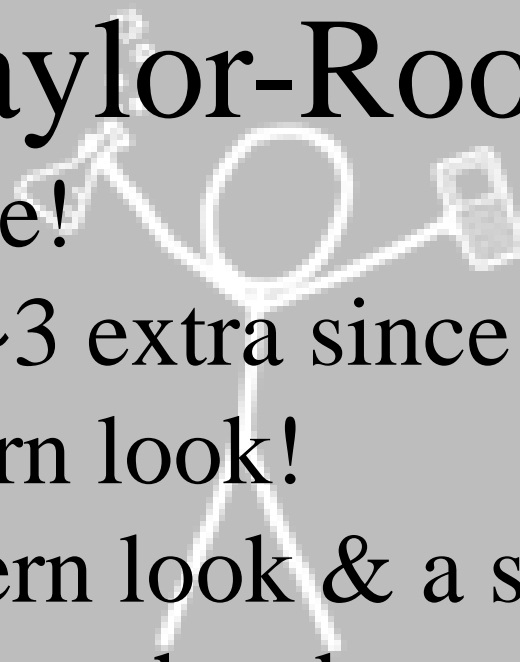
- Given ~3 extra since Sci is >2.5mi

- 1st : Stern look!

- 2nd : Stern look & a scream!

- 3rd (and each subsequent LATE)

- Equals 1 A-U.



I'M GOING TO TRY
SCIENCE

STAND BACK

HW Tonight

- Look at the pictures in Ch 1 & 2
- Submit *Info2011* w/text number
 - Where? Thanks for asking...
 - Backup Plan
- Today:
 - Finish this boring PPT

I'M GOING TO TRY

SCIENCE

Just WHY IS FIZZIX?

- Basic Taylor-Rools
 - Take NOTES!
 - EACH exam 1st SEM is open-NOTE!
 - Watch Taylor-Sites for
 - Class notes on TabletPC
 - All WS's, quizzes, Labs, Class Schedule....

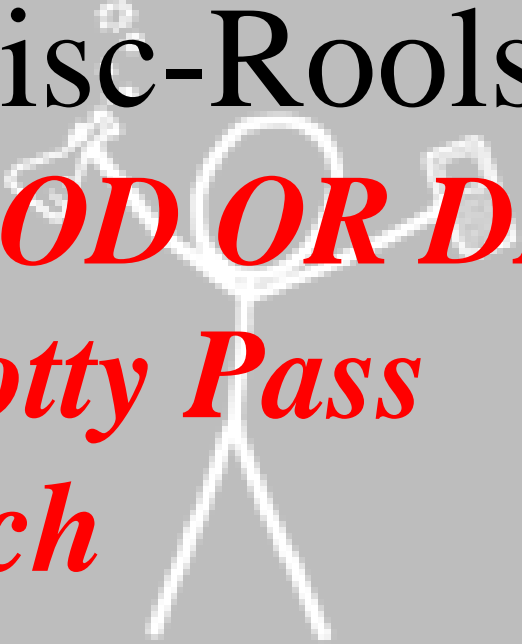
Just WHY IS FIZZIX?

- Basic Misc-Rools:

–NO FOOD OR DRINK!

–Free Potty Pass

–1st Lunch



I'M GOING TO TRY
SCIENCE

Just WHY IS FIZZIX?

- Help/Tutoring/Bribing?

–Before school

•M-F 6:15 – 7:15

–Tues & Thurs after school

•2:30-3:00pm

–Official PeerStudy

I'M GOING TO TRY
SCIENCE

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.

I'M GOING TO TRY

SCIENCE

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.

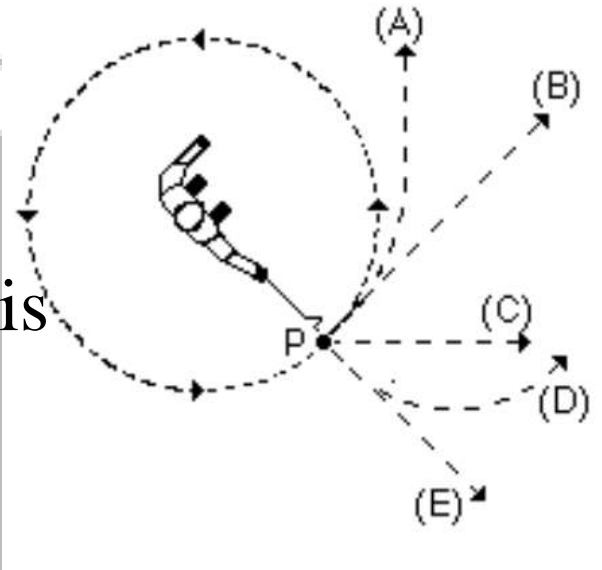
I'M GOING TO TRY

SCIENCE

STANDE

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?

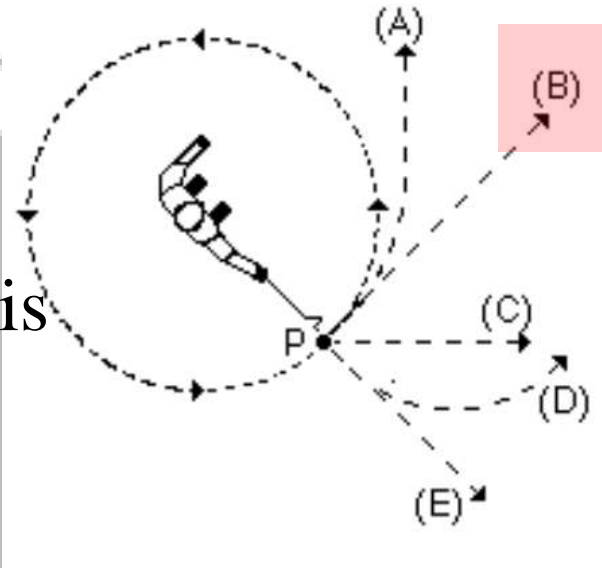
TRY

SCIENCE

STAND E

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?

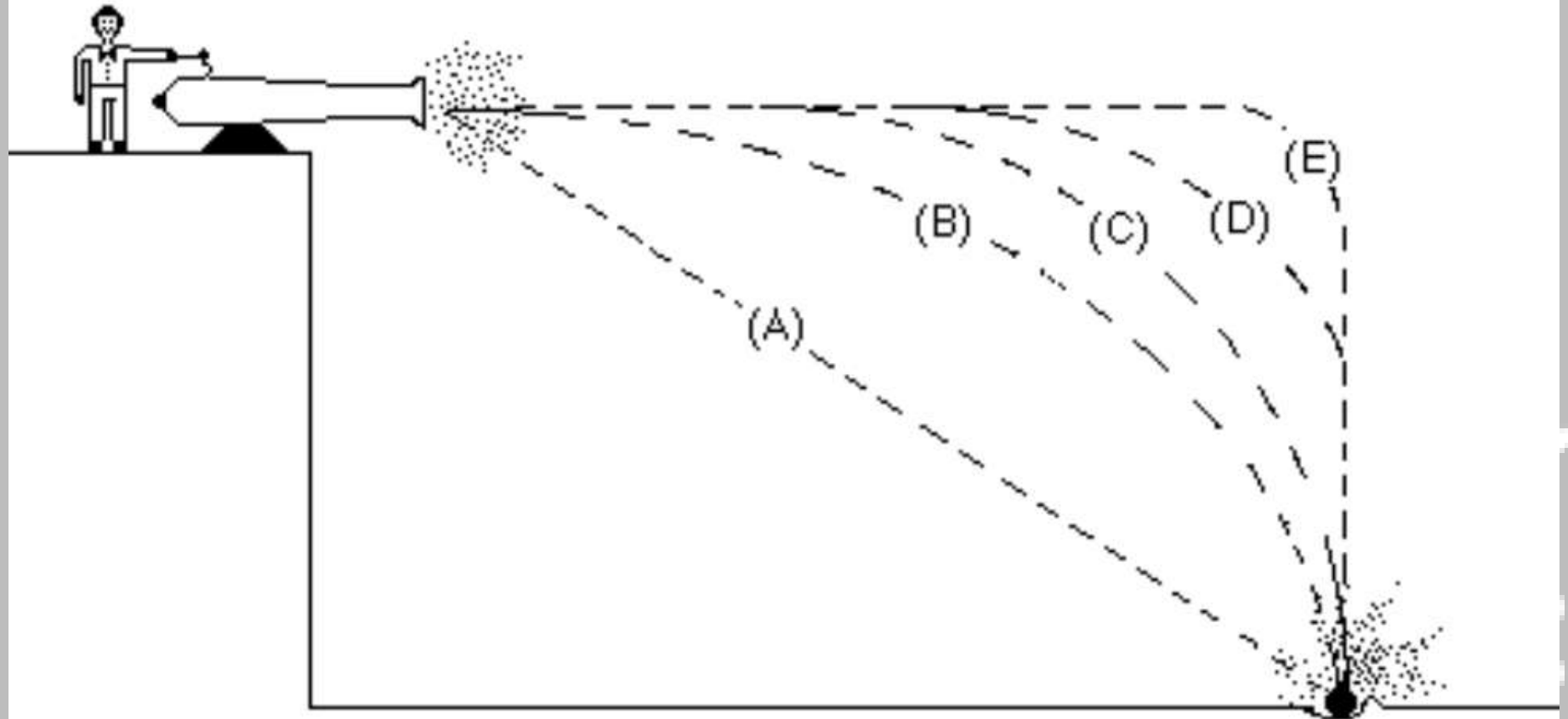
TRY

SCIENCE

STAND BACK

FCI Pre-Assess

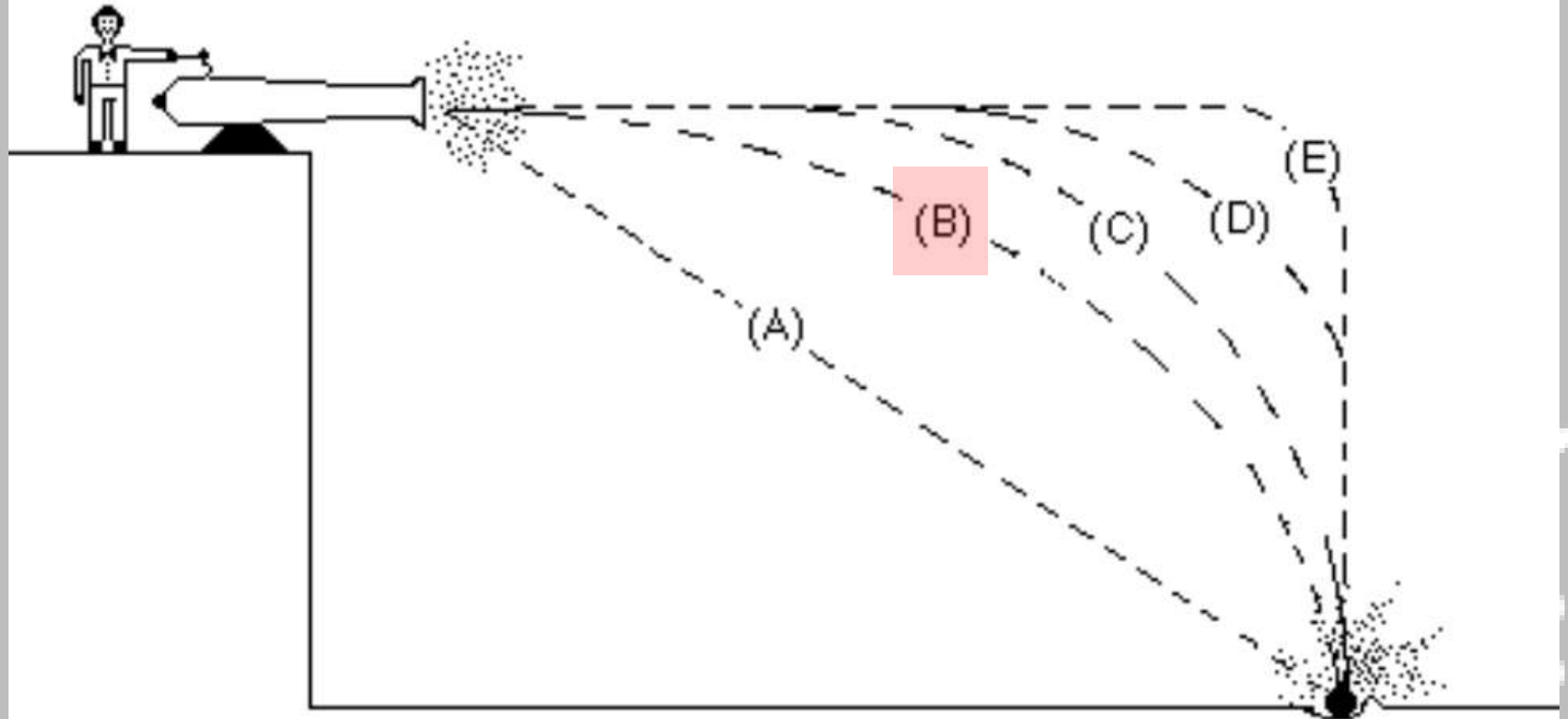
A ball is fired by a cannon from the top of a cliff as shown in the figure below. Which of the paths would the cannon ball most closely follow?



STAND BACK

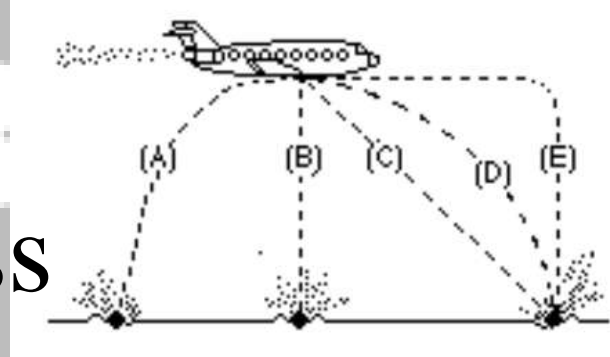
FCI Pre-Assess

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?



STAND E

FCI Pre-Assess



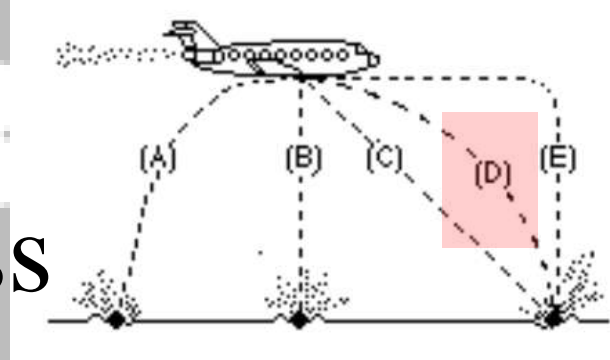
A bowling ball accidentally falls out of the cargo bay of an airliner as it flies along in a horizontal direction.

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?

SCIENCE

STANDE

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?

SCIENCE



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 large, bright plume of fire and white smoke trails behind it, indicating the point of liftoff. 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

I'M GOING TO TRY SCIENCE

STAND BACK

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.”

I'M GOING TO TRY

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

SILVER

STAND BACK

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

I'M GOING TO TRY
SCIENCE

STAND BACK

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"

I'M GOING TO TRY
SCIENCE

Ch 1 Stuff

- Measurements?
 - Numbers
 - Get used to them!
 - SI System
 - MKS
 - Standards?
 - Scaling?
- 
- A photograph of a rocket launch, showing the rocket ascending from the bottom left towards the top right. The rocket is white with orange and red accents. A large plume of white smoke and fire is visible at the base of the rocket, indicating the launch. The background is a clear blue sky.

ST

Jupiter

Saturn



Uranus

Neptune

Earth →



← Pluto

Earth



Mars



Mercury



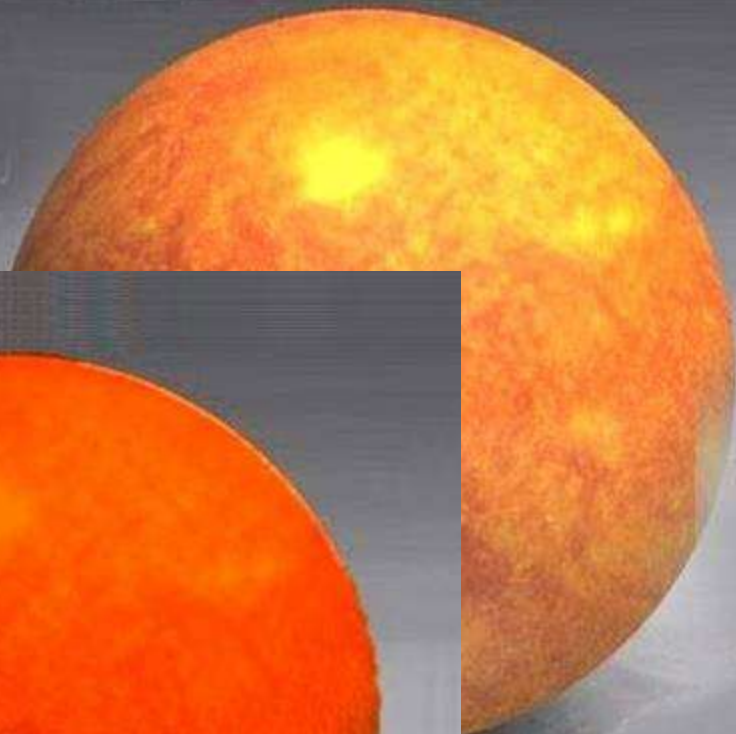
Pluto



TRY

CE

ST



Antares

Betelgeuse



Rigel



Aldebaran

Sun (1 pixel)

Sirius Pollux

Arcturus

Jupiter is invisible at this scale

S



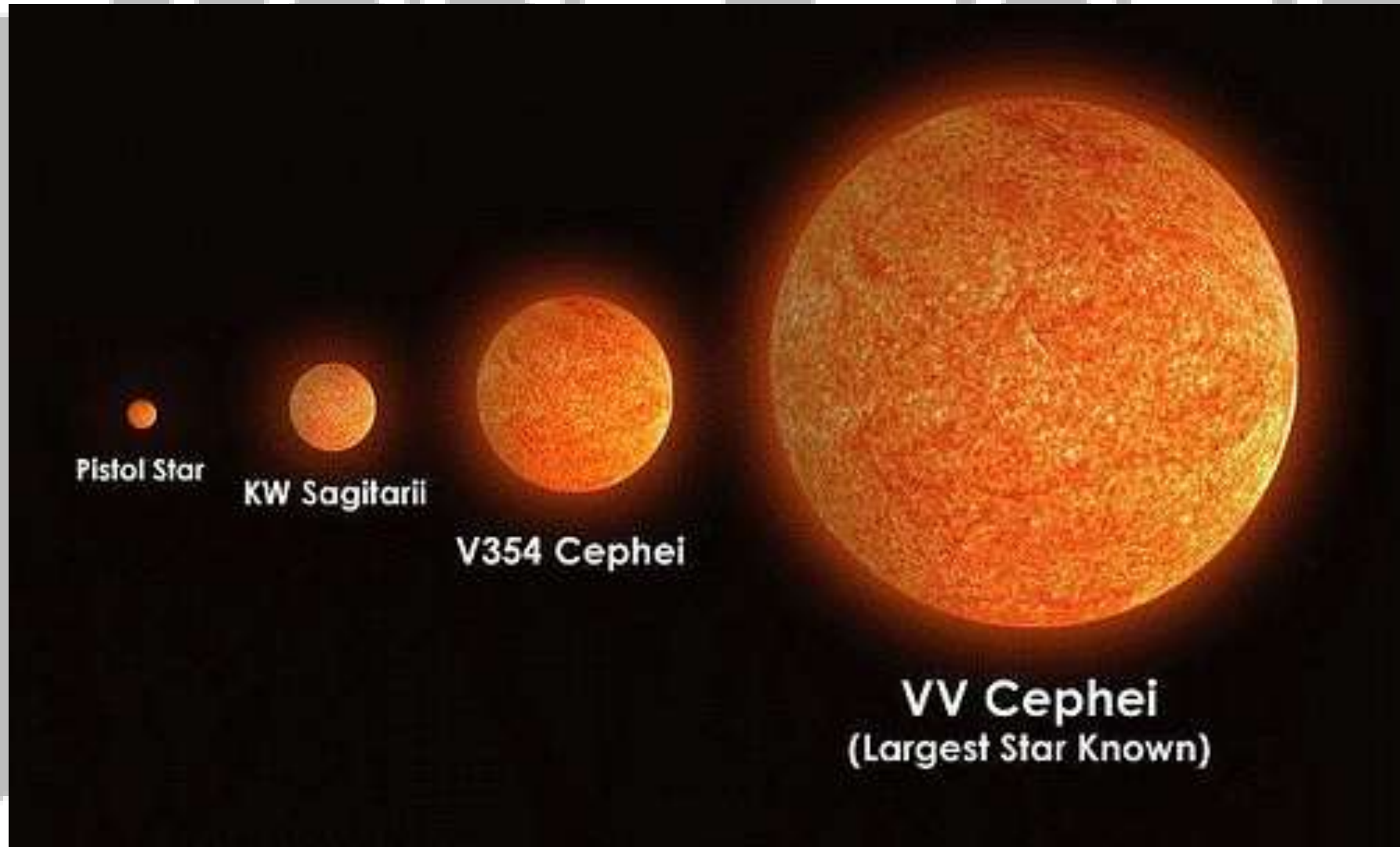


Antares



Pistol Star

STAND BACK



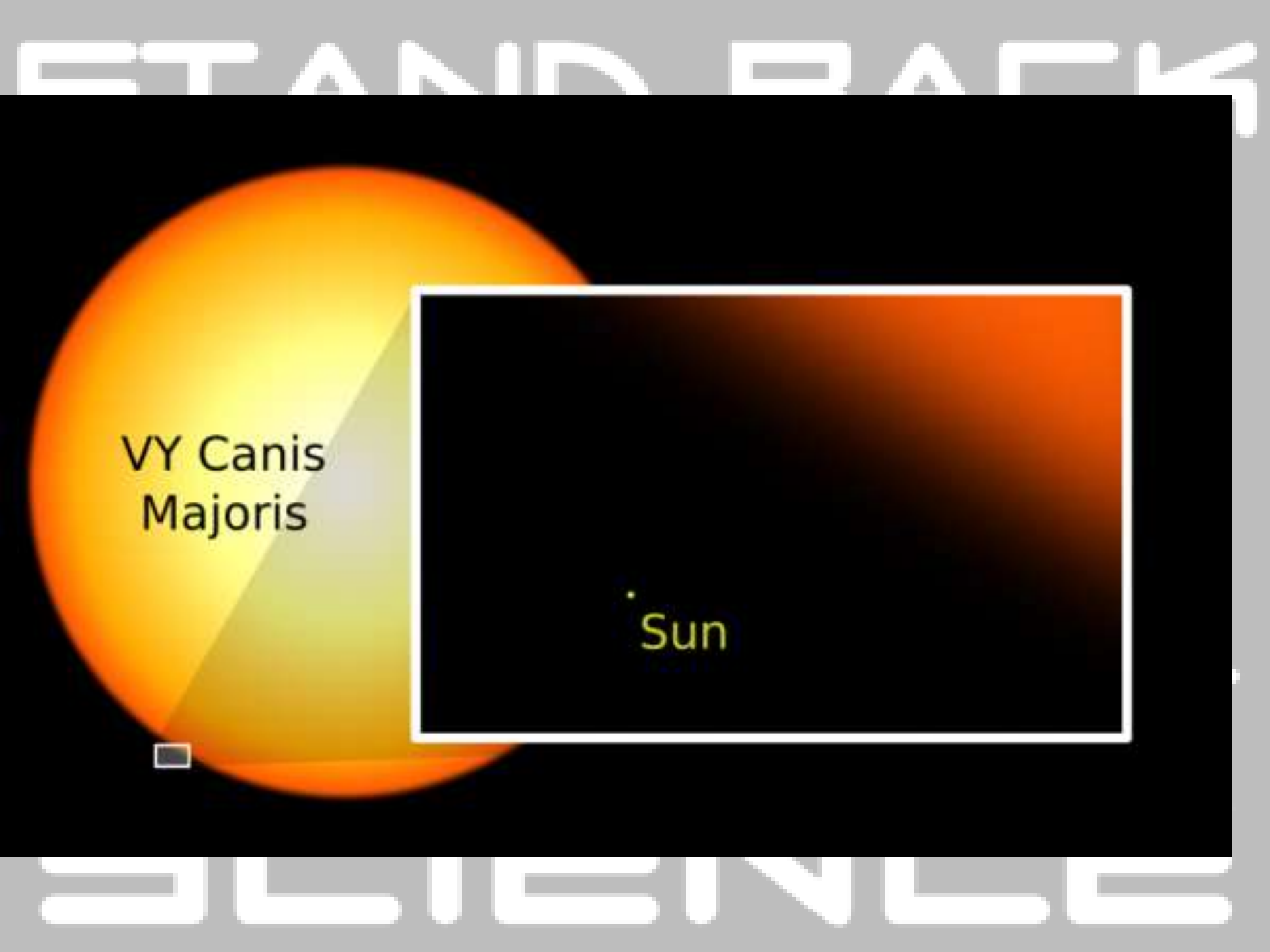
Pistol Star

KW Sagittarii

V354 Cephei

VV Cephei
(Largest Star Known)

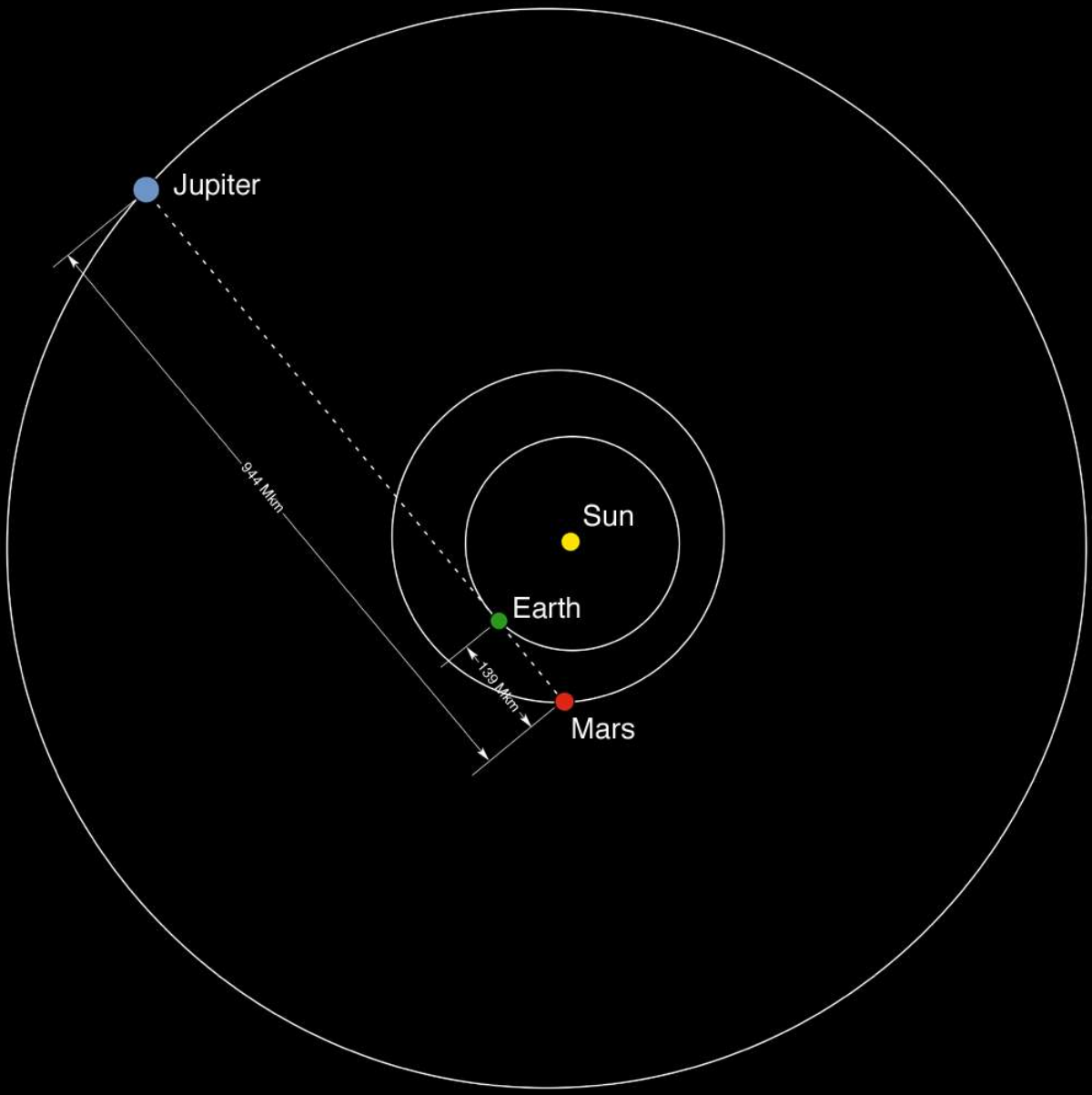
ALIEN

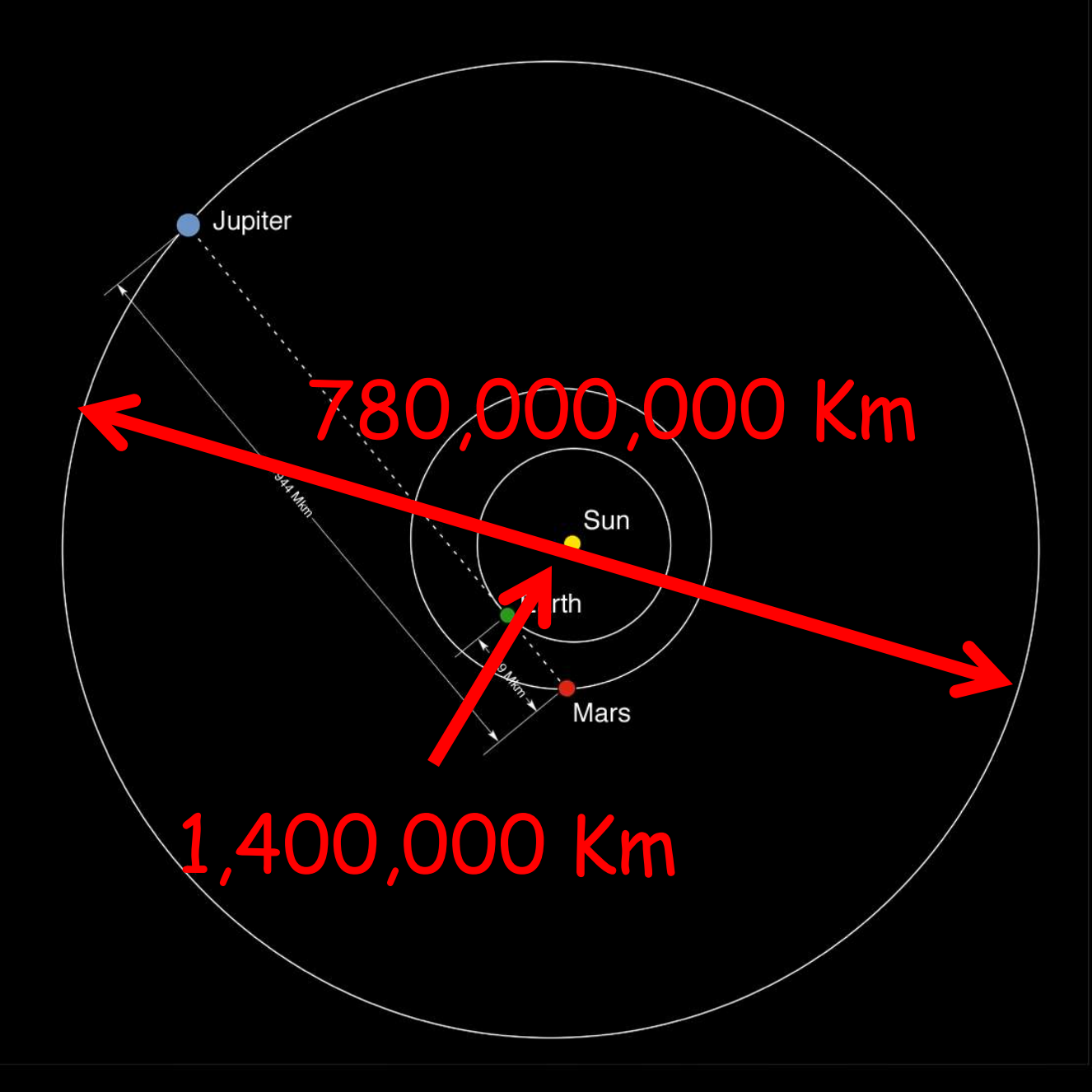


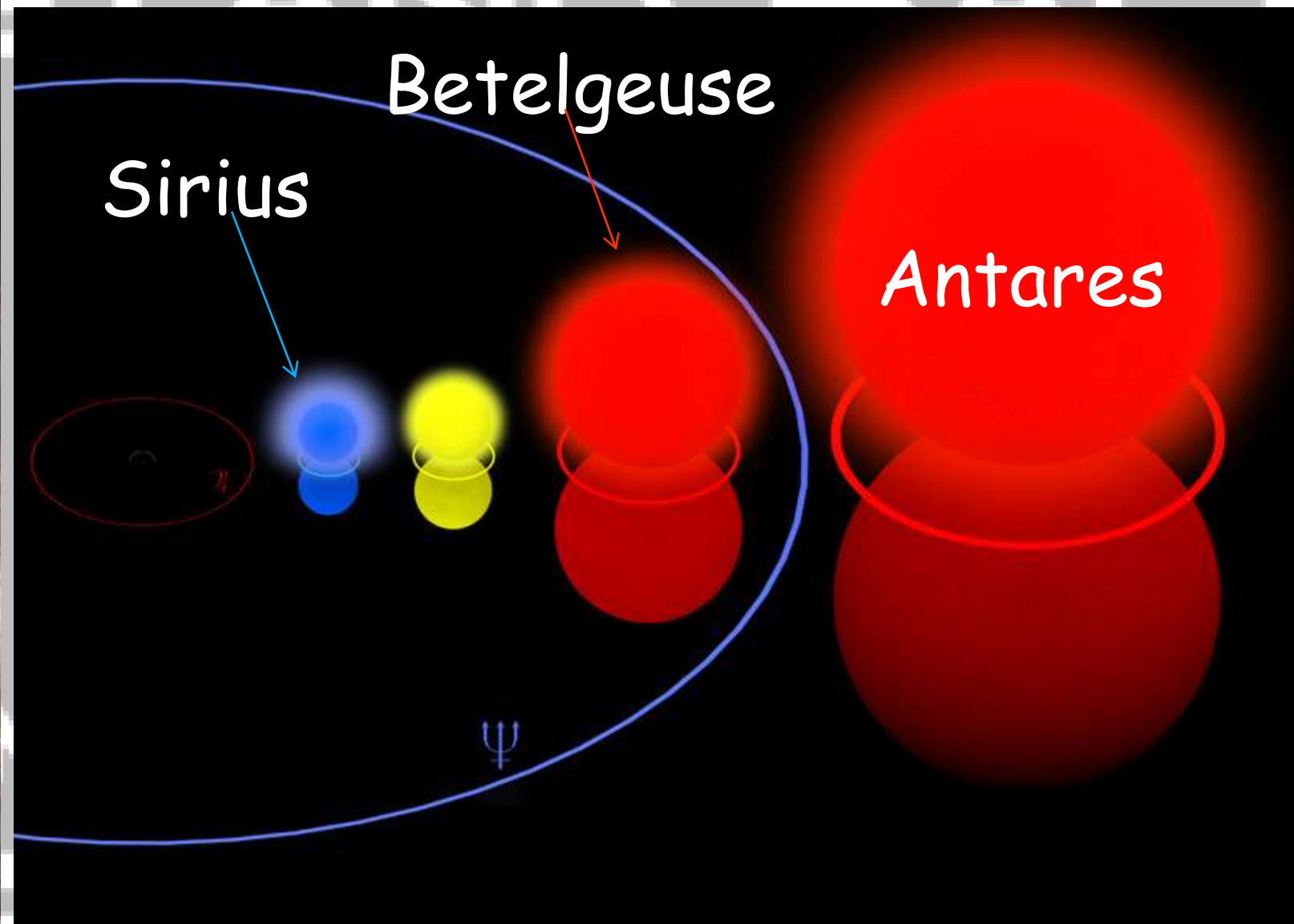
VY Canis
Majoris

Sun

The Extreme Universe: The Dark Side







STANDARD BACK

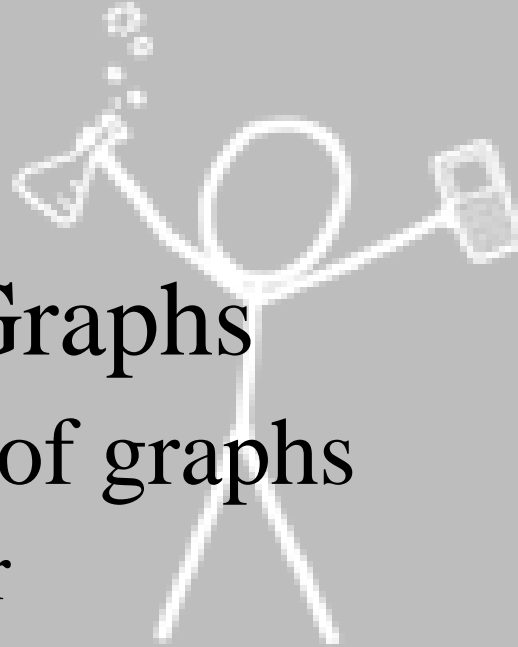
COLLEGE

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

Ch 1 Stuff

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



STAND BACK

I'M GOING TO TRY

SCIENCE

Ch 1 Intro?

- Models, Theories, & Laws
 - *Model* is an *analogy* that explains something tuff. (Wave Model)
 - *Theory* is a detailed *explanation* of an event *backed up by* experimental verifications or *ubber-strong* math (*Gravity, Evolution, Relativity*)
 - *Law* is a wide-ranging theory (LUG, LOCE, LOCM, LOCO...)

Ch 1 Intro?

- Measurement

- ***NO SIG FIGS! YUCKY POO!***

- Uncertainty

- Precision

- Accuracy

- Tolerance



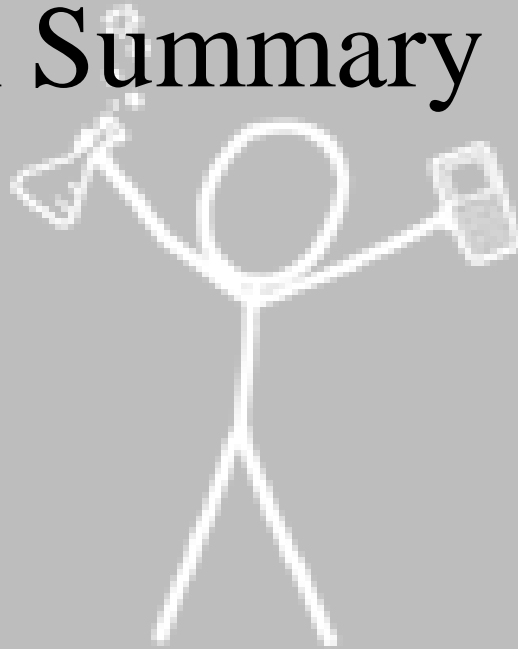
I'M GOING TO TRY

SCIENCE

STAND BACK

Ch 1 Intro?

- SI System Summary
 - Know it!
 - Love it!
 - Live it!



I'M GOING TO TRY
SCIENCE

Ch 1 Intro?

- Now, work together to find answers to *Problems*
 - #1, 17, 22, 28, 29, & 54
p16-18
- Then, you will report your answers to the class on TabletPC.

Ch 1 Intro?

- #1 (I). Age of Universe is ~14 Billion yrs. State this in Sci Notation in yrs and sec.

$$a) 14 \text{ Billion yr} = 1.4 \times 10^{10} \text{ yr}$$

$$b) (1.4 \times 10^{10} \text{ y}) \left(3.156 \times 10^7 \frac{\text{s}}{\text{y}} \right)$$

$$= 4.4 \times 10^{17} \text{ s}$$

Ch 1 Intro?

- #17 (II). Airplane @ 950 km/hr.
Time to travel 1 km?

$$1km \left(\frac{1hr}{950km} \right) \left(\frac{3600sec}{1hr} \right) = 3.8sec$$

Ch 1 Intro?

- #22 (III). *ly* is dist light travels in one yr at 3×10^8 m/s.
 - A. How many m?
 - How many *AU* = $1ly$?
 - $1AU = 1.5 \times 10^{11} m$

I'M GOING TO TRY
SCIENCE

Ch 1 Intro?

- #22

$$\begin{aligned} a) 1ly &= \left(3 \times 10^8 \frac{m}{s} \right) \left(3.156 \times 10^7 s \right) \\ &= 9.46 \times 10^{15} m \end{aligned}$$

$$\begin{aligned} b) (1ly) &\left(\frac{9.462 \times 10^{15} m}{1ly} \right) \left(\frac{1AU}{1.5 \times 10^{11} m} \right) \\ &= 6.31 \times 10^4 AU \end{aligned}$$

Ch 1 Intro?

- #28 (II). Estimate # liters you drink in a lifetime.

$$(75 \text{ y}) \left(365 \frac{\text{d}}{\text{y}} \right) \left(2 \frac{\text{L}}{\text{d}} \right)$$

$$5.5 \times 10^4 \text{ L}$$

STAND BACK

Ch 1 Intro?

- #29 (II). Estimate the volume of your body in cm^3 .

Assume cylindrical :

$$V = \pi r^2 h = \pi (12cm)^2 (1.7m)$$

$$V = 8 \times 10^4 cm^3$$

STAND BACK

Ch 1 Intro?

- #54 (Gen'1). Walk & change latitude by 1 *min* of arc. How far in miles did you travel?

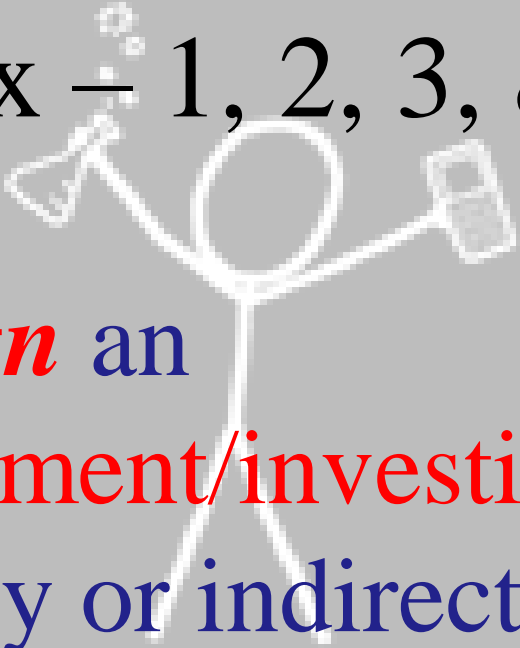
Circular Path :

$$(1 \text{ min}) \left(\frac{1^\circ}{60 \text{ min}} \right) \left(\frac{2\pi R}{360^\circ} \right) \left(\frac{0.621 \text{ m}}{1 \text{ km}} \right)$$

1.15 mi

Ch 2&3 Intro?

- Kinematix – 1, 2, 3, & 4-D
 - LAB #1
 - *Design* an experiment/investigation to directly or indirectly determine the relative motion of an object. *i.e. Boat crossing a flowing river, plane flying in strong wind...*



STAND BACK

The End?

*There is, indeed, HW this week.
Check it out.*

I'M GOING TO TRY
SCIENCE