

2017

**SUSTAINABILITY &
MULTIMODAL TRANSIT
TRIVIA JEOPARDY**



By Paul Bignardi
Chair, APTA Multimodal Operations Planning Subcommittee
San Francisco Municipal Transportation Agency

THIS SESSION BORROWS LIBERALLY FROM THE TV SHOW "JEOPARDY" - WHICH HAS BEEN A FAMOUS AND WELL-LOVED INSTITUTION FOR OVER 50 YEARS IN POPULAR AMERICAN CULTURE.

APTA AND THE TRANSIT STAFF THAT PUT THIS TOGETHER OFFER THIS SESSION IN THE SPIRIT OF FUN AND LEARNING TO ATTENDEES AT THE WORKSHOP / CONFERENCE.



2017 SUSTAINABILITY & MULTIMODAL TRANSIT TRIVIA JEOPARDY

The Transit
You Should
Know ... and
Love

“M” in
Transit and
Sustainability

Electricity
and Water

Common &
Uncommon
Sense

100

100

100

100

200

200

200

200

300

300

300

300

400

400

400

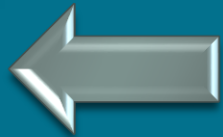
400

Final

INSTRUCTIONS

When opened in Powerpoint: this presentation will operate similar to a true “Jeopardy like” game. Selection of a category and value button on the game board with a mouse click will take the reader to the slide with the correct question. A second and possibly a third – or more clicks will reveal info and an answer. A click on the silver arrow will return the reader to the game board for the next selection to occur. As designed, there is no change to the game board as the game goes on to show which categories and values have been selected. We kept track with a pen and a sheet of paper. There is also no way to keep score between multiple players or teams in the active Powerpoint, so again we used pen and paper. To get a Powerpoint copy, please email Paul Bignardi at paul.bignardi@sfmta.com

When opened as a PDF: entire slides will open at once showing both the question and answer, as well as any photos and images.



THE TRANSIT YOU SHOULD KNOW AND LOVE – 100 POINTS

QUESTION:

Name the year when the National Transit Database was created? For an extra 50 points, what was its original name?



THE TRANSIT YOU SHOULD KNOW AND LOVE – 100 POINTS

QUESTION:

Name the year when the National Transit Database was created? For an extra 50 points, what was its original name?

ANSWER:

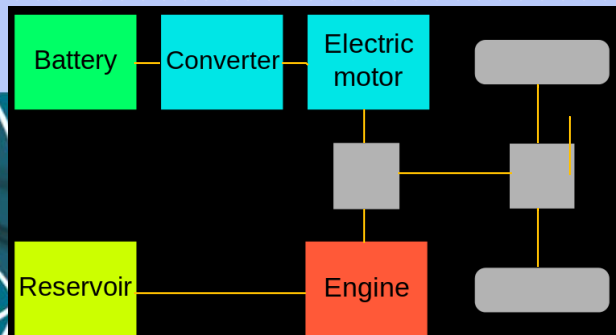
What is 1974 (also will accept 1979 – first annual report).
The original name of the NTD was the “Section 15 report”.



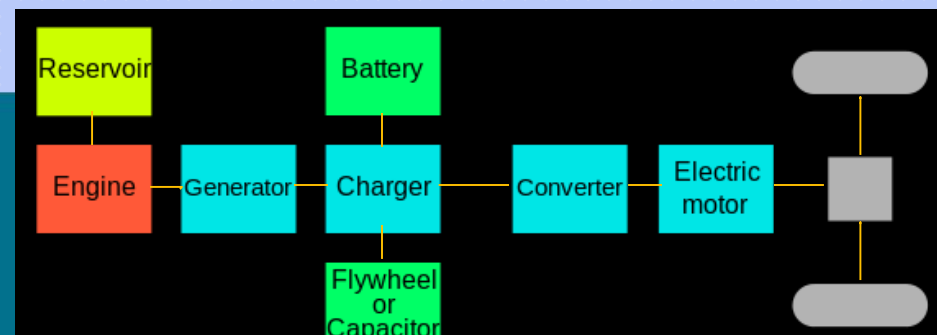
THE TRANSIT YOU SHOULD KNOW AND LOVE – 200 POINTS

QUESTION:

Name the two types of hybrid motor in common use in transit buses today? (Not manufacturers, but different types of motor)



Parallel Hybrid



Series Hybrid

THE TRANSIT YOU SHOULD KNOW AND LOVE – 200 POINTS

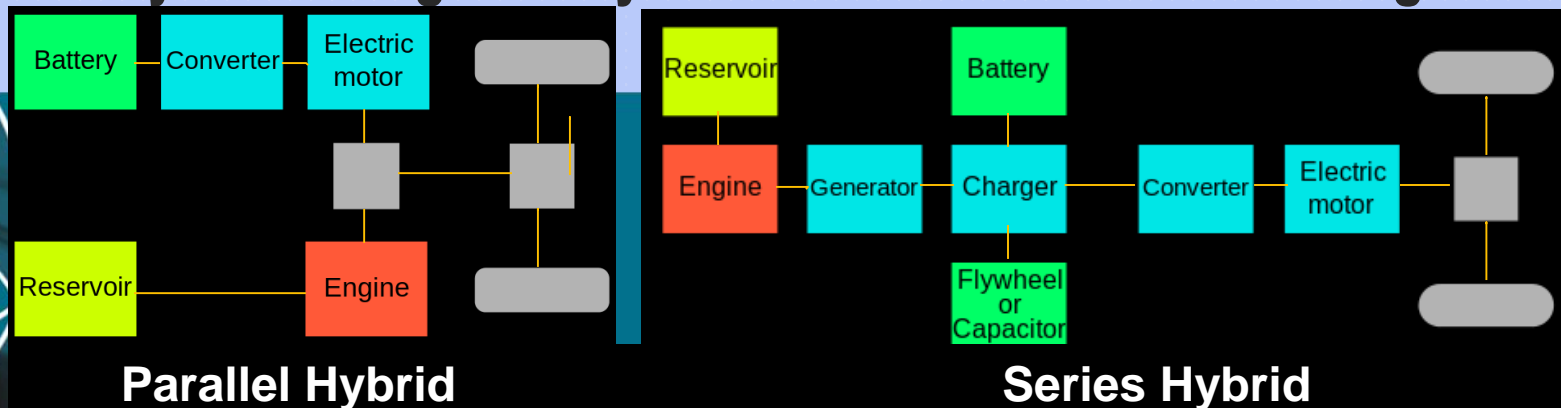
QUESTION:

Name the two types of hybrid motor in common use in transit buses today? (Not manufacturers, but different types of motor)

ANSWER:

What are “parallel” and “series” type motors. A “parallel” motor requires use of a transmission for the fuel (gas/diesel) motor to provide power when in use. A “series” motor does not – both the electric motor and the fuel motor are arrayed in a line, so the fuel motor powers the electric motor directly.

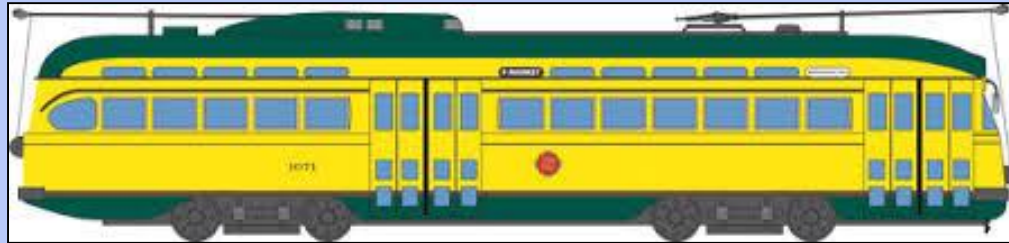
“Series” hybrids are generally more effective in urban settings.



THE TRANSIT YOU SHOULD KNOW AND LOVE – 300 POINTS

QUESTION:

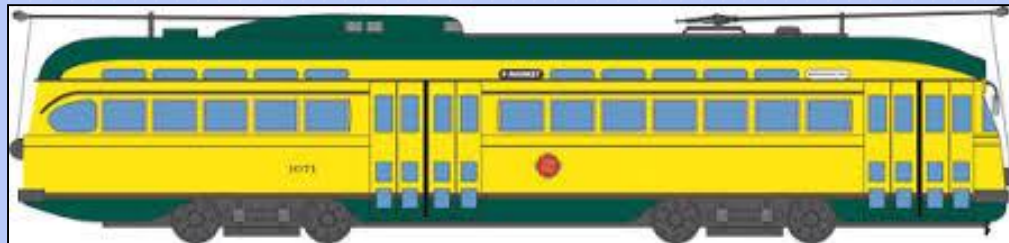
Streetcar service on Twin City Lines ended in Minneapolis on June 19, 1954, but returned after 50 years when the Blue Line opened on June 26, 2004. The streetcar in the graphic was only briefly out of service from 1954-2004, and it operates today, but not in Minneapolis. Where has it operated between 1954 and 2017?



THE TRANSIT YOU SHOULD KNOW AND LOVE – 300 POINTS

QUESTION:

Streetcar service on Twin City Lines ended in Minneapolis on June 19, 1954, but returned after 50 years when the Blue Line opened on June 26, 2004. The streetcar in the graphic was only briefly out of service from 1954-2004, and it operates today, but not in Minneapolis. Where has it operated between 1954 and 2017?



ANSWER:

Where are Newark & San Francisco.

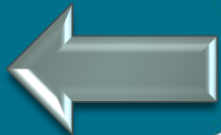
The car in the graphic is Twin City Lines Transit Car #362: sold to Newark NJ in 1953 where it operated as Car #23 for Public Service Coordinated Transport until 2001. In 2004 it was sold to the S.F. Municipal Railway and after a rebuild it continues to operate as Car # 1171 on the F-Line in San Francisco.



THE TRANSIT YOU SHOULD KNOW AND LOVE – 400 POINTS

QUESTION:

Which company is the most popular light rail vehicle (LRV) supplier in North America in 2017, and which is the most popular model?



THE TRANSIT YOU SHOULD KNOW AND LOVE – 400 POINTS

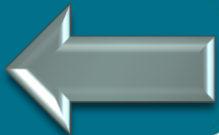
QUESTION:

Which company is the most popular light rail vehicle (LRV) supplier in North America in 2017, and which is the most popular model?

ANSWER:

Who is Siemens, and what is the Model S70 LRV.

In 2017 336 units of this LRV are in operation in 8 cities in the United States and Canada, including Minneapolis, although none are currently in service in Mexico.



“M” IN TRANSIT AND SUSTAINABILITY – 100 POINTS

QUESTION:

Minneapolis in winter is usually a snowy place. What item (two words – one starts with the letter “M”) is a green alternative to be used for snow removal??



“M” IN TRANSIT AND SUSTAINABILITY – 100 POINTS

QUESTION:

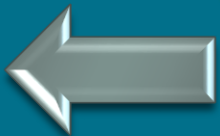
Minneapolis in winter is usually a snowy place. What item (two words – one starts with the letter “M”) is a green alternative to be used for snow removal??

ANSWER:

What is Alfalfa Meal?

Cost about \$1 per lb.

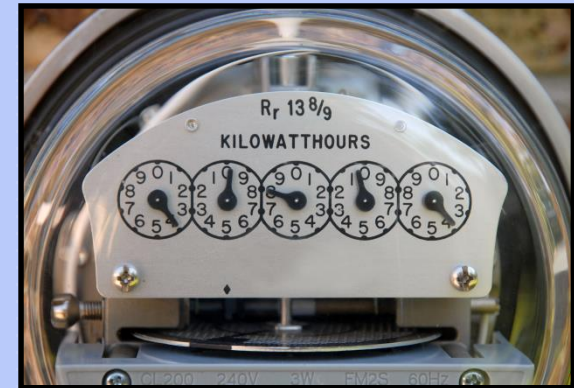
Rock salt costs 20%-50% less,
but corrodes everything



“M” IN TRANSIT AND SUSTAINABILITY – 200 POINTS

QUESTION:

How many kilowatt hours (kWh) of electrical power = the power contained in one gallon of gasoline (gasoline gallon equivalent (GGE))?



“M” IN TRANSIT AND SUSTAINABILITY – 200 POINTS

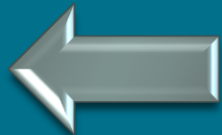
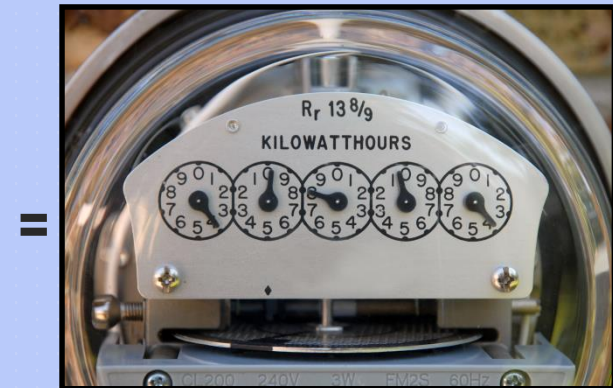
QUESTION:

How many kilowatt hours (kWh) of electrical power = the power contained in one gallon of gasoline (gasoline gallon equivalent (GGE))?

ANSWER:

What is 34.

Answers in the
32-35 range
get points.



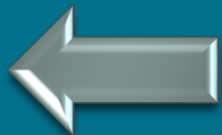
“M” IN TRANSIT AND SUSTAINABILITY – 300 POINTS

QUESTION:

**Will the United States ever go Metric and join the rest of the world?
Convert the following items from their U.S. or Imperial
measurement to a metric measurement:**

- 1) 1 gallon of liquid into liters,**
- 2) 1 yard of linear measure into meters,**
- 3) 61 degrees Fahrenheit into Celsius.**

You have 1minute. All must be correct or zero points.



“M” IN TRANSIT AND SUSTAINABILITY – 300 POINTS

QUESTION:

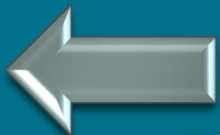
Will the United States ever go Metric and join the rest of the world?
Convert the following items from their U.S. or Imperial measurement to a metric measurement:

- 1) 1 gallon of liquid into liters,
- 2) 1 yard of linear measure into meters,
- 3) 61 degrees Fahrenheit into Celsius.

You have 1minute. All must be correct or zero points.

ANSWER:

- What is
- 1) 1 gallon = 3.7854 liters (3.75 liters is OK)
 - 2) 1 yard = .9144 meters (.9 or 9/10 of a meter is OK)
 - 3) 61 degrees F = 16 degrees C



“M” IN TRANSIT AND SUSTAINABILITY –

DAILY DOUBLE

DAILY DOUBLE

PLACE YOUR BETS:

Write the number of points you want to bet on a sheet of paper.

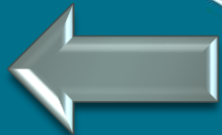
You have 10 seconds to write a number down.



“M” IN TRANSIT AND SUSTAINABILITY – DAILY DOUBLE

QUESTION:

Mileage is the goal. Place your bets! Based on 2016 tests, which vehicle can go further on a full battery charge:
A Tesla Model S car, or a Proterra Catalyst E2 40' bus?



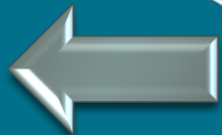
“M” IN TRANSIT AND SUSTAINABILITY – DAILY DOUBLE

QUESTION:

Mileage is the goal. Place your bets! Based on 2016 tests, which vehicle can go further on a full battery charge: A Tesla Model S car, or a Proterra Catalyst E2 40' bus?

ANSWER:

What is the Proterra Catalyst E2 range 350 miles w/ 660 kwh battery pack vs. Tesla Model S range 315 miles w/ 100 kwh battery pack.



ELECTRICITY & WATER – 100 POINTS

QUESTION:

Three LED bulbs are available for purchase: a “warm white”, a “cool white”, and a “daylight”. Which bulb actually provides the hottest light on the Kelvin scale of light color?



ELECTRICITY & WATER – 100 POINTS

QUESTION:

Three LED bulbs are available for purchase: a “warm white”, a “cool white”, and a “daylight”. Which bulb actually provides the hottest light on the Kelvin scale of light color?

ANSWER:

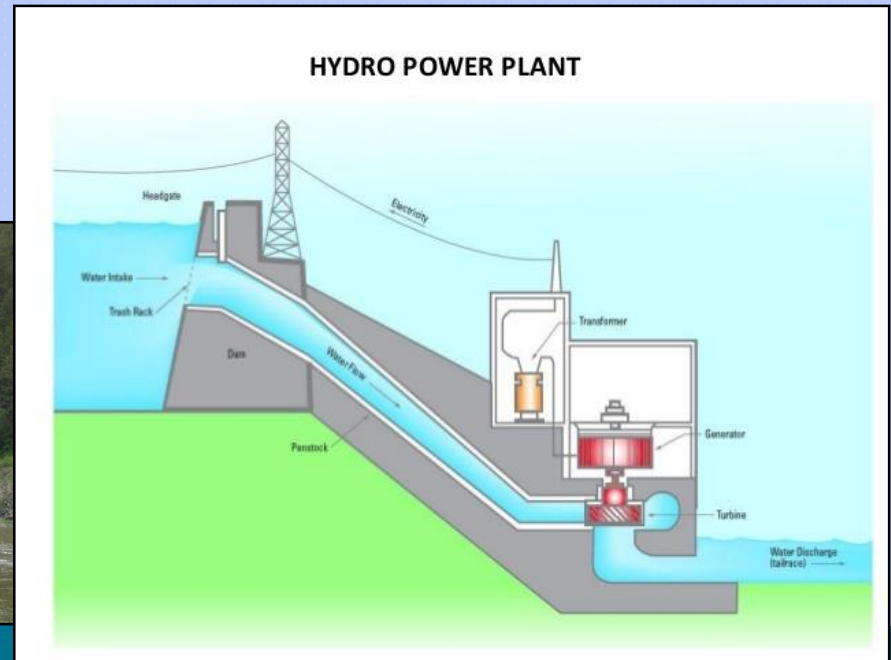
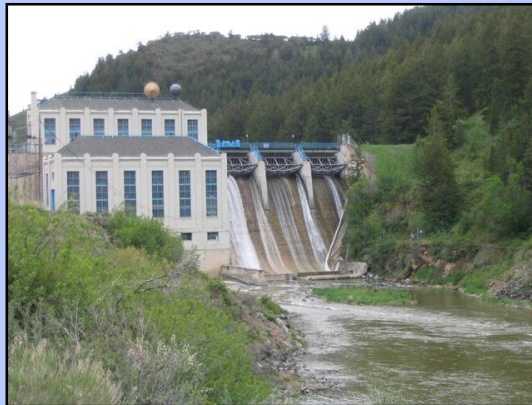
What is the “daylight” bulb.



ELECTRICITY & WATER - 200 POINTS

QUESTION:

How efficient at power generation are modern hydroelectric water turbines (% energy conversion efficiency level)



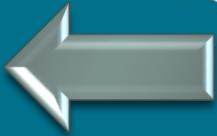
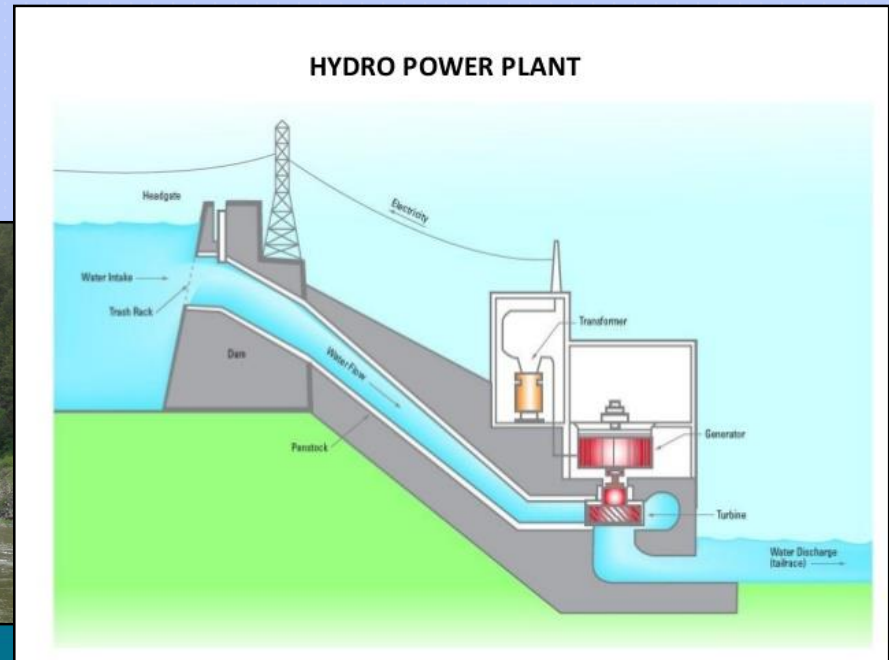
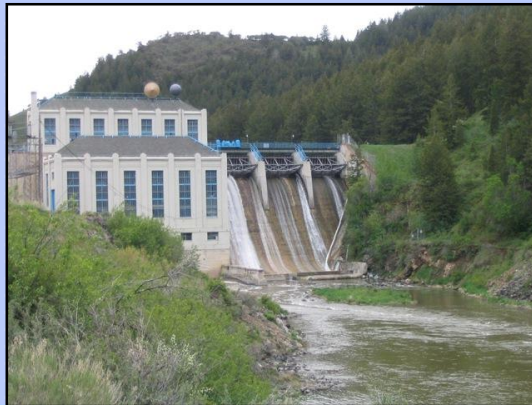
ELECTRICITY & WATER - 200 POINTS

QUESTION:

How efficient at power generation are modern hydroelectric water turbines (% energy conversion efficiency level)

ANSWER:

What is 90% efficiency?
85%-95% earn points.

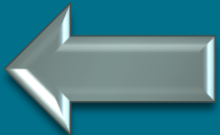
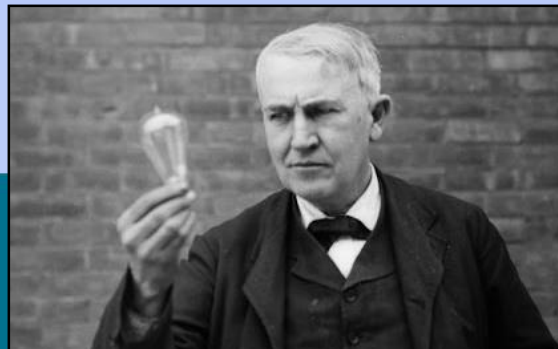


ELECTRICITY & WATER – 300 POINTS

QUESTION:

It is widely known that Thomas Edison invented the first commercial electric light bulb. Where did he invent the bulb and in what year did he invent it?

Must get both right to get points.



ELECTRICITY & WATER – 300 POINTS

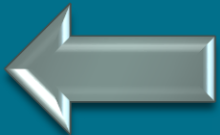
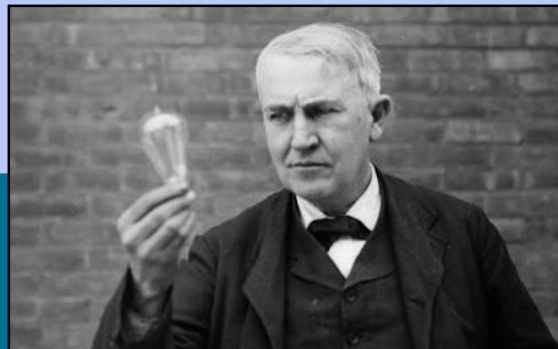
QUESTION:

It is widely known that Thomas Edison invented the first commercial electric light bulb. Where did he invent the bulb and in what year did he invent it?

Must get both right to get points.

ANSWER:

It was invented in 1879 at Edison Labs in Menlo Park, NJ. (1879 is year of first commercial patent filing).



ELECTRICITY & WATER – 400 POINTS

QUESTION:

There is always a music question in this game – here it is.
Which artist of the following three has the most popular Top 40 record to date featuring a song with a strong environmental message: 1) Joni Mitchell – Big Yellow Taxi,

2) John Denver – Calypso,

3) Jack Johnson – With My Own Two Hands



ELECTRICITY & WATER – 400 POINTS

QUESTION:

There is always a music question in this game – here it is.
Which artist of the following three has the most popular Top 40 record to date featuring a song with a strong environmental message: 1) Joni Mitchell – Big Yellow Taxi,

2) John Denver – Calypso,

3) Jack Johnson – With My Own Two Hands



ANSWER:

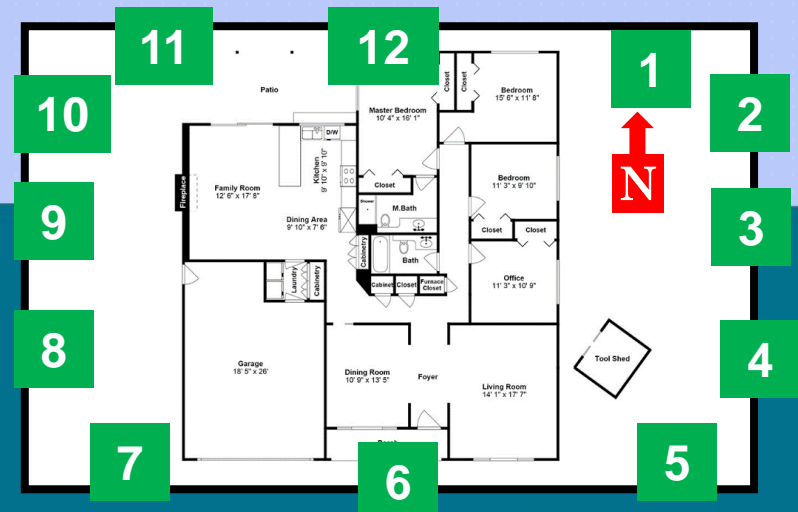
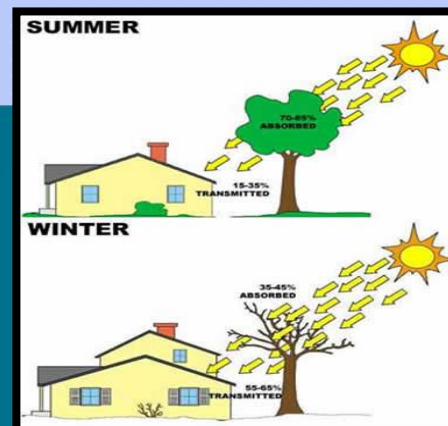
Who is John Denver – Calypso –
1975 - #2 on Top 40 Billboard. Calypso was
named after Jacques Costeau's ship and told
a story of the value of ocean research.



COMMON & UNCOMMON SENSE – 100 POINTS

QUESTION:

Where is the best location to plant a tree to maximize shade and sun effects on a house (or transit building) in both summer and winter, and what is the best type of tree to plant? Must get both right to earn points.



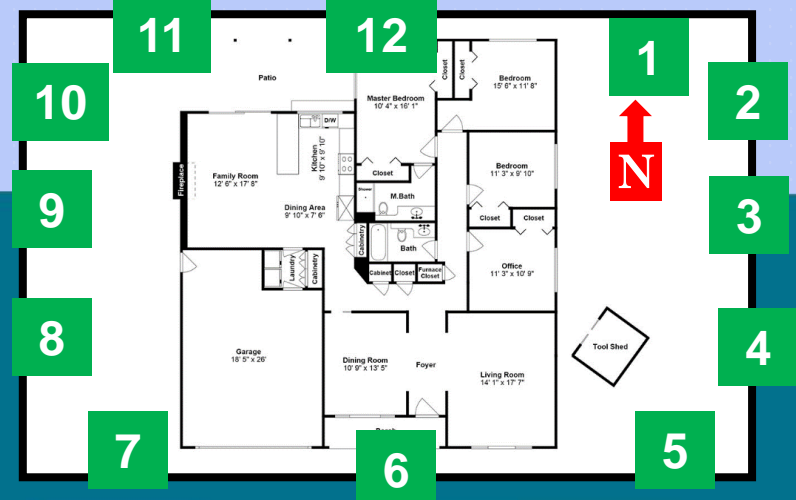
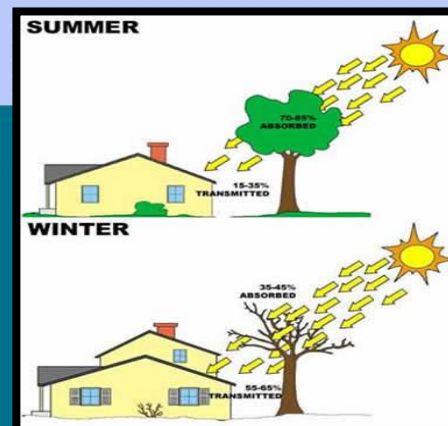
COMMON & UNCOMMON SENSE – 100 POINTS

QUESTION:

Where is the best location to plant a tree to maximize shade and sun effects on a house (or transit building) in both summer and winter, and what is the best type of tree to plant? Must get both right to earn points.

ANSWER:

What is the west / southwest side (spaces 7 or 8), and the best tree type is a large deciduous tree. It provides shade in summer during the hottest time of the day, but lets sunshine in on cold winter days after losing its leaves.



COMMON & UNCOMMON SENSE – 200 POINTS

QUESTION:

In the post American With Disabilities Act era – the standard lengths of transit buses are 30 feet, 40 feet, 45 feet and 60 feet. What is the standard width of a bus in North America?

How wide am I ?



(standard width)



COMMON & UNCOMMON SENSE – 200 POINTS

QUESTION:

In the post American With Disabilities Act era – the standard lengths of transit buses are 30 feet, 40 feet, 45 feet and 60 feet. What is the standard width of a bus in North America?

ANSWER:

What is 102”
or what is 8 feet 6 inches

How wide am I ?



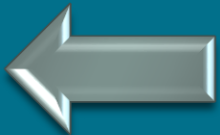
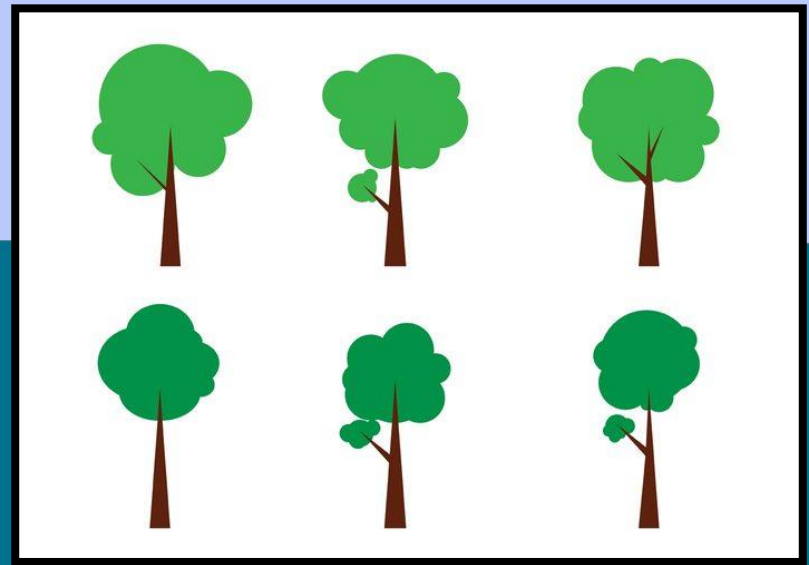
(standard width)



COMMON & UNCOMMON SENSE – 300 POINTS

QUESTION:

How many trees (average) does it take to remove the carbon emitted by burning ten gallons of diesel fuel?



COMMON & UNCOMMON SENSE – 300 POINTS

QUESTION:

How many trees (average) does it take to remove the carbon emitted by burning ten gallons of diesel fuel?



ANSWER:

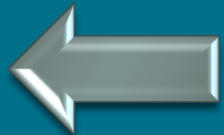
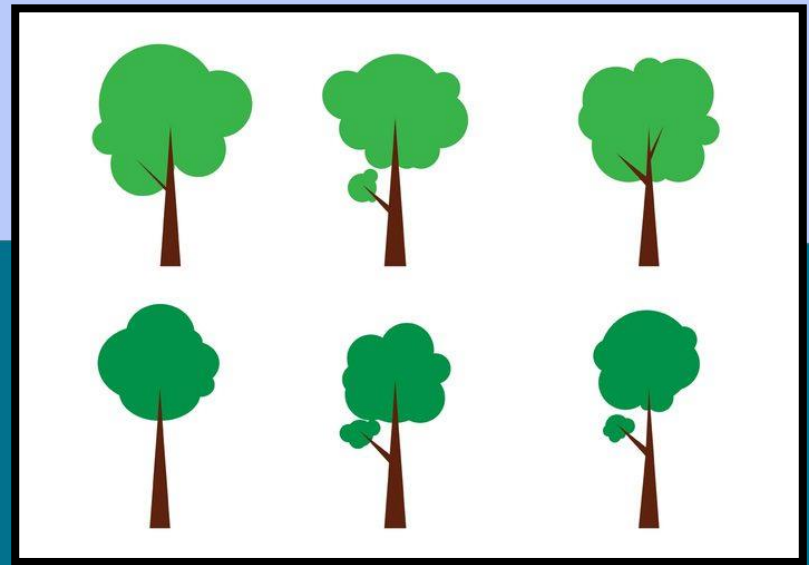
What is 5-6 trees.

A total of 22.4 lbs. of carbon are produced by burning one gallon of diesel fuel, and an

average tree can absorb 40-48

gallons of CO₂ annually

($10 \times 22.4 = 224 / 44 = 5.1$ trees)



COMMON & UNCOMMON SENSE – 400 POINTS

QUESTION:

Is it a criminal violation – punishable by jail time - to avoid paying a transit fare in most North American cities?



COMMON & UNCOMMON SENSE – 400 POINTS

QUESTION:

Is it a criminal violation – punishable by jail time - to avoid paying a transit fare in most North American cities?

ANSWER:

What is Yes.

In most U.S., Canadian and Mexican cities, failing to pay a transit fare is a misdemeanor / minor offense – punishable by a fine and jail time of up to 1 year. Some U.S cities are moving away from this standard – to only issuing a fine as many believe this is a penalty that unfairly impacts poor people and people of color.





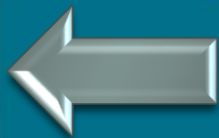
FINAL JEOPARDY

TOPIC:

BUSES

PLACE YOUR BETS:

Write the number of points you want to bet on a sheet of paper.
You have 30 seconds to write a number down.





FINAL JEOPARDY

BUSES

QUESTION

Where is this place and why is it important ?





FINAL JEOPARDY

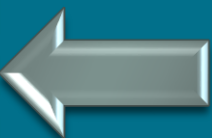
BUSES

QUESTION

Where is this place and why is it important ?

ANSWER:

What / where is Altoona. These are Photos of the Altoona Test Track & Maintenance Facility in Altoona, PA
A bus must pass tests that are performed at this facility to be eligible for US FTA funding support.



2017
SUSTAINABILITY &
MULTIMODAL
TRANSIT TRIVIA

THANK YOU



SOURCES

TYSK#1: FTA website

TYSK#2: Wikipedia, InTechOpen.com, other websites

TYSK#3: Market Street Railway website

TYSK#4: Siemens Corp website, FTA website, Wikipedia – Light Rail in North America

MIS#1: Farmers Almanac, Plowsite.com, sustainability consulting. Com

MIS#2: Fuel Economy Impact Analysis of RFG. United States Environmental Protection Agency

MIS#3: Daily Double – multiple Wikipedia websites

MIS#4: Proterra Bus and Tesla websites

E&W #1 Energyearth.com, lumens.com, other internet sources

E&W #2 Wikipedia several sites

E&W #3: Edison NHS site, W. Orange NJ., Wikipedia, other internet sources

E&W #4: American Top 40 online archives, Billboard archives

CUS#1: Landscape for Life website, Arbor Day website

CUS#2: FTA website, many other information sources

CUS#3 U.S. Energy Information administration, Trees and Forest & You William David Godfrey website

CUS #4: FTA website, SFMTA website, CA legislature website, NYMTA website

FINAL: FTA website, Wikipedia



