SCHOOL QUESTIONS SPECS
(updated 09/12/2006)

How well do UCSD undergraduates remember facts they learned in school?

<u>Task</u>:

Answer a series of questions about U. S. History, U. S. and world Geography, Science, and Mathematics. Determine whether or not students learned this knowledge, approximately when they learned it, and how much of it they remember.

<u>Stimuli</u>:

Questions are arranged in four topics: (1) U. S. History, (2) U. S. and World Geography, (3) Science, and (4) Mathematics. For each subject, randomize the order of topics.

Present the following:
   (1) Question + the four multiple choice options.
   (2) Confidence judgment: " How confident are you in your answer?" (provide check boxes from 1 to 5, with 1 = not at all confident, 3 = somewhat confident, 5 = very confident).

After subject chooses an answer and makes a confidence judgment, present the following:
   (1) A button that says "Click for Answer"
   (2) Feedback: "Correct answer is <provide correct letter>"
   (3) "Prior to now, do you believe there was ever a time when you could have answered this correctly?" (provide check boxes with options "yes" or "no")
   (4) If subject clicks "yes" to #3, ask "How do you remember learning this information? Check all that apply" (provide check boxes with options "school," "someone told me," "read it somewhere," and "other: please specify." Then ask "What grade were you in when you learned this information? Check all that apply" (provide check boxes with options "K," "1," "2," "3," "4," "5," "6," "7," "8," "9," "10," "11," and "12")
   (5) If subject clicks "no" to #3, then go on to next question.

Allow subject unlimited time to answer questions. Present "Continue" button in between each question.

<u>Demographic Information</u>:

At the beginning of the experiment, collect the following from each subject:

   1) What is your gender? (check boxes with options "male" or "female")
   2) What is your age? (drop-down options 18-65?)
   3) What is your current year as a student at UCSD? (check boxes with options "1," "2," "3," "4," "5," "6," "6+"
   4) What is your academic major? (alphabetized drop-down options)

5) What is your country of origin? (alphabetized drop-down options)
6) Prior to entering college, did you ever attend school in the United States? (check boxes with options "yes" or "no")
7) If Yes to #6, please indicate which grade levels you completed in the United States. Check all that apply (provide check boxes with options "K," "1," "2," "3," "4," "5," "6," "7," "8," "9," "10," "11," and "12")
8) If Yes to #6, please indicate the state(s) in which you attended school. Check all that apply (provide check boxes for 50 states, alphabetized)
9) If more than 1 box was checked for #8, please indicate what grade level(s) you completed in that state.

Instructions:
In this experiment, we are going to ask you some questions about things you might have learned in school when you were younger. Starting on the next screen, you will see a series of questions about U. S. History, Geography, Science, and Mathematics. The mathematics questions will not require computation, so *you will not need a calculator*.

For each question, we would like you to do three things:

(1) Answer each question to the best of your knowledge
(2) Tell us whether or not you learned that information prior to now
(3) Tell us approximately what grade you were in (K-12) when you learned that information

If you have any questions, ask the experimenter now. Click "Continue" to begin.

U. S. History
Present questions 1-15 in random order

1) The United States entered World War II after Japan did what? (answer – b)
   a) surrounded U. S. bases on Guam
   b) bombed Pearl Harbor
   c) captured Guadalcanal
   d) invaded the Philippines
   e) began killing Jewish-Japanese Citizens

2) What event in the 1800's doubled the size of the United States? (answer-d)
   a) War of 1812
   b) Virginia Plan
   c) Founding of Washington, D.C.
   d) Louisiana Purchase
   e) Oklahoma Land Rush

3) What country sponsored the voyage of Christopher Columbus? (answer –a)
   a) Spain
   b) Portugal

c) England
d) Italy
e) France

4) Who became the leader of the first permanent colony in the United States? (answer – b)
   a) John Rolfe
   b) John Smith
   c) Benjamin Franklin
   d) William Penn
   e) George Washington

5) What weapon was most widely used during the American Revolutionary War? (answer- c)
   a) Shotgun
   b) Revolver
   c) Musket
   d) Pistol
   e) Gatling Gun

6) The Boston Tea Party was the colonists' way of protesting against what? (answer = d)
   a) slavery
   b) unfair working conditions
   c) harsh drug laws
   d) taxes
   e) British merchants

7) In what month and year did the greatest Stock Market crash of the 20th century occur? (answer = c)
   a) November, 1919
   b) October 1922
   c) October, 1929
   d) December, 1929
   e) October, 1939

8) Who was president of the United States during the beginning of the Great Depression? (answer = a)
   a) Herbert Hoover
   b) Harry Truman
   c) Calvin Coolidge
   d) Woodrow Wilson
   e) Warren Harding

9) Who was the author of the Declaration of Independence? (answer = c)
   a) George Washington
   b) Thomas More
   c) Thomas Jefferson

d) Benjamin Franklin
e) John Hancock

10) In what year was the U. S. Constitution written? (answer = e)
   a) 1870
   b) 1905
   c) 1776
   d) 1814
   e) 1787

11) Who was the second president of the United States? (answer = e)
   a) James Monroe
   b) Alexander Hamilton
   c) Andrew Jackson
   d) Theodore Roosevelt
   e) John Adams

12) In what year did Alaska and Hawaii become the 49th and 50th U. S. states? (answer = d)
   a) 1918
   b) 1938
   c) 1947
   d) 1959
   e) 1964

13) On what city did the U. S. drop the atomic bomb in 1945? (answer = e)
   a) Moscow
   b) Berlin
   c) Seoul
   d) Tokyo
   e) Hiroshima

14) The Statue of Liberty was given to the U. S. from what country? (answer = b)
   a) England
   b) France
   c) Russia
   d) Germany
   e) Canada

15) Who guided the expedition of Lewis and Clark in the early 1800's? (answer = a)
   a) Sacagawea
   b) Pocahontas
   c) Squanto
   d) Geronimo
   e) Tecumseh

U. S. and World Geography
Questions 1-15 will be presented first, in random order

1) What is the world's largest country? (answer – a)
   a) Russia
   b) China
   c) United States
   d) Brazil
   e) Canada

2) What part of Korea is communist? (answer – e)
   a) All of Korea is communist
   b) West
   c) South
   d) East
   e) North

3) What is the capital of China? (answer-d)
   a) Shanghai
   b) Guangzhou
   c) Taipei
   d) Beijing
   e) Hong Kong

4) What is the country directly north of China? (answer – a)
   a) Mongolia
   b) Russia
   c) Korea
   d) Thailand
   e) Nothing, there is no country north of China.

5) What is the capital of Canada? (answer- d)
   a) Quebec
   b) Toronto
   c) Vancouver
   d) Ottawa
   e) Montreal

6) What country has the largest population in the world? (answer = c)
   a) United States
   b) Japan
   c) China
   d) India
   e) Brazil

7) What is the world's largest ocean? (answer = a)

a) Pacific
b) Atlantic
c) Arctic
d) Indian
e) Southern

8) How many continents are on the earth? (answer = b)
   a) 5
   b) 7
   c) 9
   d) 10
   e) 11

9) What mountain has the highest elevation in the world? (answer = d)
   a) Pike's Peak
   b) Mount Whitney
   c) Mount McKinley
   d) Mount Everest
   e) Machu Pichu

10) What city has the largest population in the world? (answer = b)
   a) New York
   b) Tokyo
   c) Hong Kong
   d) Rio De Janeiro
   e) Mexico City

11) What is the world's largest island? (answer = b)
   a) Australia
   b) Greenland
   c) Ireland
   d) England
   e) Japan

12) Which continent contains the largest number of countries? (answer = e)
   a) North America
   b) South America
   c) Asia
   d) Europe
   e) Africa

13) What is the official language of Brazil? (answer = e)
   a) Spanish
   b) English
   c) German
   d) French

e) Portuguese

14) What two bodies of water are connected by the Panama canal? (answer = c)
    a) The Atlantic Ocean and the Gulf of Mexico
    b) The Pacific Ocean and the Gulf of Mexico
    c) The Pacific Ocean and the Caribbean Sea
    d) The Atlantic Ocean and the Caribbean Sea
    e) The Caribbean Sea and the Gulf of Mexico

15) What country is directly south of Scotland? (answer = a)
    a) England
    b) France
    c) Ireland
    d) Germany
    e) Holland

Geography – U. S. States
Present questions 16-23 in random order

(images can be found in Tara → Shana → School Questions → Maps-Irene → U. S. States → U. S. places Real → School Questions)

16) What is the name of the U.S. state indicated by the arrow? (answer = b)
    a) Missouri
    b) Iowa
    c) Minnesota
    d) Nebraska
    e) Wisconsin

17) What is the name of the U.S. state indicated by the arrow? (answer = c)
    a) North Dakota
    b) Wisconsin
    c) Minnesota
    d) Iowa

e) Michigan

18) What is the name of the U.S. state indicated by the arrow? (answer = d)
      a) Alabama
      b) Georgia
      c) Louisiana
      d) Mississippi
      e) Arkansas

19) What is the name of the U.S. state indicated by the arrow? (answer = b)
      a) New York
      b) Pennsylvania
      c) New Jersey
      d) Delaware
      e) Tennessee

20) What is the name of the U.S. state indicated by the arrow? (answer = d)
  a) Kentucky
  b) Arkansas
  c) Illinois
  d) Tennessee
  e) North Carolina

21) What is the name of the U.S. state indicated by the arrow? (answer = c)
  a) Nevada
  b) Colorado
  c) Utah
  d) Arizona
  e) Wyoming

22) What is the name of the U.S. state indicated by the arrow? (answer = e)
  a) Oregon
  b) Montana
  c) Iowa
  d) North Dakota
  e) Idaho

23) What is the name of the U.S. state indicated by the arrow? (answer = e)
   a) Colorado
   b) Nebraska
   c) Oklahoma
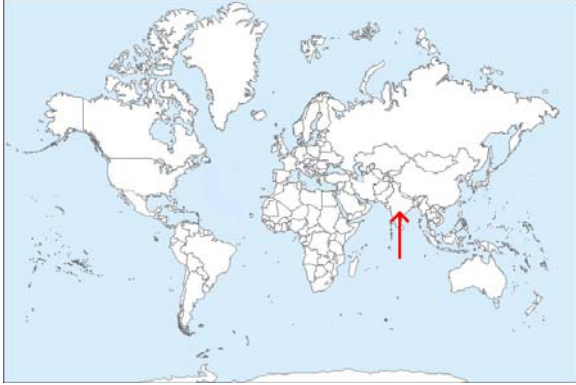   d) Missouri
   e) Kansas

Geography – World
Present questions 24-30 in random order

(images can be found in Tara → Shana → School Questions → Maps-Irene → World → world countries – blue ocean Real → School Questions)

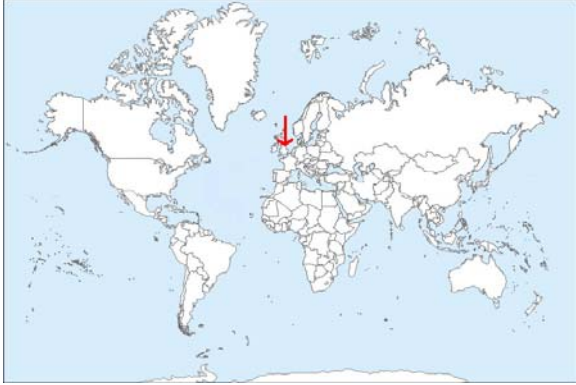24) What is the name of the country indicated by the arrow? (answer = a)
   a) India
   b) Afghanistan
   c) Iran
   d) Saudi Arabia
   e) Turkey

25) What is the name of the country indicated by the arrow? (answer = d)
    a) Finland
    b) Norway
    c) Sweden
    d) Iceland
    e) Scotland
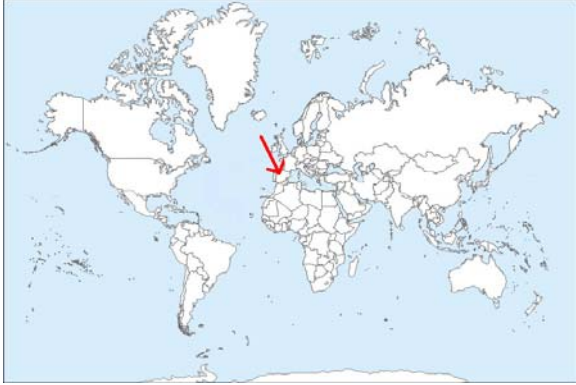

26) What is the name of the country indicated by the arrow? (answer = c)
    a) Ireland
    b) France
    c) England
    d) Norway
    e) Denmark

27) What is the name of the country indicated by the arrow? (answer = b)
    a) Iceland
    b) Greenland
    c) Newfoundland
    d) Finland
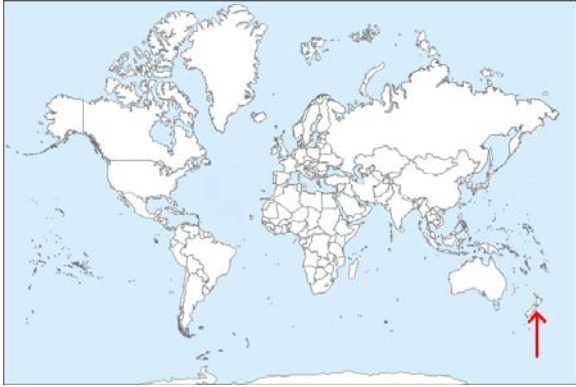   e) Sweden

28) What is the name of the country indicated by the arrow? (answer = a)
    a) Spain
    b) Portugal
    c) Morocco
    d) Italy
    e) Germany

29) What is the name of the country indicated by the arrow? (answer = a)
      a) Iran
      b) Turkey
      c) Pakistan
      d) Saudi Arabia
      e) Afghanistan

30) What is the name of the country indicated by the arrow? (answer = e)
      a) Tasmania
      b) Costa Rica
      c) Australia
      d) Ecuador
      e) New Zealand

Science
Present questions 1-15 in random order

1. What normally causes the waves on the ocean? (answer = a)
   a. The wind on the surface of the ocean
   b. The moon's gravity
   c. Volcanic activity at the bottom of the ocean
   d. Seismic activity at the bottom of the ocean
   e. The sun's gravity

2. If you drilled into the ground from any given spot on Earth, what would you eventually encounter? (answer = e)
   a. permafrost
   b. basalt
   c. granite
   d. coal
   e. molten iron and nickle

3. What unit of time results when the Earth spins once around its axis? (correct = b)
   a. 1 hour
   b. 1 day
   c. 1 week
   d. 1 month
   e. 1 year

4. What causes most of Earth's tsunamis? (correct = d)
   a. Severe winds in remote parts of the ocean
   b. Asteroids landing in the ocean
   c. Gravitational pull from the moon
   d. Underwater earthquakes

e. Underwater volcanic eruptions

5. What percentage of the earth is covered in water? (answer = d)
    a. 90%
    b. 20%
    c. 50%
    d. 70%
    e. 30%

6. What is the smallest unit of matter that cannot be broken down by chemical means?
   (answer = a)
    a. Atom
    b. Molecule
    c. Cell
    d. Neutron
    e. Proton

7. Who discovered the laws of motion? (answer = c)
    a. Michael Faraday
    b. Albert Einstein
    c. Isaac Newton
    d. Paul Dirac
    e. Niels Bohr

8. What causes the ocean's tides? (answer = d)
    a. The gravity of the sun interacts with the gravity of the moon
    b. The wind interacts with the gravity of the moon
    c. The wind interacts with the gravity of the earth
    d. The gravity of the earth interacts with the gravity of the moon
    e. The wind interacts with the gravity of the sun

9. How many planets are in our solar system? (answer = c)
    a. 12
    b. 10
    c. 9
    d. 7
    e. 6

10. Why is ocean water salty? (answer = c)
    a. Salt is deposited directly into the ocean from rain
    b. Fish and other animals that live in the ocean emit salt when they decay
    c. Salt is washed out of the land and carried to the sea by rivers and glaciers
    d. The plants that live in the ocean emit salt when they decay

e. Salt is contained in the chemicals that humans dump into the ocean

11. What causes thunder? (answer = b)
    a. The momentum of the lightning bolt striking the Earth
    b. The change in air temperature surrounding a lightning bolt
    c. The scattering of the air around a lightning bolt
    d. The interaction between moisture and electricity
    e. The connection between two or more lightning bolts

12. What is the main reason why leaves change color in the fall? (answer = e)
    a. The air becomes colder
    b. Burrowing insects consume the tree's nutrients
    c. There is less moisture in the ground
    d. There is less moisture in the air
    e. There are fewer hours of sunlight

13. Why is the temperature colder during the winter than during the summer? (answer = a)
    a. During the winter, sunlight does not shine directly on some parts of Earth because of the tilt of Earth's axis
    b. During the winter, Earth is farther away from the sun than during the summer
    c. During the winter, sunlight does not shine directly on Earth because there are more clouds in the atmosphere
    d. During the winter, the sun gives off a smaller amount of light
    e. During the winter, sunlight does not shine directly on Earth because other planets and asteroids are in-between Earth and the sun

14. Why is the desert so cold at night? (answer = b)
    a. Because of the desert's open space, the heat acquired from the daytime is spread out over too large a distance
    b. In the desert there is not enough moisture in the air to hold in the heat acquired during the daytime
    c. Heat rises, and the desert's altitude is too low to contain the head acquired from the daytime
    d. The desert does not have enough plants to hold in the heat acquired from the daytime
    e. In the desert, there is nothing to block the strong winds that cool the air temperature

15. What causes the movement of Earth's tectonic plates? (answer = e)
    a. Erosion of the continents
    b. Storms under the surface of the ocean
    c. The rotation of Earth on its axis

d. The gravitational pull from the moon
e. The movement of molten rock in the Earth's core

Mathematics
Present questions 1-15 in random order

1. What is the Pythagorean Theorem? (answer = c)
   a. $A+B=C$
   b. $2A+2B=2C$
   c. $A^2+B^2=C^2$
   d. $A^3+B^3=C^3$
   e. $A*B=C$

2. In $(3+2)^2 - 8$, which operation would you do first? (answer = e)
   a. 3^2
   b. $8+2$
   c. 8^2
   d. 2^2
   e. $3+2$

3. How many degrees are in the sum of the three angles of a triangle? (answer = e)
   a. $360°$
   b. $90°$
   c. $270°$
   d. $250°$
   e. $180°$

4. How many degrees are in the sum of all of the angles of a circle? (answer = a)
   a. $360°$
   b. $90°$
   c. $270°$
   d. $180°$
   e. $250°$

5. What is the formula for computing the area of a circle as a function of the radius r? (answer = b)
   a. πr
   b. πr^2
   c. πr^3
   d. $2\pi r$
   e. $\pi^2 r$

6. What is an integer? (answer = a)
   a. A whole number
   b. A fraction

    c. A decimal
    d. An imaginary number
    e. A prime number

7. In 1/2 + 2/3 what operation would you do first? (answer = d)
    a. $1 + 2$
    b. $2 + 3$
    c. $1 * 2$
    d. $2 * 3$
    e. $2 / 3$

8. What equation would you use to find the slope of a line? (answer = c)
    a. $y^2 = mx^2 + b$
    b. $y = mx - b$
    c. $y = mx + b$
    d. $y = 2mx + b$
    e. $y = bx - m$

9. In the number 0.5143, what number is in the hundredth place? (answer = b)
    a. 5
    b. 1
    c. 4
    d. 3
    e. 0

10. In the number 14,395, what number is in the thousands place? (answer = e)
    a. 3
    b. 1
    c. 5
    d. 9
    e. 4

11. In the equation $x^2 + 1 = 2$, what operation would you do first? (answer = d)
    a. $2 + 2$
    b. 2^2
    c. 1^2
    d. $2 - 1$
    e. $1 - 2$

12. If a circle has a radius of 3 feet, what is its circumference C? (answer = a)
    a. $C = 2\pi(3)$
    b. $C = \pi(3)6$
    c. $C = 2\pi(6)$
    d. $C = \pi(3)$
    e. $C = \pi(3)^2$

13. If one side of a square is 5 inches, what is its area A? (answer = b)
   a. $A = (5 * 2)^2$
   b. $A = 5 * 5$
   c. $A = 5 * 2$
   d. $A = 5 + 5 + 5 + 5$
   e. $A = 5^4$

14. How do you solve $6^{.5}$? (answer = c)
   a. $6 / 5$
   b. $6 * 3$
   c. $\sqrt{6}$
   d. $\sqrt{3}$
   e. $6 / 3$

15. Which of the following numbers has the largest absolute value? (answer = d)
   a. -15
   b. 12
   c. .22
   d. 19
   e. -.30