

1991 Florida High School Academic Tournament

Introduce yourself.

Welcome participants, give round number and the significance of this particular competition. (The two teams with the highest scores will advance to the semifinals on Monday at 8:00 a.m. The remaining teams will compete Sunday at 12:00 noon)

Have judges, scorekeepers and student helpers introduce themselves. (Judges should give their name and the areas in which they will be judging only.)

Have the team coaches come forward to introduce himself/herself and team members.

Conduct a button check.

Begin 5-point question round.

SS 1. Name the modern city in which the Hagia Sophia is located.

Answer: Istanbul

(Source: World Book Encyclopedia, Vol. 17, p. 50)

SCI 2. In giving the electron configuration for an element, what would follow 6s?

Answer: 4f

ENG 3. Fill in the blank. Pluto is the Roman name for the god who rules over the dead. His name, however (as shown in words like Plutocrat), means "the god of _____."

Answer: wealth

MATH 4. This is a two-part question. Compute the greatest common factor and the least common multiple of 31 and 13.

Answer: GCF = 1 and LCM = 403

ART 5. Name the seventeenth century Italian painter who was a rebel against convention, represented religious scenes in terms of daily life, and used chiaroscuro in such paintings as Conversion of Saint Paul and Calling of Saint Matthew.

Answer: Caravaggio

(Source: Art by Frederick Hartt, Prentice Hall, pp. 694-695)

SS 6. Which one of the following four events created a major problem for Jimmy Carter's re-election bid?

- A. the Israeli-Egyptian crisis
- B. the Vietnam War
- *C. the Iranian hostage problem
- D. a labor union strike

ENG 7. Match each of the four authors to the appropriate work.

Authors	Works
1. E. M. Forster	A. <u>A Passage to India</u>
2. Willa Cather	B. <u>Death Comes for the Archbishop</u>
3. Richard Wright	C. <u>The Naked and the Dead</u>
4. Norman Mailer	D. <u>Native Son</u>

Answer: 1-A, 2-B, 3-D, 4-C

MATH 8. Which one of the following three locations names the point of concurrency of the lines containing the altitudes of an obtuse triangle?

- A. on the triangle
- *B. in the exterior of the triangle
- C. in the interior of the triangle

ENG 9. Name the novelist who created the three heroines--Bathsheba Everdene, Eustacia Vye, and Tess Durbeyfield.

Answer: (Thomas) Hardy

(Note: 1. Far from the Madding Crowd, 2. Return of the Native, 3. Tess of the d'Urbervilles)

SCI 10. Which one of the following four continents was not believed to be a part of the supercontinent Gondwanaland?

- A. South America
- B. Africa
- *C. Europe
- D. Australia

other was Laurasia, hence Europe!

(Source: World Geography Today, p. 15, Holt-publisher)

MATH 11. State the center and the unit length of the radius for the circle whose equation is $x^2 + y^2 - 6x + 4y - 12 = 0$.

Answer: center (3, -2), radius = 5

ECON 12. All things being equal, which one of the following four circumstances will cause the production possibilities curve to shift outward?

- A. decreases in the labor force
- *B. significant increases in population
- C. declines in productivity
- D. all resources remain fixed

- SCI 13. A space vehicle with a mass of 27,500 kilograms is traveling through intergalactic space at a constant velocity of 9850 meters per second. What net force is being exerted on the vehicle?

Answer: zero

- ENG 14. Which one of the following four poems was not written by T.S. Eliot?

- A. "The Hollow Men"
- B. "The Love Song of J. Alfred Prufrock"
- C. "The Waste Land"
- *D. "Sailing to Byzantium"

- HUM 15. Name the country whose traditional stylized art is described in the following:

"The artist was faced with the fact that the standing human figure does not have a single main profile, but two competing profiles; so for the sake of clarity, he must combine these two. His method of doing this was to show the chest and shoulders in frontal view, the head and the legs in profile."

Answer: Egypt

- SS 16. For which one of the following three levels of government was the Bill of Rights of the U. S. Constitution designed to set limits?

- *A. national government
- B. state government
- C. local government

(Source: Magruder's Government, p. 100, Barron vs. Baltimore established this in 1833)

- MATH 17. State the domain of the function, y equals the square root of the quotient of $x^2 - 4$ and x.

Answer: $-2 \leq x < 0$ or $x \geq 2$ (must have the "or")

- SCI 18. Which one of the following four statements best explains why action potentials are usually propagated in only one direction along an axon?

- A. Impulses can only flow from the negatively charged axon hillock to the positively charged dendrites.
- B. Impulses can only flow from the positively charged axon hillock to the negatively charged dendrites.
- *C. A brief refractory period prevents reversal of the action potential.
- D. The nodes of Ranvier conduct in only one direction.

(Source: Biology, Campbell, p. 1009)

- MUS 19. Name the intervallic relationship between C and G.

Answer: perfect fifth

HUM 20. Match each of the three types of government to its definition.

<u>Types of Government</u>	<u>Definitions</u>
1. democracy	A. rule by a select few
2. oligarchy	B. rule by the gods or the church
3. theocracy	C. rule by the people

Answer: 1-C, 2-A, 3-B

End of 5-point round.

Begin 10-point team question.

Read: For this team question you will be given Handout 2-1.

Do not distribute the handouts until you are instructed to do so. This team question is worth 10 points. Each question is worth 2 points.

You will be given 3 minutes. Please identify one handout as your team answer sheet in the upper left-hand corner.

Begin.

Time 3 minutes.

STOP!

Identify one handout as your team answer sheet and hold it in the air. The judges will correct your work.

Read answers: (two points each)

1. answers are in the range of 108 to 112
2. Na_2SO_4 , $\text{Ce}_2(\text{SO}_4)_3$ (either order)
3. $\text{Ce}_2(\text{SO}_4)_3$ [accept: cerium sulfate or cerium (III) sulfate]
4. B
5. A

Announce scores from team question.

Two-minute break. (All coaches should report to scorekeepers whether substitutions are made or not.)

Announce scores after the round.

Begin 10-point question round.

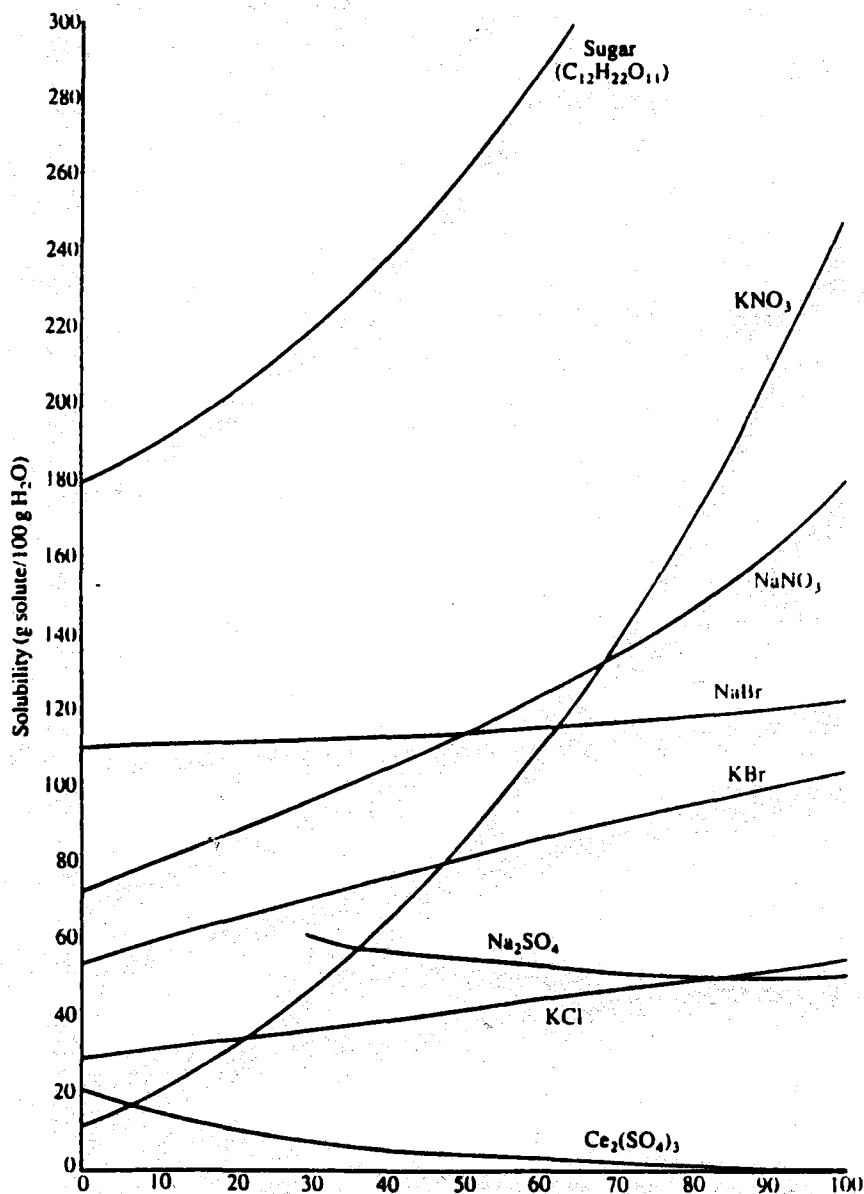
MATH 21. The price of copper in the United States rose from 66 cents per pound in 1982 to 94 cents per pound in 1989. If the price of copper is a linear function of time, what will be the predicted price per pound in 1992?

Answer: \$1.06

Handout 2-1

Team # _____

- Determine the number of grams of sodium bromide dissolved in 100 grams of water at 283 K. _____
- Which one or ones of the compounds graphed display processes which are exothermic? _____
- Which one of the compounds has the least solubility at 30 degrees Celsius? _____
- At what approximate temperature on the Celsius scale will 5 moles of KCl dissolve in one liter of water?
A. 20°C B. 40°C C. 80°C D. greater than 100°C
- There are 100 grams of sodium nitrate dissolved in 100 milliliters of water at 100 degrees Celsius. At what approximate temperature will 20 grams come out of solution?
A. 15°C B. 30°C C. 50°C D. 80°C



SS 22. Match each of the four kings to his companion.

<u>Kings</u>	<u>Companions</u>
1. Louis XIV	A. Mme de Pompadour
2. Louis XV	B. Nell Gwynn
3. Ahab	C. Mme de Maintenon
4. Charles II	D. Jezebel

Answer: 1-C, 2-A, 3-D, 4-B

HUM 23. Name the author of The Institutes of the Christian Religion who believed that salvation is predestined by God.

Answer: (John) Calvin

SCI 24. This is a two-part question. Part 1: Calculate the sum of the numbers indicated by the average mass in whole numbers of an oxygen molecule, the number of human thoracic vertebrae, and the number of hydrogen atoms in a water molecule. Part 2: How does the sum in part one relate to the number of chromosomes found in human sex cells?

Answer: Part 1: 46 (32 + 12 + 2)
Part 2: double (accept: twice, two times, or 23 more)

ENG 25. Name three of the four authors of the following science fiction classics.

- A. Stranger in a Strange Land
- B. 2001: A Space Odyssey
- C. I, Robot
- D. Fahrenheit 451

Answer: (any three) A. (Robert) Heinlein
B. (Arthur C.) Clarke
C. (Isaac) Asimov
D. (Ray) Bradbury

MUS 26. Match each of the four dances to its country of origin.

<u>Dances</u>	<u>Countries</u>
1. calypso	A. Brazil
2. mazurka	B. Cuba
3. rumba	C. Poland
4. samba	D. Trinidad

Answer: 1-D, 2-C, 3-B, 4-A

(Source: People and Music, Allyn and Bacon)

MATH 27. Misters Red, White, and Blue have ties and shirts that are red, white, and blue. No man's clothing is the same color as his name, and no man's shirt is the same color as his tie. If Mr. Blue's tie is the same color as Mr. Red's shirt, what is the color of Mr. White's shirt?

Answer: blue

SCI 28. Give the name used for the shortest day of the year.

Answer: winter solstice

(Source: Earth Science, Prentice-Hall, 1987, p. 107)

SS 29. Which one or ones of the following four are not constitutional requirements to be President of the United States?

- *A. nomination by national convention
- B. 35 years of age
- C. natural-born citizenship
- D. 14 years of residency in the U. S.

(Source: Article II, section 1)

SCI 30. Match each of the four principles to the process which demonstrates it.

<u>Principles</u>	<u>Processes</u>
1. Newton's Third Law	A. Rockets move forward.
2. Doppler Effect	B. Planes rise.
3. Bernoulli's Principle	C. Stars are shifted red.
4. Boyle's Law	D. Pistons cause compression.

Answer: 1-A, 2-C, 3-B, 4-D

(Source: Sears College Physics)

ENG 31. From the novel 1984, name the two terms which were used to protect the Outer Party. One term means "the faculty of stopping short, as though by instinct, at the threshold of any dangerous thought." The second term means "the power of holding two contradictory beliefs in one's mind simultaneously and believing both."

Answer: Crimestop, Doublethink

For the next question you will be given Handout 2-2. Do not distribute these until you are instructed to do so. (pause) Distribute these face down.

FL 32. The question is printed on the handout. Turn them over and begin.

Answer: B

SS 33. Match each of the four Presidential candidates to the slogan associated with his campaign.

<u>Candidates</u>	<u>Slogans</u>
1. James Polk	A. "My Hat is in the Ring."
2. Theodore Roosevelt	B. "He Kept Us Out of War."
3. Woodrow Wilson	C. "Tippecanoe and Tyler too"
4. William Henry Harrison	D. "Fifty-four forty or Fight"

Answer: 1-D, 2-A, 3-B, 4-C

Handout 2-2

Spanish

Which one of the following four hacer expressions would you use in order to tell a Spanish person to pay attention?

- A. ¡ Hazme una visital
- B. ¡ Haz caso!
- C. ¡ Haz un viaje!
- D. ¡ Haz daño!

French

Which one of the following four faire expressions would you use to tell a French person to do the dishes?

- A. Faites un match!
- B. Faites la vaisselle!
- C. Faites la queue!
- D. Faites le ménage!

German

Which one of the following four machen expressions tells a person to open the door?

- A. Mach das Licht an!
- B. Mach die Tür auf!
- C. Mach die Augen auf!
- D. Mach dich fertig!

MATH 34. Evaluate the limit as x approaches one of the quantity $x^2 - x$ divided by the quantity $x - 1$.

Answer: one

ENG 35. Which one of the following four motifs does Prince Hal's repentant behavior in Henry IV, Part II represent?

- A. alienation
- *B. prodigal son
- C. weeping clown
- D. reluctant hero

ART 36. Match each of the four terms associated with the cruciform plan to its description.

<u>Terms</u>	<u>Descriptions</u>
1. apse	A. the center aisle
2. nave	B. location where the center aisle meets the transept
3. narthex	C. location of the high altar
4. crossing	D. vestibule

Answer: 1-C, 2-A, 3-D, 4-B

SCI 37. Which one of the following four best describes what a protein loses when it is denatured?

- A. its primary structure
- B. its peptide bonds
- C. its amino groups
- *D. its three-dimensional shape

(Source: Biology, Campbell, p. 80)

MATH 38. How many different seven-letter arrangements are possible using the letters in the word minimum?

Answer: 420

$$\frac{7!}{3!} \times 2! \quad \begin{matrix} (7 \text{ letters}) \\ (3 \text{ m's}) \end{matrix} (2 \text{ i's})$$

ENG 39. Match each of the four misses to her description.

<u>Misses</u>	<u>Descriptions</u>
1. Miss Muffet	A. a Southern Jewish woman who is chauffeured by a Black man
2. Miss Marple	B. a young lady whose dinner is interrupted by an arrogant arachnid
3. Miss Lonelyhearts	C. a newsperson who assumes the role of counselor to suffering humanity
4. Miss Daisy	D. a sweet old lady who solves mysteries

Answer: 1-B, 2-D, 3-C, 4-A

SS 40. Which one of the following four tariff acts provided the lowest average tariff rate?

- *A. Underwood-Simmons
- B. Hawley-Smoot
- C. McKinley
- D. Dingley

(Source: Encyclopedia of American History, Morris)

End of 10-point round.

Begin 20-point team question.

Read: For this team question you will be given Handout 2-3.

Do not distribute the handouts until you are instructed to do so. This team question is worth 20 points. Each question is worth 4 points.

You will be given 3 minutes. Please identify one handout as your team answer sheet in the upper left-hand corner.

Begin.

Time 3 minutes.

STOP!

Identify one handout as your team answer sheet and hold it in the air. The judges will correct your work.

Read answers: (4 points each)

- 1. (-2, 0)
- 2. (0, -1)
- 3. (3, 5)
- 4. $x = 2$
- 5. $y = 1$

Announce scores from team question.

Two-minute break. (All coaches should report to scorekeepers whether substitutions are made or not.)

Announce scores after the round.

Begin 15-point question round.

SS 41. Give the name of the dynasty which established the Golden Age of India.

Answer: Gupta (Dynasty)

(Source: World Book Encyclopedia, vol. 8, p. 426)

Handout 2-3

Team # _____

Given $y = \frac{x^2 - x - 6}{x^2 - 5x + 6}$

1. Find the coordinates of the x-intercept(s) _____
2. Find the coordinates of the y-intercept(s) _____
3. Find the coordinates of any hole(s) _____
4. Find the equation of any vertical asymptote(s) _____
5. Find the equation of any horizontal asymptote(s) _____

SCI 42. A 500-gram object was thrown upward. It took two seconds to return to the ground from where it was thrown. What was its average velocity in meters per second?

Answer: 4.9

ENG 43. The first and last names of these four literary heroines are jumbled. Give the correct name of each.

- A. Emma Sharp
- B. Anna Bovary
- C. Jane Karenina
- D. Becky Eyre

Answer: Emma Bovary, Anna Karenina, Jane Eyre, Becky Sharp

MUS 44. Match each of the four performers to the instrument on which each excels.

<u>Performers</u>	<u>Instruments</u>
1. Itzhak Perlman	A. guitar
2. Wynton Marsalis	B. trumpet
3. Van Cliburn	C. violin
4. Eric Clapton	D. piano

Answer: 1-C, 2-B, 3-D, 4-A

HUM 45. Which one of the following four areas does epistemology primarily concern?

- A. ethics
- *B. knowledge
- C. reality
- D. value

SCI 46. If the sun is 93 million miles away from Earth and light travels at 186,000 miles per second, how many full minutes ago did the light you now see leave the sun?

Answer: 8

(Note: $93,000,000/186,000 = 500/60 = 8.333$)

(Source: Modern Earth Science - Holt, pg. 5)

SS 47. Which one of the following four statements provides the best definition of mercantilism?

- A. It is a system which called for direct trade between colonies and foreign countries.
- B. It is a system which increased exports and imports from countries outside the empire.
- *C. It is a system which sought to establish financial independence within an empire.
- D. It is a system which established the laws of the sea.

MATH 48. Find the sum in degrees of the smallest angle and the largest angle of a hexagon, if the degree measures of the six angles are represented by $3x$, $5x + 10$, $4x + 20$, $7x$, $6x + 10$, and $3x - 20$.

Answer: 230

For the next question you will be given Handout 2-4. Do not distribute these until you are instructed to do so. (pause) Distribute these face down. (pause) You may turn these over and begin reading. (pause)

ENG 49. Answer any three of the following four questions concerning the poem.

- A. What is the rhyme scheme for the poem?
- B. What is the rhythm and meter of the poem?
- C. What sound device is used in line 2 of the poem?
- D. What modern American novel for young adults uses this poem as one of its themes?

(any three)

Answer: A. AABBCDD (accept: couplets), B. iambic trimeter, C. alliteration, D. The Outsiders

MS 50. Which one of the following four is not a scientific reference to objects that "float"?

- A. air bladder
- *B. floating island
- C. floating kidney
- D. floating rib

Answer: B. floating island is a dessert made of boiled custard with meringue, whipped cream or another topping

ENG 51. Name Walt Whitman's elegy which mourns the death of Abraham Lincoln by tracing the journey of Lincoln's coffin to its burial place.

Answer: "When Lilacs Last in the Dooryard Bloom'd"

SS 52. Name the European monarch who was known as the Royal Drill Sergeant.

Answer: Frederick William I

(Source: The Human Experience, p. 318)

MATH 53. What is the period of the graph of the function, y equals the absolute value of the quantity two times the sine of $2x$?

Answer: $\frac{\pi}{2}$

Handout 2-4

Nothing Gold Can Stay

Nature's first green is gold,
Her hardest hue to hold.
Her early leaf's a flower;
But only so an hour.
Then leaf subsides to leaf.
So Eden sank to grief,
So dawn goes down to day.
Nothing gold can stay.

For the next question you will receive an art handout. (Art handout 2-5)
There will be one three-part question concerning this art handout.

ART 54. This is a three-part question.

1. Name the building.
2. Name the goddess to whom this temple was dedicated.
3. Name the order of columns used.

Answer: 1. Parthenon, 2. Athena, 3. Doric

MS 55. Arrange the following four men in chronological order according to the dates of their deaths.

- A. Alexander the Great
- B. Thales of Miletus
- C. Sophocles
- D. King David

Answer: D, B, C, A

(Note: David--972 BC; Thales--545 BC; Sophocles--406 BC; Alexander--323 BC)

SCI 56. Which one of the following four selections is the correct empirical formula for the compound which has the percent composition of: 17.6% Na, 39.7% Cr, 42.7% O?

- *A. $\text{Na}_2\text{Cr}_2\text{O}_7$
- B. Na_2CrO_4
- C. Na CrO_4
- D. $\text{Na Cr}_2 \text{O}_7$

MS 57. Identify each of the four words beginning with the letter R from the following descriptions.

1. in music, a mass for one or more dead persons containing biblical passages and prayers
2. the period directly after the Civil War
3. another name for the multiplicative inverse
4. the chemical reaction opposite of oxidation

Answer: requiem, reconstruction, reciprocal, reduction

(Source: The Dictionary of Cultural Literacy, pp. 180, 278, 462)

MATH 58. State the equations of the vertical and horizontal asymptotes for the function: y equals three divided by $x - 1$ quantity squared.

Answer: vertical: $x = 1$
horizontal: $y = 0$

HUM 59. This is a three-part question.

- Part 1: Who was the English Archbishop murdered in 1170 at Canterbury?
Part 2: Who was the King of England at the time?
Part 3: What is the name of the author and the title of the modern play about this event?

Answer: Part 1: Thomas Becket (accept: Thomas à Becket), Part 2: Henry II, Part 3: T.S. Eliot's "Murder in the Cathedral" or Jean Anouilh's "Becket"

MS 60. Match each of the four Latin phrases to its common translation.

<u>Latin Phrases</u>	<u>Translations</u>
1. annus mirabilis (AN-uhs mi-RAB-uh-lis)	A. actually existing, whether legal or not
2. de facto	B. to go on endlessly
3. in situ (in CEE-tyooh)	C. the miraculous year
4. ad nauseam	D. in the original arrangement

Answer: 1-C, 2-A, 3-D, 4-B

(Source: The Dictionary of Cultural Literacy, pp. 59, 64, 69)

SS 61. Identify the four walls in the following descriptions.

- A. Almost 1800 miles long and 20 to 50 feet high, it was built during the Ch'in dynasty.
B. It was built to protect a province of the Roman Empire from the Celts.
C. It is a remnant of the temple of Solomon in Jerusalem.
D. It is the location of financial interests of the United States.

Answer: A. Great Wall, B. Hadrian's Wall, C. Wailing Wall (accept: Western Wall), D. Wall Street

SCI 62. Which one of the following four shapes best describes the hydrogen cyanide (HCN) molecule?

- A. trigonal planar
B. bent or angular
C. pyramidal
*D. linear

For the next question you will be given Handout 2-6. Do not distribute these until you are instructed to do so. (pause) You may distribute these face up.

COMP 63. Given the BASIC program printed on the handout, determine the value of C string at the completion of program execution.

Answer: yellow

Handout 2-6

```
10 LET C$ = "BLUE"  
20 FOR X = 1 TO 5  
30 LET C$ = "RED"  
40 FOR I = 1 TO 3  
50 LET C$ = "YELLOW"  
60 NEXT I  
70 NEXT X  
80 END
```

ENG 64. Identify each of the three authors of the following river works.

- A. "A Negro Speaks of Rivers"
- B. "Big Two-Hearted River"
- C. Life on the Mississippi

Answer: A. (Langston) Hughes, B. (Ernest) Hemingway, C. (Mark) Twain

MATH 65. An angle A has a tangent of $\frac{2}{3}$ and an angle B has a secant of two. Both angles are acute. Find the exact value of the sine of the quantity $A + B$.

Answer: $\frac{2\sqrt{13} + 3\sqrt{39}}{26}$ (accept: $\frac{2 + 3\sqrt{3}}{2\sqrt{13}}$)

End of 15-point round.

Begin 30-point team question.

Read: For this team question you will be given Handouts 2-7, 2-7A, and 2-7B and you will hear the recording of one musical selection (tape 2-7).

Do not distribute the handouts until you are instructed to do so. This team question is worth 30 points. Each blank is worth 1 point.

You will be given 6 minutes. Please identify one handout as your team answer sheet in the upper left-hand corner.

Play tape. ("Ride of the Valkyries")

Begin.

Time 6 minutes.

STOP!

Identify one handout as your team answer sheet and hold it in the air. The judges will correct your work.

Handout 2-7

Team # _____

Rings and Things

1. Name the 20-hour operatic cycle from which the musical selection played is taken. _____
2. The graph of the equation $r = e$ has what common name? _____

Beware of the rings of thieves who may tarnish your reputation. American history has had its share of rings of thieves or scandals. Match the following rings with the description.

	<u>Rings</u>	<u>Descriptions</u>
_____ 3.	Teapot Dome	A. railroad contracts
_____ 4.	Crédit Mobilier	B. obstruction of justice
_____ 5.	Tweed Ring	C. oil leases
_____ 6.	Whiskey Ring	D. excise tax collection in St. Louis
_____ 7.	Watergate	E. N.Y. politics

8. In what book does an invisible ring help the protagonist escape from a dragon? _____
9. What is the name given to hurricanes or tropical cyclones in the western Pacific? _____

Rings have long been associated with the Olympics. Give the city associated with the events of the following modern Olympics.

10. Jesse Owens won three gold medals in track and was snubbed by the country's leader.

11. Site of the 1996 summer Olympics. _____
12. Members of the Israeli wrestling team were taken hostage and some were later killed. _____
13. Two American track winners raised a clinched fist as a symbol of black power and lost their medals. _____
14. Florence Griffith-Joyner, Carl Lewis, Jackie Joyner-Kersey, were all gold medal winners. _____
15. Baron Pierre de Coubertin was instrumental in locating the 1896 Olympics in this city. _____
16. The Spanish city in which the Olympics are to be celebrated in the summer of 1992. _____

Handout 2-7A

Team # _____

The next four questions concern the symbol used for the Olympic Games. Choose the questions written in Spanish, French, or German and give your answers in English.

Spanish

17. ¿Cuántos anillos hay? _____
18. ¿Qué representan los anillos? _____
19. ¿Cuáles son los colores que se usan en los anillos? _____

20. ¿Qué representan estos colores? _____

French

17. Combien de cercles y a-t-il? _____
18. Qu'est-ce que les cercles représentent? _____
19. Quels sont les couleurs qu'on emploie pour les cercles? _____

20. Qu'est-ce que ces couleurs représentent? _____

German


17. Aus wie vielen Ringen besteht das Zeichen? _____
18. Was bedeuten die Ringe? _____
19. Welche Farben benutzt man für die Ringe? _____
20. Was für eine Bedeutung haben die verschiedenen Farben? _____

21. Identify the structure known as "the wooden 'O'." _____
22. Which one of the following four creatures guarded the entrance to the seventh circle in Dante's Inferno?
 - A. Geryon
 - B. Minotaur
 - C. Minos
 - D. Cerberus

Handout 2-7B
Team # _____

23. Annual rings reflect the fact that the vascular cambium divides more actively when which two of the following four conditions exist?
- A. equal hours of daylight and darkness
 - B. plentiful water supply
 - C. suitable temperatures
 - D. an abundance of phloem tissue
24. Name the ring compound from which toluene, phenol, and aniline is derived. _____
25. What functional group and atom vary in position on the number one carbons of alpha and beta glucose molecules? _____
- _____
26. Complete the following statement using one of the four given choices.
- Fungi forming a "fairy ring" after a morning rain belong to the _____ division.
- A. ascomycota
 - B. zygomycota
 - C. oomycota
 - D. basidiomycota
27. Identify the geometrical arrangement of the carbon atoms in diamond. _____
28. Name the smaller, separate circles of DNA in bacteria. _____
29. Identify the ring of stones on the Salisbury Plain of England. _____
30. Give the term often used for the large circular stained glass windows usually found above the north, south, and west entrances of Gothic cathedrals. _____

Read answers: (one point each)

1. The Ring of the Nibelung
 2. circle
 3. C
 4. A
 5. E
 6. D
 7. B
 8. The Hobbit
 9. typhoons
 10. Berlin
 11. Atlanta (accept: Savannah)
 12. Munich
 13. Mexico City
 14. Seoul
 15. Athens
 16. Barcelona
- Spanish, French and German answers are same.
17. five
 18. the continents (that participate)
 19. red, yellow, blue, green, white (any order)
 20. the colors of flags (of the countries)
 21. Globe (Theater) (accept: Elizabethan theater)
 22. B
 23. B, C
 24. benzene (accept: C_6H_6 or )
 25. the hydroxyl (-OH) group and (-H or H^+) hydrogen atom
 26. D
 27. tetrahedral (accept: tetrahedron)
 28. plasmids
 29. Stonehenge
 30. rose (accept: rose windows)

Announce scores from team question.

Teams should remain seated until final scores are computed.

Announce scores.

If scores are tied, have a two-minute break before beginning the tie breaker question. Only the teams whose scores are tied will compete.

Tie Breaker Questions.