

OOT 2016: “Waiting for Goldman”

Packet 12 (Editors 6)

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1. This man captured the Count of Barcelona twice in one war, though the main aim of that war was to capture a city known as the City of Sand, where he was subsequently to die during a siege by the Almoravids. One epithet given to this man during his lifetime was drawn from the Latin for “battlefield master”. Despite his heroic reputation as a Christian warrior, this man served the Taifa of Zaragoza after his exile by Alfonso VI of Leon and Castile. His wife Jimena [Him-ena] supposedly hitched, for 10 points, which man’s corpse to his horse at the siege of Valencia.

ANSWER: El Cid or Rodrigo Díaz de Vivar (accept El Campeador)

2. One form of sample preparation for this technique immobilises analytes in a sinapinic acid matrix before ablation with a pulsed laser. A highly accurate version of this technique, FT-ICR, uses a device named for Penning instead of the quadrupolar traps named for Pauli used in simpler forms. This technique is often used to analyse the products of gas chromatography. Peaks separated by 2 units with a 3:1 intensity ratio indicate the presence of chlorine in an analyte, owing to the relative abundances of its 35 and 37 isotopes. For 10 points, name this analytical technique which measures a namesake property’s ratio to charge.

ANSWER: Mass Spectroscopy (prompt on MS)

3. One poet associated with this city included a man called “Mike” who includes and then later covers a depiction of “SARDINES”. That poet associated with a group from this city wrote poems on a series of stones with the painter Larry Rivers. One novel set in this city concerns a PI called Blue who is trained by Brown, and investigated Black on the orders of White. Paul Auster wrote a trilogy named for this city that names a school of poets that included Frank O’Hara. Eilis [A-lish] Lacey nearly marries Jimmy Flaherty during a sojourn home from this city in a novel named for a neighbourhood of this city. For 10 points name this city which hosts the non-Irish sections of the Colm Tóibín [toe-bin] novel *Brooklyn*.

ANSWER: New York City, New York

4. This term can describe the set of all points within a polygon from which all of the polygon is visible. It’s not “mask”, but in image processing, this term describes a small matrix that can be convoluted with a source image to effect edge detection or blurring. In linear algebra, for a linear map L between vector spaces V and W , this term describes the set of elements of V which are mapped to the zero vector in W by L . This term which also describes the central component of an operating system, the interface between software and hardware. For 10 points, give this term which in biology describes the individual seeds of a corn cob.

ANSWER: Kernel

5. The Bogoliubov transformation can be used to calculate a bound for one form of this quantity which can be derived from the Clausius inequality under isochoric conditions. The chemical potential is a molar form of one type of this quantity which has a pressure dependance equal to $R T \ln p$ over p nought. One variety of this is defined as U minus TS and the change in another is equal to ΔH minus $T \Delta S$. For 10 points, name this quantity which depending on whether you are at constant volume or pressure comes in Helmholtz and Gibbs varieties.

ANSWER: Free Energy (accept Helmholtz Free Energy or Gibbs Free Energy, prompt on Energy)

6. This playwright appeared as a character himself in a play put on half a century after his death, where he is praised as teaching his audiences to seek victory in battle. Martin West and Mark Griffith have argued that one of this man’s attributed works was in fact composed by his son, Euphorion, on the basis of metrical analysis. Pericles was the choregos of one work that won the 1st prize at the City Dionysia that is unique for its contemporary situation, and surprising for eliciting sympathy in its audience for its titular characters, the *Persians*. The invention of the jury trial is central to the Eumenides, the last part of, for 10 points, which man’s *Oresteia* trilogy.

ANSWER: Aeschylus

7. After Baudemagus is beaten by the white knight, Melias gives this person King Evalach's shield, whose insignia was made by a nosebleed from Josephus. Logres becomes fertile after this person heals the maimed king Pellam. After being visited by Joseph of Arimathea, this person requests to die. Dindrane made a belt out of her hair for this man's sword. This person's father mistook Elaine of Corbenic, the daughter of King Pelles for his mistress. This knight draws a sword from a stone and alongside Perceval and Bors, for 10 points, achieves the Holy Grail.

ANSWER: Galahad

8. In a court appearance, this person claimed that chili con carne was a large army as he sued a newspaper for scorning his efforts to end the Great War by means of a "Peace Ship". This person forbade alcohol and tobacco in his eponymous Brazilian rubber plant and this man earlier pledged his workers "\$5 a day" in wages. This person used soy and hemp to create a prototype vehicle and had earlier stopped all production in his firm for nearly six months before beginning production on a car designed by his son, Edsel the Model A. For 10 points, name this American industrialist who revolutionised car production with his Model T.

ANSWER: Henry Ford

9. Bassoons, violas and cellos play descending first inversion, ornamented B minor arpeggios to open one piece by this composer. Every movement in this composer's third symphony is in sonata form and features "snap rhythms" in its second movement. A bassoon holds a long B flat to link the first and second movements of an E minor concerto by this composer. One work by this composer contains the vocal *Ye spotted snakes* and an intermezzo *Wedding March*. The island of Staffa inspired him to write a piece often known as *Fingal's Cave*. For 10 points, name this composer of incidental music to *A Midsummer Night's Dream*, the *Scottish Symphony* and the *Hebrides Overture*.

ANSWER: Felix Mendelssohn Bartholdy

10. The father of one member of this group was given his exotic name because of a local Ice Cream dealer his other admired in Belfast. One member of this group was said to have rushed away from a Jack the Lad concert and another member of this group married Courtney Kennedy. They were aided by Gareth Pierce in being freed in 1989 having been wrongly accused of attacking the Horse and Groom and Seven Stars supposedly assisted by the Maguire Seven, relatives of member Gerry Conlon's family. For 10 points name this quartet wrongly convicted of the bombing of two Surrey pubs in October 1974.

ANSWER: Guilford Four

11. In *Victoria Wood with all the Trimmings*, a quartet of middle aged men sing about their anticipation for the arrival of this figure at Christmas. Charlie Brooker described the 2007 documentary, this person *vs. Prostitution* as sounding like "the ultimate Hobson's Choice" and this person refused to reappear on *Have I Got News For You* after a disastrous encounter with Jimmy Carr that same year. This person was compared to Big Bird due to a dress she wore while partnered by Anton du Beke on *Strictly Come Dancing* in 2010, the same year she stepped down as M.P. for Maidstone and the Weald. For 10 points, name this former Prisons Minister and host of *Cleverdicks*.

ANSWER: Ann Noreen Widdecombe

12. This artist painted multiple versions of the first known stigmatization, where the saint receives the wounds from Christ depicted as a seraphim. As part of a sequence of frescoes of the same saint, this artist depicts that saint surviving a trial by fire before a Sultan. Those frescoes are in the Upper Church of Assisi, while elsewhere this person was the architect of a polychrome *campanile*, though he died after only the lower stories were built and he is buried according to Vasari, beside it, in Florence's Duomo. His masterpiece is a fresco cycle depicting the lives of Mary and of Christ and for 10 points, name this artist who decorated the Scrovegni Chapel in Padua.

ANSWER: Giotto di Bondone

13. In the Greek Orthodox tradition, during this festival a priest throws a cross into a body of water and blesses the household of the first swimmer to retrieve it. In the Roman Catholic Church, this day was historically associated with the baptism of Christ; but in 1955, the Vatican moved the day of the latter feast a week later. In Ireland, this feast is traditionally known as Little Christmas and in England, this festival's eve is known as the Twelfth Night. Commemorating the visit of the Magi, for 10 points name this Christian festival usually held on 6th of January, the end of the Christmas season.

ANSWER: Epiphany [Accept; Theophany or any ANSWER indicating the coming of the Magi before its mention]

14. The second oldest subscription library in Europe was founded for miners of this commodity. That library formerly for miners of this commodity is in the highest village in Scotland, Wanlockhead. In the Roman Empire, the largest sources of this commodity were mines along the Rio Tinto in Hispania although they also mined this commodity at Charterhouse in Somerset. Frogs Hole and Wanton Legs were mines for this metal in Derbyshire where the mining of this commodity had largely died out by the 20th century before this metal fell out of everyday usage due to its poisonous properties. For 10 points, name this metal with chemical symbol Pb.

ANSWER: Lead [accept: Pb before mention]

15. One character in this opera sends a mask and wig to woman asking her to wear them if she wants to see her husband dancing. Carlos Kleiber included a polka by the composer of this opera at the end of its second act. At the start of this opera's third act, Adele sings the "Audition Song" and sings her "Laughing Song" after being mistaken for a maid by a man who is imprisoned while the cast sings the praise of champagne at the end of this opera. Doctor Falke takes his revenge on Eisenstein for leaving him dressed as the title animal in this opera in, for 10 points, this comic opera by Johann Strauss the Younger.

ANSWER: Die Fledermaus [or The Bat]

16. This leader helped launch the Shaheen programme and during their tenure the Pressler Amendment was launched to suppress its finances. They served simultaneously as Prime Minister, Defence Secretary and Finance Secretary for their first term and this leader ordered the ISI invasion of Jalalabad to gain a military victory over the Soviets. By means of the eighth amendment to the constitution, Ghulam Ishaq Khah deposed this leader and their successor. This leader contested the 1993 election against Nawaz Sharif as leader of the PPP and was in exile for 10 years in Dubai, but on returning was assassinated in Rawalpindi in 2008, the same city in which their father Zulfikar Ali was killed. For 10 points, name this only female prime minister of Pakistan.

ANSWER: Benazir Bhutto [prompt on partial ANSWER]

17. This author wrote an adaptation, inspired by Yeats, Noh theatre and Vishakadatta of "Rappaccini's Daughter" and in one lecture linked "expulsion from the present" with the writing of poetry. This author added "Post Data" to one of his works after a student massacre and this author wrote about a "willow of crystal" in a circular poem based on the Aztec calendar. As well as writing the poetry collection *The Monkey Grammarian*, he included "The Conquest and Colonialism" and "The Day of the Dead" amongst a series of essays on his home country. For 10 points, name this Mexican author of "Sunstone" and *The Labyrinth of Solitude*

ANSWER: Octavio Paz

18. One essay by this man includes a critique of Carnap's state-descriptions with the caveat of this thinker's awareness that Carnap intended that model's use for a project concerning induction rather than language. An early essay by this thinker aimed at an alternative model of convention that generated rather than transformed truths. This philosopher discussed a connection between the word 'gavagai' and a moving rabbit in an essay concerning the 'indeterminacy of translation'. Another essay by this thinker targeted Kant's cleavage between analytic and synthetic propositions. For 10 points, name this philosopher who wrote *Word and Object* and "Two Dogmas of Empiricism."

ANSWER: Willard Van Orman Quine

19. Phospholipase C isoform zeta plays a crucial role in facilitating the subsequent events of this process. During this process, a fast block and a slow block occurs, the former is mediated by increased sodium permeability and the latter via the cortical reaction which increases cytosolic calcium. Exocytosis of hyaluronidase accompanies the acrosome reaction which occurs during this process and involves the degradation of the zona pellucida. This process which involves the union of two haploid cells happens externally in many fish and amphibians. For 10 points give this process in which a sperm and egg combine to make a zygote.

ANSWER: **Fertilisation** [accept word forms and “**oocyte activation**”, grudgingly prompt on “conception”]

20. This author wrote the only poem to receive its own chapter in Lionel Trilling’s *The Liberal Imagination*. In one poem this author decries his home country as being “a fen / Of stagnant waters” and calls out to another poet who “hadst a voice whose sound was like the sea”. Another poem by this poet who wrote about Milton in “London, 1802” describes how “The things which I have seen I now can see now more” and opens by describing “a time when” all “did seem / apparell’d in celestial light”. That is this poet’s “Ode: Intimations of Immortality.” For 10 points name this poet who wrote about daffodils in “I Wandered Lonely as a Cloud”.

ANSWER: William **Wordsworth**

Spare/Tiebreaker

21. In Xhosa, Lithuanian and Indonesia a demonstrative replaces these words which don’t exist in Cantonese, Thai or Pali. In Turkish the suffix –I is used to form the objective which is essentially an accusative and replaces this. In Danish a separate word is only used when a noun is qualified by an adjective. In Arabic this only added to the second noun in an Idafa construction as in “Dar Es-Salaam” also an example of it inflecting based on whether the succeeding word begins with a sun or moon letter. In French it accompanies mass, nouns, generic plurals and abstract nouns unlike in English. For 10 points name this part of speech denoted in Gaelic by “na”, in Arabic by “Al”, marked in English by the.

ANSWER: **Definite Article**

1. This late deceased film critic published a collection of his negative reviews called *Your Movie Sucks*. For 10 points each:

[10] Identify this critic who collaborated with Gene Siskel in creating the phrase “Two Thumbs Up”

ANSWER: Roger **Ebert**

[10] Robert Ebert was a big fan of this woman who wrote film criticism for *The New Yorker* from 1968 until 1991. Quentin Tarantino said that this critic was as influential for his development as any director.

ANSWER: Pauline **Kael**

[10] Godard’s film *Contempt* opens with a quotation falsely attributed to this French film critic and theorist noted for his multi volume collection of essays *What is Cinema?*

ANSWER: André **Bazin**

2. Name some plays by Irishmen, for 10 points each:

[10] This play by George Bernard Shaw saw Professor Henry Higgins teach Eliza Doolittle to talk like a duchess, and was adapted into the musical *My Fair Lady*.

ANSWER: **Pygmalion**

[10] Samuel Barber wrote an overture for this Richard Brinsley Sheridan play, in which Lady Teazle is discovered hiding behind a screen by Charles Surface.

ANSWER: *The* **School for Scandal**

[10] Katurian Katurian Katurian writes disturbing short stories in this Martin McDonagh play, including one about the title figure who persuades children to commit suicide.

ANSWER: *The* **Pillowman**

3. Single Round examples of this sort of voting system are the Kemeny-Young and Schulze systems. For 10 points each:

[10] Name these electoral methods where any candidate who would win by majority rule in all pairings wins the overall election, provided that such a candidate is available.

ANSWER: **Condorcet** Methods.

[10] The Condorcet Paradox occurs when run-offs produce cyclical results as in Rock-Paper Scissors. This means that they violate the independence of irrelevant alternatives, the second criterion in this theorem which states Rank Order Voting Systems cannot convert ranked preferences into a complete and transitive ranking.

ANSWER: **Arrow's Impossibility Theorem**

[10] The Schulze method is a Condorcet Method which is used by this Swedish Political Party which was set up to aid privacy, transparency and as the name suggests, the swashbuckling aim of reforming patent and copyright laws.

ANSWER: **Pirate Party** [or **Piratpartier**]

4. This French Marxist philosopher's association with the Situationist is borne out in his discussion of appropriation in *The Production of Space*. For 10 points each:

[10] Name this philosopher of *The Critique of Everyday Life*.

ANSWER: Henri **Lefebvre**

[10] Analogies have been drawn between Lefebvre and this philosopher of the *Phenomenology of Perception*.

ANSWER: Maurice **Merleau-Ponty**

[10] Lefebvre's work on Marx includes an extension of this concept as it pertains to city life. This concept originated in Marx as a description of the separation of a person from their self, due to the mechanisms of class structure.

ANSWER: **alienation**

5. In the last movement of a piece in which this melody appears, it is first stated by the C clarinet as a vulgar dance tune and then again by as a shrill parody by the E-flat clarinet. For 10 points each.

[10] Name this melody inspired by a composer's infatuation with Irish actress Harriet Smithson.

ANSWER: The **Idée Fixe** [or the "**fixed idea**"]

[10] The idée fixe is a recurrent theme in this programmatic symphony by Hector Berlioz where it represents, amongst other things, an artist's dying thoughts.

ANSWER: **Symphonie Fantastique**: *Épisode de la vie d'un artiste ... en cinq parties*

[10] The idée fixe reappears in this sequel to *Symphonie Fantastique* which features both spoken text and music

ANSWER: **Lélio**

6. While a bit of a downer for everyone else, economic misery in 1930s America was a boom time for photographers. For 10 points each:

[10] Name this most famous work by Dorothea Lange in which Florence Owens Thompson touches her chin while her two children lean on her shoulders.

ANSWER: **Migrant Mother**

[10] This photographer collaborated with James Agee [ay-jee] and provided the illustrations for the latter's chronicle of three sharecropper families, *Let us Now Praise Famous Men*.

ANSWER: Walker **Evans**

[10] Evans and Lange documented the hardships faced by many rural Americans during this economic slump caused by the Wall Street Crash of 1929.

ANSWER: Great **Depression**

7. Before Alexander, the Achaemenid Empire was the greatest empire of the Near East. Name, for 10 points each:

[10] This monumental inscription, incorrectly ascribed to Semiramis by Ctesias and now in modern day Kermanshah province, is carved in three languages: Old Persian, Elamite and Babylonian. It celebrates the defeat of nine rebel kings.

ANSWER: **Behistun** (Accept **Bisotun**, **Bistun**, **Bagastana** or **Bisutun**)

[10] This king of Persia set up the inscription after his accession. He established the satrapal system, though he failed to extend this into Greece after the Battle of Marathon.

ANSWER: **Darius I** the Great (accept **Darayavuš**)

[10] This predecessor to Darius extended the Empire by defeating the Pharaoh Psamtik III. He died in uncertain circumstances after the rebellion of a figure known alternatively as Bardiya, Smerdis or Gaumata.

ANSWER: **Cambyses II** (accept **Kamboujje**)

8. Two sentries observe this character speaking to the moon as he dies, overcome with guilt after being given all his plunder by the master he has betrayed. For 10 points each:

[10] Name this character, a Roman soldier, who delivers a famous monologue that begins “I will tell you. / The barge she sat in, like a burnish’d throne.”

ANSWER: **Enobarbus**

[10] Enobarbus dies just before the Battle of Actium in the fourth act of this Shakespeare play.

ANSWER: **Antony and Cleopatra**

[10] In one scene in *Antony and Cleopatra*, music is played under the stage as a sign that this Greco-Roman god has abandoned Antony’s cause.

ANSWER: **Hercules** [accept **Herakles**]

9. While many modern expos revolutionise the architecture of second-rate cities, the Great Exhibition had some truly sparkling inventions. For 10 points each:

[10] George Merryweather built the tempest prognosticator, a form of barometer which made use of these animals. When these creatures, used medicinally to balance the humors, detected humidity they would rise up and cause a bell to ring.

ANSWER: **Leeches**

[10] This inventor who patented a gun which could fire multiple times without reloading showed his prototype for his namesake Navy Revolver.

ANSWER: **Samuel Colt**

[10] Inventor George Jennings pioneered further developments in this field which were housed in Monkey closets.

ANSWER: **Toilets** (accept word forms)

10. The four basic tissue types are muscle, nervous, connective and this type. For 10 points each

[10] Name this tissue type that lines organs and cavities within the body, it may come in columnar and squamous variants

ANSWER: **Epithelium** [accept variants, do not accept “Endothelium”]

[10] Epithelial tissue maintain transcellular impermeability to water due to these structures which divide the surface of epithelial cells into apical and basolateral segments

ANSWER: **Tight Junctions** [accept “**occluding junctions**” or “**zonulae occludentes**”]

[10] The two major components of tight junctions are the occludins and these other proteins which link the actin cytoskeletons of neighbouring cells

ANSWER: **Occludins**

11. One short story by this man features the boorish Fortunato, who is walled up alive after being lured into a catacomb by Montresor with the title object, “The Cask of Amontillado.” For 10 points each:

[10] Name this American horror writer, who narrates one story in the voice of a murderer who keeps hearing the beating of the titular “Tell-Tale Heart” of his victim.

ANSWER: Edgar Allan **Poe**

[10] In Poe’s “The Murders in the Rue Morgue,” widely regarded as the first detective story, Dupin [“Doo-Pan”] reveals that the murders were committed by what animal?

ANSWER: **orangutan** [prompt on “ape;” do not accept “monkey”]

[10] This Poe tale ends with the narrator’s dead wife, Rowena, turning into the title woman, who composed the poem “The Conqueror Worm.”

ANSWER: **Ligeia**

12. One of its namesake 3 conditions state that Δk equals $2\pi h$. For 10 points each:

[10] Name this type of diffraction produced by waves entering a crystal lattice.

ANSWER: **Laue** diffraction

[10] The three Laue conditions reduce to this law, which gives the angles for coherent and incoherent scattering by relating the distance between lattice sites and the wavelength of the incident wave.

ANSWER: **Bragg's Law**

[10] According to Bragg's Law, constructive interference is strongest when this function of the angle equals $n\lambda/2d$. This periodic function gives the ratio of the opposite to the hypotenuse in a right angled triangle.

ANSWER: **sine**

13. For 10 points each, name some things relating to the geography of Djibouti:

[10] Djibouti has prospered as a port since it is the gateway for shipping containers to enter this most populous landlocked country.

ANSWER: **Ethiopia**

[10] This hypersaline lake in Djibouti is the lowest point in Africa.

ANSWER: **Lake Assal**

[10] Lake Assal is located in this geologically active depression at the triple junction between the Nubian, Somalian and Arabian plates. It shares its name with an ethnic group prominent in Djibouti.

ANSWER: **Afar Depression** [or **Afar Triangle**, or **Afar Triple Junction**]

14. His chariot was drawn by tigers, and he carried the thyrsus [fur-sus]. Name, for 10 points each:

[10] This god, who was raised on Mount Nysa, and was accompanied by satyrs and maenads.

ANSWER: **Dionysus**

[10] This mother of Dionysus was tricked by Hera into asking Zeus to reveal himself in his full majesty. The ensuing blaze caused the death of this Theban daughter of Cadmus.

ANSWER: **Semele**

[10] This Athenian festival of Dionysus had three days named after pots, jars and the pouring of wine. It saw the sacred marriage of a *Basilinna* to the god in the Council Chamber,

ANSWER: **Anthesteria**

15. This man brought a concealed dagger, a tiger claw and a suit of armour to a sword duel with Afzal Khan, and escaped from captivity dressed as a sweet carrier. For 10 points each:

[10] Name this founder and first Chhatrapati [Ch'hat-ruh-puhti] of the Maratha Confederacy, who carved a realm out in the areas around Bijapur.

ANSWER: **Shivaji**

[10] Shivaji fought primarily against the forces of this Mughal Emperor, during whose reign the empire reached its maximum territorial extent and who abandoned the Pluralist policies of his father Shah Jahan.

ANSWER: **Aurangzeb**

[10] Aurangzeb oversaw the creation of the Fatawa-e-Alamgiri by almost 500 jurists from across the Muslim world. It was a central text in the Hanafi school of this wide reaching law code of Islam.

ANSWER: **Sharia**

16. The Nine Lyric poets were judged of great enough worth to be studied by those arbiters of taste, the Alexandrian scholars. For 10 points each

[10] This only woman amongst the number, and only her Hymn to Aphrodite is complete of her works, while her relationships with other women are perhaps the greatest source of her fame.

ANSWER: **Sappho**

[10] This poet is known, other than fragments, through his Victory Odes for the great athletic Games of Archaic Greece, notably to Hieron, tyrant of Syracuse.

ANSWER: **Pindar**

[10] This poet worked extensively during the Persian wars, and his epigram *Go, Tell the Spartans*, was placed on the cenotaph to the fallen at Thermopylae.

ANSWER: **Simonides**

17. Like oxytocin, this hormone is released from the neurohypophysis, also known as the posterior pituitary gland. For 10 points each

[10] Name this hormone that causes increased reabsorption of water from the kidney's collecting ducts.

ANSWER: **ADH** [or **antidiuretic hormone** or **arginine vasopressin** or **AVP** or **vasopressin**]

[10] ADH causes the insertion of these proteins into the surface membrane of collecting duct cells from sub-plasmalemmal storage vesicles. Peter Agre won the 2003 Nobel Prize for his work on this family of proteins

ANSWER: **Aquaporins**

[10] The insertion of aquaporins allows cells lining the collecting duct to use the concentration gradient established across the renal medulla by this anatomist's namesake loop. In a nephron, this man's loop connects the proximal and distal convoluted tubules.

ANSWER: Friedrich Gustav Jakob **Henle**

18. For 10 points, answer some questions about Alexander Nevsky:

[10] Somewhat paradoxically, Nevsky was prince of this city and republic in modern Russia which remained unconquered by the Mongols and today houses the *Millennium of Russia* monument.

ANSWER: Veliky **Novgorod** (the Great)

[10] Nevsky led the Novgorod Republic to victory over the Livonian Order at this 1242 battle named for its location on frozen Lake Peipus.

ANSWER: **Battle on the Ice** [anything mentioning Ice will do]

[10] Nevsky's father was this Prince of Vladimir who left him as his representative in Novgorod after moving south to Kiev shortly before its invasion by the Mongols.

ANSWER: **Yaroslav III** [accept: **Yaroslav II**]

19. Dying out by 400 B.C., this society was the first to play the Mesoamerican ball game and practice ritual bloodletting they also produced lots of sculpture, which is what we're going to talk about. For 10 points each:

[10] Name this ancient civilisation of southern Mexico.

ANSWER: **Olmec**

[10] The Olmecs are noted for producing massive sculptures of this part of the body from basalt boulders. The Maoi on Rapa Nui are commonly, if somewhat inaccurately known as depictions of these body parts.

ANSWER: **Heads**

[10] Although also somewhat misnamed, give the common name of this Olmec basalt sculpture depicting a sitting man clenching his fists near his chest.

ANSWER: The **Wrestler** OR El **Luchador** Olmeca [accept: **Antonio Plaza Monument 1**]

20. This Dutch Scientist studied at Leyden University despite not being allowed to sit exams due a lack of knowledge of classical languages. For 10 points each:

[10] Name this Dutch scientist who names the most common intermolecular forces caused by dipole interactions, characterised by their r to the -6 dependency.

ANSWER: Johannes Diderik **Van der Waals**

[10] This Van der Waals force, named for a European capital city is caused by temporary dipole induced dipole interactions.

ANSWER: **London** dispersion force

[10] Van der Waals forces are the attractive term in this doubly eponymous model for the interactions between two neutral molecules, with an r to the -12 repulsive term.

ANSWER: **Lennard-Jones** potential