2 Hours and 30 Minutes

REVIEW OF THE DRE SCHOOL

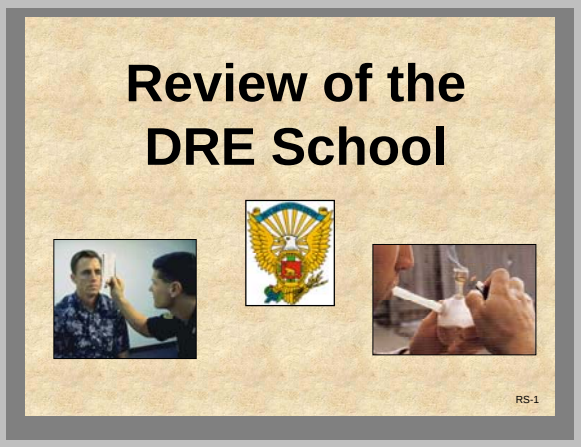
REVIEW SESSION

The principal purpose of the Review Session is to help students prepare for the final written examination. The following questions and exercises can be posed to the class to cover all of the information that will be elicited on the final exam. Try to involve all of the students actively in these questions and exercises.

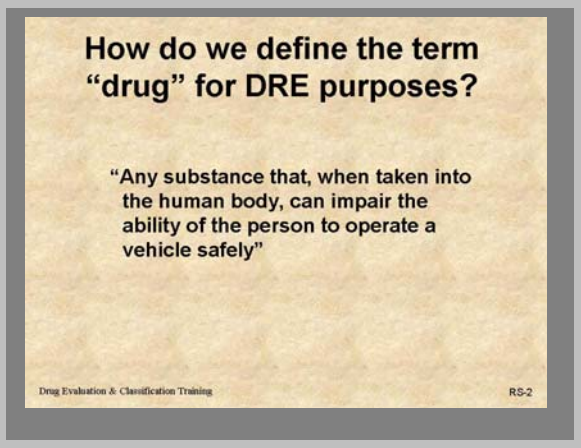
Remind the students that they have a thirty-three question self test with answers in their participant manuals.

I. REVIEW OF THE DRE SCHOOL

Review RS-1: Review of the DRE School



Review RS-2: How do we define the term “drug” for DRE purposes?



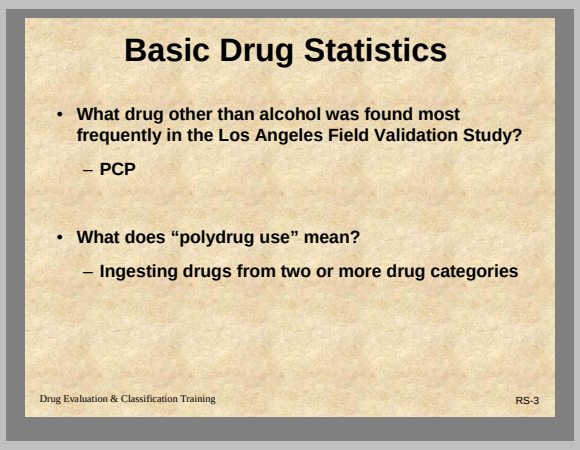
Defining the term “drug”

How do we define the term “drug” for DRE purposes?

Key Points to Emphasize:

- any substance
- that impairs the ability to operate a vehicle

Review RS-3: Basic Drug Statistics



Basic Drug Statistics

What percentage of DWI arrests involve drugs other than alcohol?

- LAPD Estimate: 10 – 20%

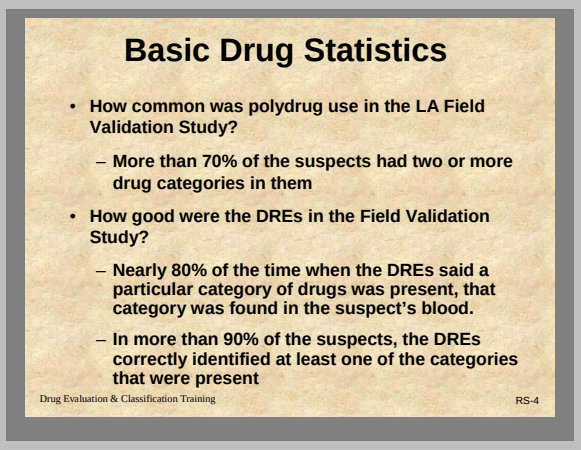
What drug other than alcohol was found most frequently in the Los Angeles Field Validation study?

- PCP

What does "polydrug use" mean?

- Ingesting drugs from two or more drug categories.

Review RS-4: Basic Drug Statistics



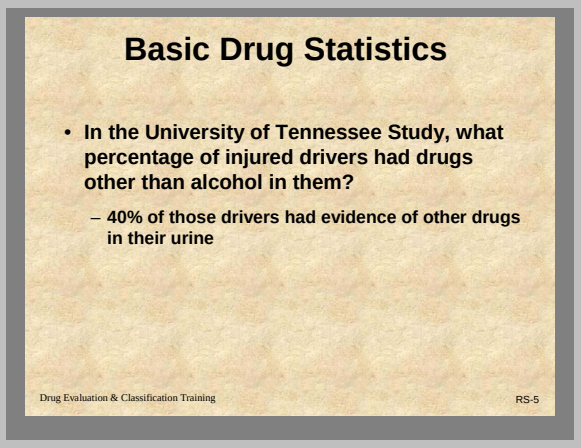
How common was polydrug use in the field validation study?

- 72% of the suspects had two or more drug categories in them.

How good were the DREs in the Field Validation study?

- Nearly 80% of the time when the DREs said a particular category of drugs was present, that category was found in the suspect's blood.
- In more than 90% of the suspects, the DREs correctly identified at least one of the categories that were present.

Review RS-5: Basic Drug Statistics



In the University of Tennessee study, what percentage of injured drivers had drugs other than alcohol in them?

- 40% of those drivers had evidence of other drugs in their urine.

Solicit students' questions about drug statistics.

Review of Symptomatology

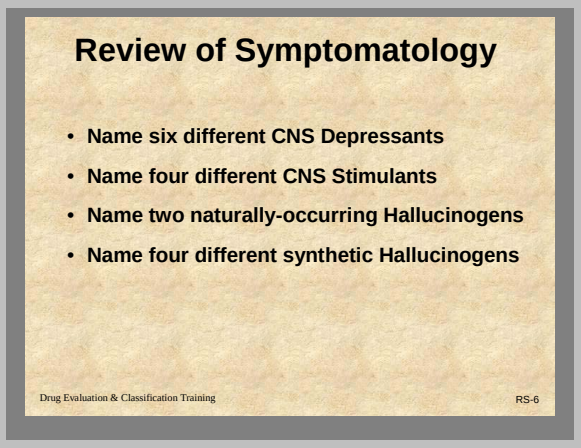
Prepare a "symptomatology matrix" on the dry erase board:

CATEGORY	HGN	VGN	CONV	PULSE	BP	TEMP	PUPILS	REACT	MUSCLE
CNS DEP									
CNS STIM									
HALLUC									
DIS ANESTH									
NARCOTICS									
INHALANTS									
CANNABIS									

Ask students to "fill in" the matrix by stating how each category will affect these major indicators of impairment.

Write students' responses on the dry erase board.

Review RS-6: Review of Symptomatology



Name six different CNS Depressants.

- See chapter 9 for full list: Alcohol, Chloral Hydrate, Librium, Prozac, Secobarbital, Thorazine, Valium, Xanax

Name four different CNS Stimulants.

- Methamphetamine, Cocaine, Amphetamines, Ritalin

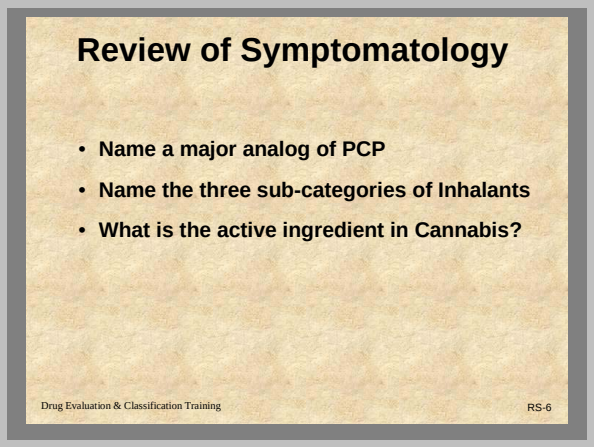
Name two naturally-occurring Hallucinogens.

- Peyote and Psilocybin

Name four different synthetic Hallucinogens.

- LSD, MDMA, MDA, TMA, STP, DMT

Review RS-7: Review of Symptomatology



Name a major analog of PCP.

- Ketamine

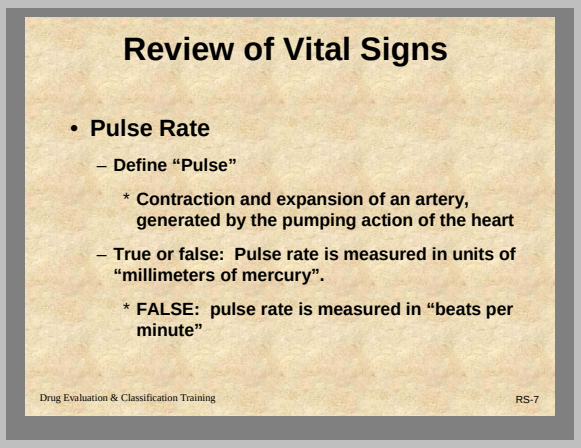
Name the three sub-categories of Inhalants.

- Anesthetic gases, Aerosols, Volatile Solvents

What is the active ingredient in Cannabis?

- $\triangle 9$ – THC

Review RS-8: Review of Vital Signs



Review of Vital Signs

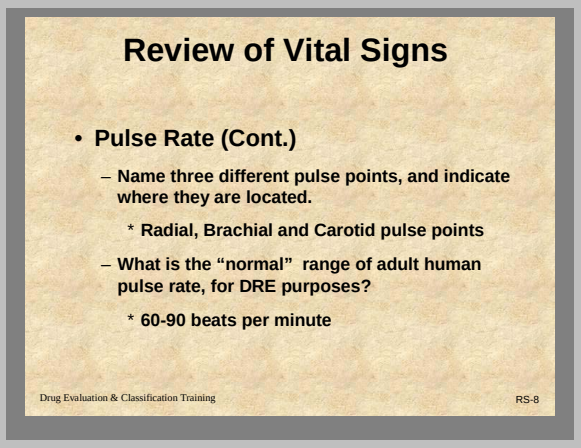
Define "Pulse."

- Contraction and expansion of an artery, generated by the pumping action of the heart.

True or False: Pulse rate is measured in units of "millimeters of mercury."

- FALSE: pulse rate is measured in "beats per minute."

Review RS-9: Review of Vital Signs



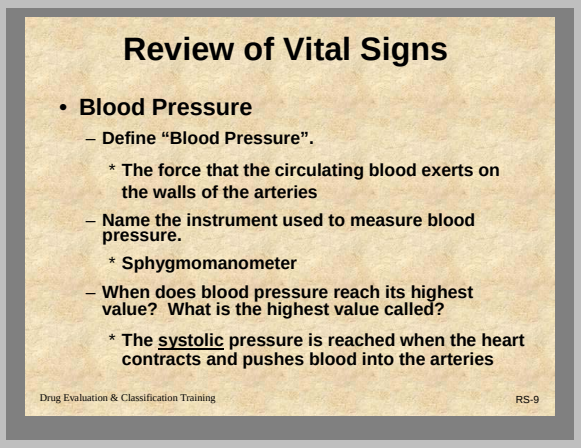
Name three different pulse points, and indicate where they are located.

- Make sure the students point out the Radial, Brachial, and Carotid pulse points.

What is the "normal" range of adult human pulse rate, for DRE purposes.

- 60-90 beats per minute.

Review RS-10: Review of Vital Signs



Define "Blood Pressure."

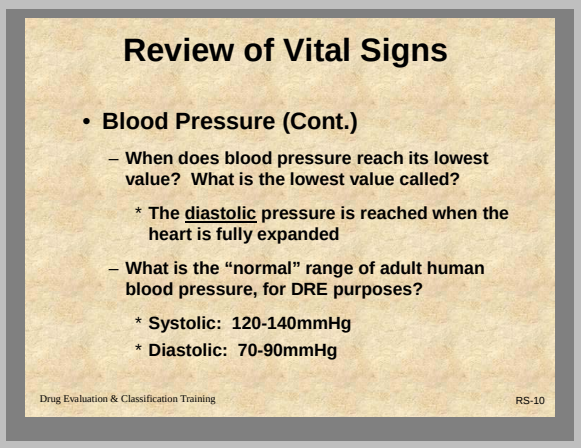
- The force that the circulating blood exerts on the walls of the arteries.

Name the instrument used to measure blood pressure.

- SPHYGMOMANOMETER: Ask a student to spell this, and write the correct spelling on the dry-erase board or flip chart.

Ask a student to spell this, and write the correct spelling on the dry-erase board or flip chart.

Review RS-11: Review of Vital Signs



When does blood pressure reach its highest value? What is the highest value called?

- The systolic pressure is reached when the heart contracts and pushes blood into the arteries.

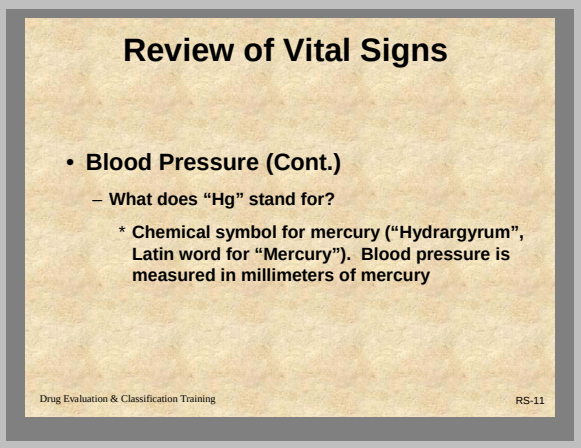
When does blood pressure reach its lowest value? What is the lowest value called?

- The diastolic pressure is reached when the heart is fully expanded.

What is the "normal" range of adult human blood pressure, for DRE purposes?

- Systolic: 120 – 140
- Diastolic: 70 – 90

Review RS-12: Review of Vital Signs

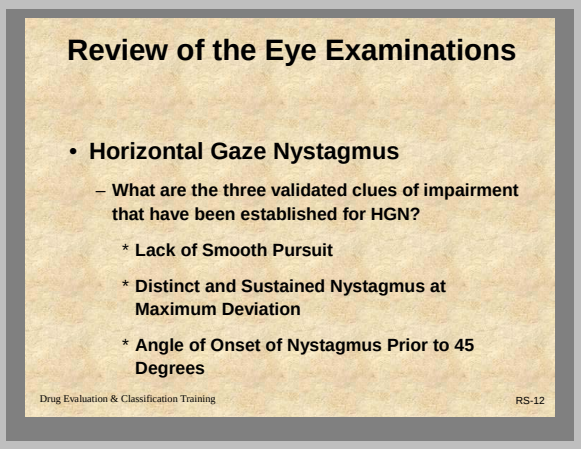


What does “Hg” stand for?

- Chemical symbol for mercury (“Hydrargyrum,” latin word for “Mercury”). B/P is measured in millimeters of mercury.

Solicit students’ questions about vital signs.

Review RS-13: Review of the Eye Examinations

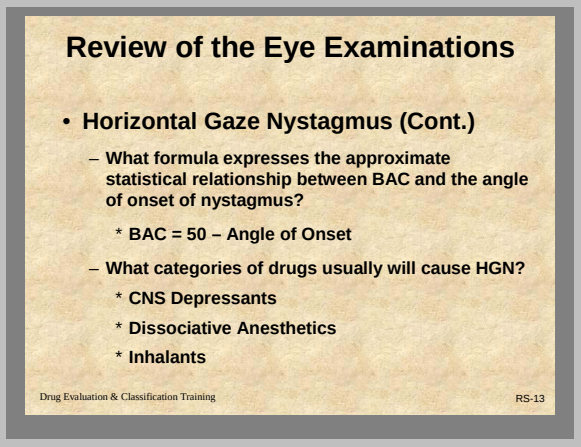


Review of the Eye Examinations

What are the three validated clues of impairment that have been established for HGN?

- Lack of Smooth Pursuit
- Distinct and Sustained Nystagmus at Maximum Deviation
- Angle of Onset prior to 45 Degrees

Review RS-14: Review of the Eye Examinations



What formula expresses the approximate statistical relationship between BAC and onset angle?

- BAC = 50 – Angle of onset

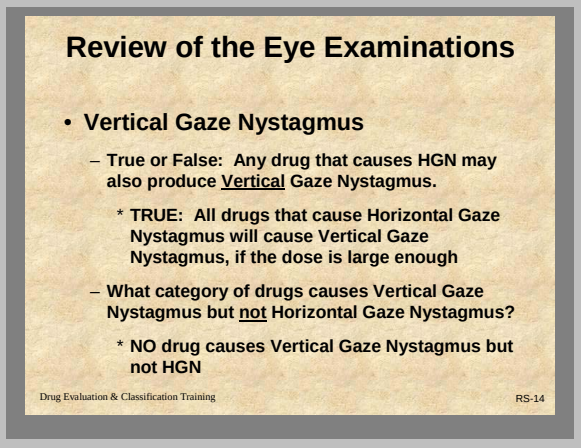
What categories of drugs usually will cause HGN?

- CNS Depressants, Dissociative Anesthetics, Inhalants

True or False: Any drug that causes HGN may also cause Vertical Gaze Nystagmus.

- TRUE: all drugs that cause Horizontal Gaze Nystagmus will cause Vertical Gaze Nystagmus, if the dose is large enough.

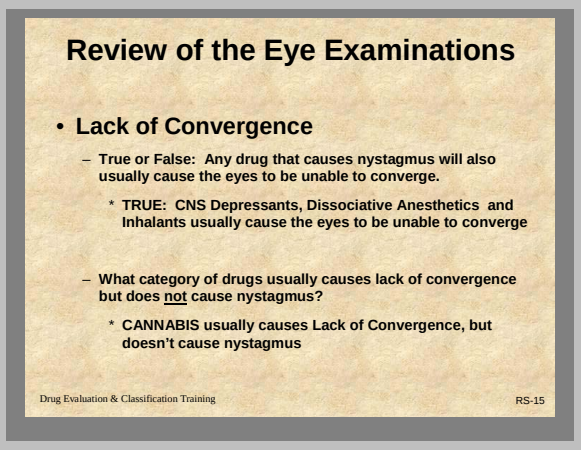
Review RS-15: Review of the Eye Examinations



What category of drugs causes Vertical Gaze Nystagmus but not Horizontal Gaze Nystagmus?

- No drug causes Vertical Gaze Nystagmus but not HGN.

Review RS-16: Review of the Eye Examinations



True or False: Any drug that causes nystagmus will also usually cause the eyes to be unable to converge?

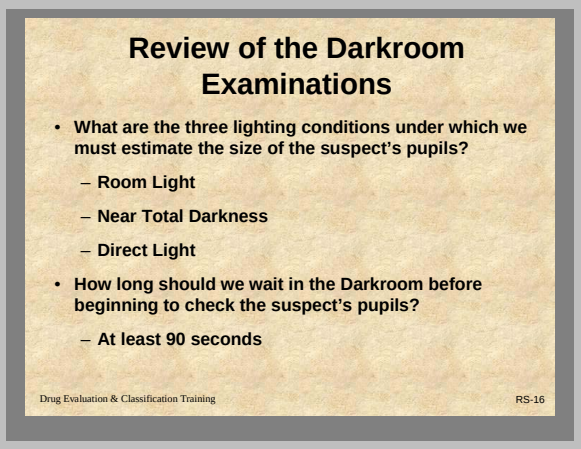
- TRUE: CNS Depressants, Dissociative Anesthetics, and Inhalants usually cause the eyes to be unable to converge.

What category of drugs usually causes Lack of Convergence but does not cause nystagmus?

- CANNABIS usually causes Lack of Convergence, but doesn't cause nystagmus.

Solicit students' questions about the eye examinations.

Review RS-17: Review of the Darkroom Examinations



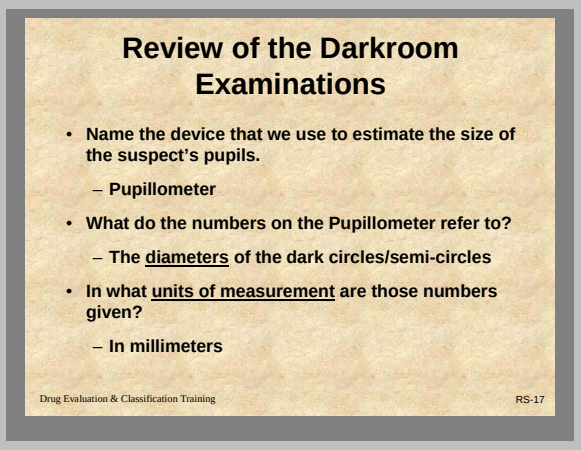
What are the three lighting conditions under which we must estimate the size of the suspect's pupils?

- Room Light, Near Total Darkness, Direct Light

How long should we wait in the Darkroom before beginning to check the suspect's pupils?

- At least 90 seconds

Review RS-18: Review of the Darkroom Examinations



Name the device that we use to estimate the size of the suspect's pupils.

- Pupillometer

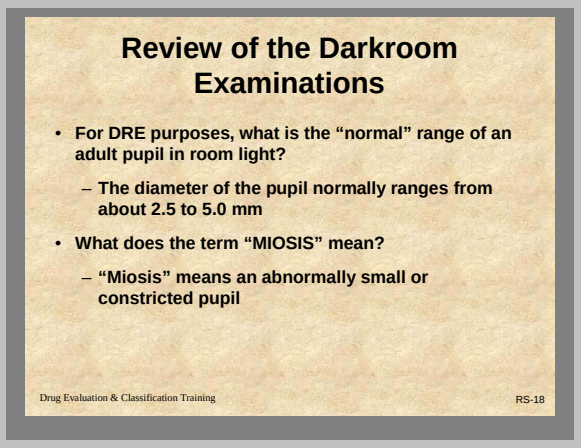
What do the numbers on the Pupillometer refer to?

- The diameters of the dark circles/ semi circles.

In what units of measurement are those numbers given?

- In millimeters

Review RS-19: Review of the Darkroom Examinations



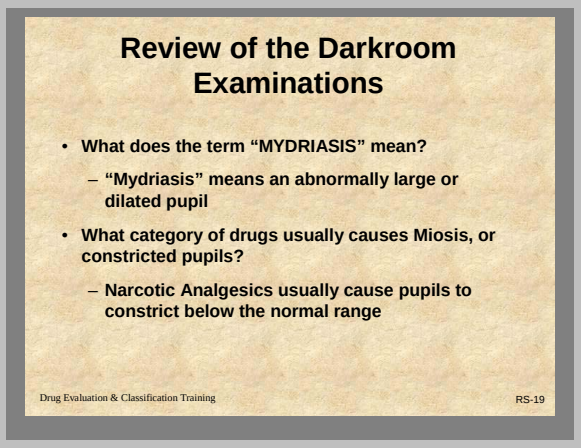
For DRE purposes, what is the "normal" range of the size of an adult human's pupil in room light?

- The diameter of the pupil normally ranges from about 2.5 to 5.0 mm.

What does the term "MIOSIS" mean?

- "Miosis" means an abnormally small or constricted pupil.

Review RS-20: Review of the Darkroom Examinations



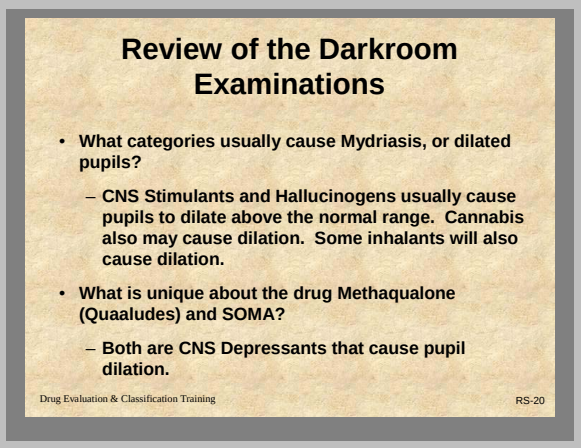
What does the term "MYDRIASIS" mean?

- "Mydriasis" means an abnormally large or dilated pupil.

What category of drugs usually causes Miosis, or constricted pupils?

- Narcotic Analgesics usually cause pupils to be constricted below the normal range.

Review RS-21: Review of the Darkroom Examinations



What categories usually cause Mydriasis, or dilated pupils?

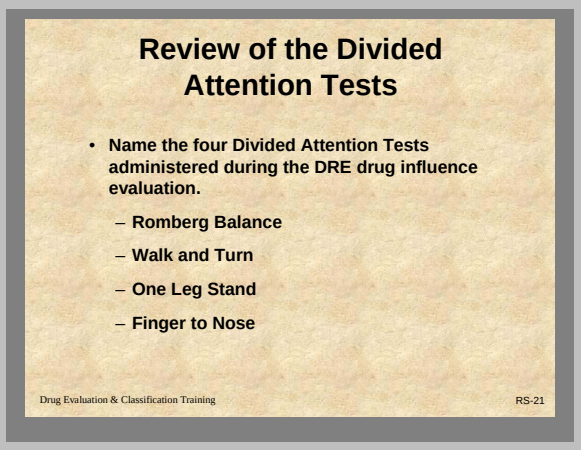
- CNS Stimulants and Hallucinogens usually cause pupils to be dilated above the normal range. Cannabis also may cause dilation. Some inhalants will also cause dilation.

What is unique about the drug "Methaqualone" and SOMA?

- Methaqualone and Soma are CNS Depressants that cause pupil dilation.

Solicit students' questions about the darkroom exams.

Review RS-22: Review of the Divided Attention Tests

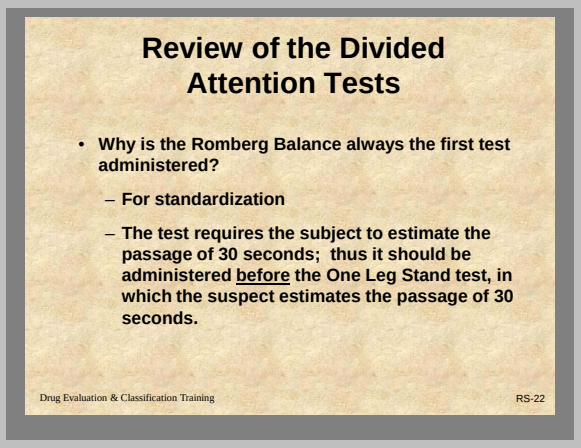


Review of the Divided Attention Tests

Name the four Divided Attention Tests administered during the DRE Examination.

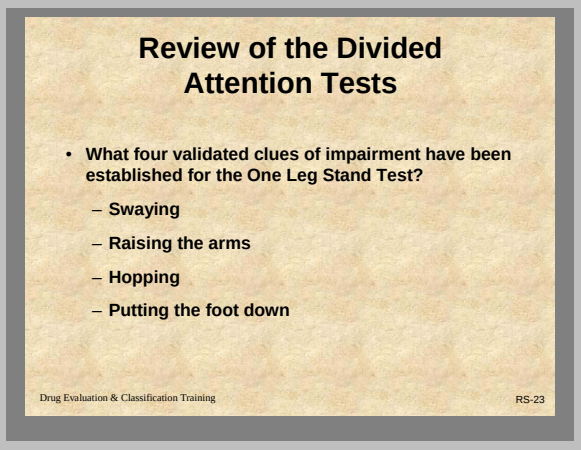
- Romberg Balance, Walk and Turn, One Leg Stand, Finger to Nose

Review RS-23: Review of the Divided Attention Tests



- For standardization
- The test requires the subject to estimate the passage of 30 seconds; thus, it should be administered before the One Leg Stand.

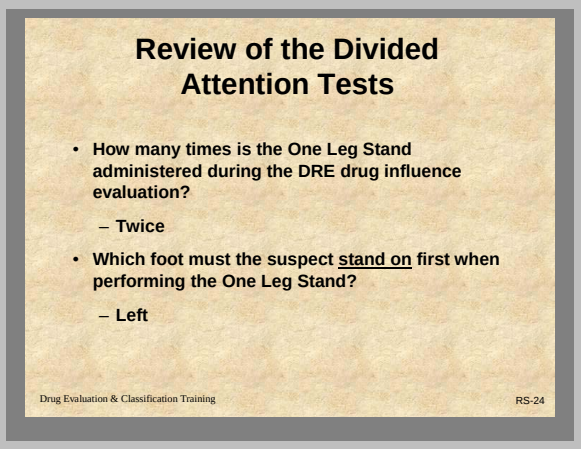
Review RS-24: Review of the Divided Attention Tests



Four validated clues of impairment have been established for the One Leg Stand test; name them.

- Swaying, raising the arms, hopping, putting the foot down

Review RS-25: Review of the Divided Attention Tests



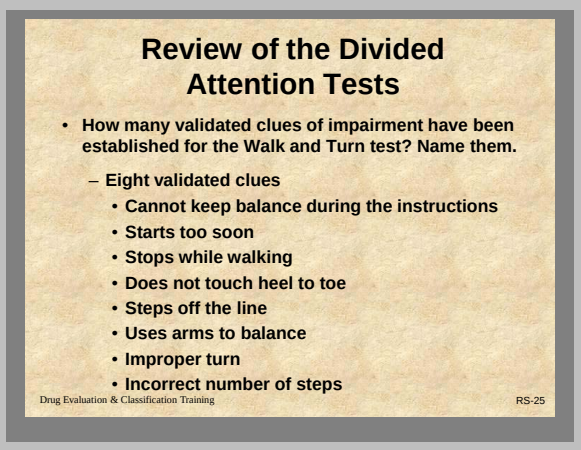
How many times is One Leg Stand administered during the DRE drug influence evaluation?

- Twice

Which foot must the suspect stand on first when performing the One Leg Stand?

- Left

Review RS-26: Review of the Divided Attention Tests

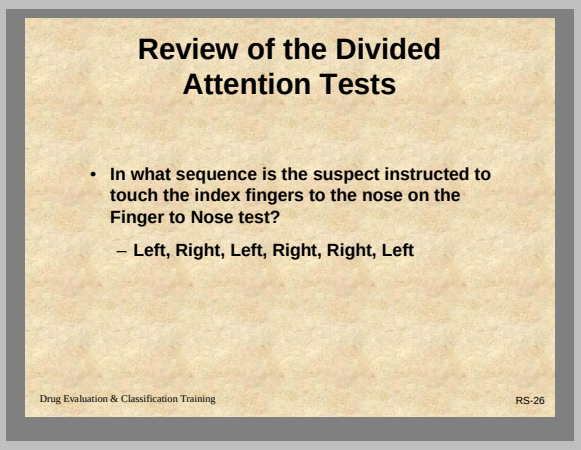


How many validated clues of impairment have been established for the Walk and Turn test? Name them.

- Cannot keep balance during the instructions.

- Starts too soon
- Stops while walking
- Does not touch heel-to-toe
- Steps off the line
- Uses arms to balance
- Improper turn
- Incorrect number of steps

Review RS-27: Review of the Divided Attention Tests

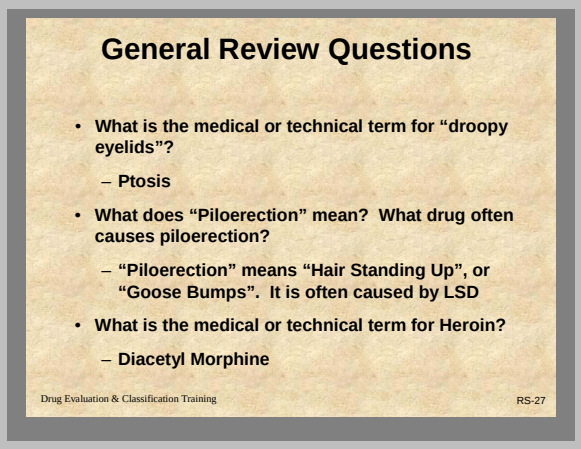


In what sequence is the suspect instructed to touch the index fingers to the nose on the Finger to Nose test?

- Left, right, left, right, right, left

Solicit students' questions about the divided attention tests.

Review RS-28: General Review Questions



General Review Questions

What is the medical or technical term for "droopy eyelids?"

- Ptosis

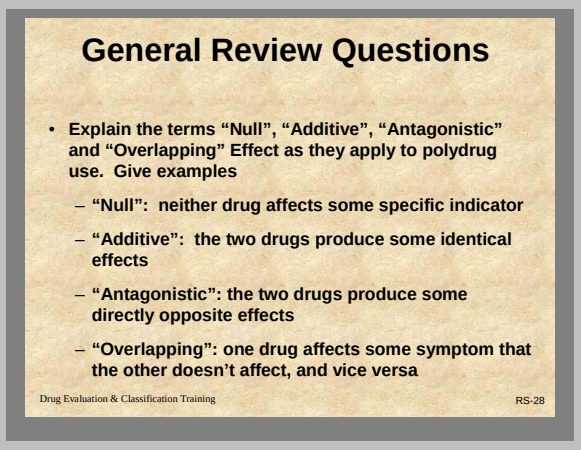
What does "Piloerection" mean? What drug often causes piloerection?

- Piloerection" means "Hair Standing Up," or "Goose Bumps."
- Often caused by LSD.

What is the medical or technical term for Heroin?

- Diacetyl Morphine

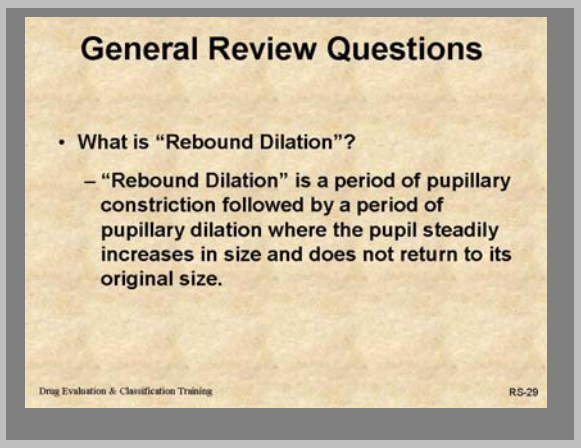
Review RS-29: General Review Questions



Explain the terms "Null," "Additive," "Antagonistic," and "Overlapping Effect" as they apply to polydrug use. Give examples.

- "Null": neither drug affects some specific indicator.
- "Additive": the two drugs produce some identical effects.
- "Antagonistic": the two drugs produce some directly opposite effects.
- "Overlapping": one drug affects some symptom that the other doesn't affect, and vice versa.

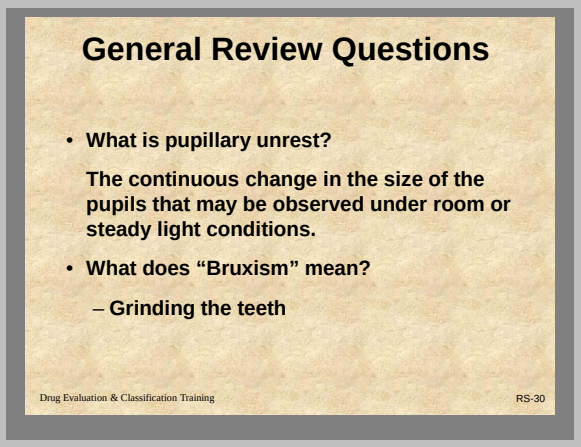
Review RS-30: General Review Questions



What is "Rebound Dilation?"

- "Rebound Dilation" is a period of pupillary constriction followed by a period of pupillary dilation where the pupil steadily increases in size and does not return to its original constricted size.

Review RS-31: General Review Questions



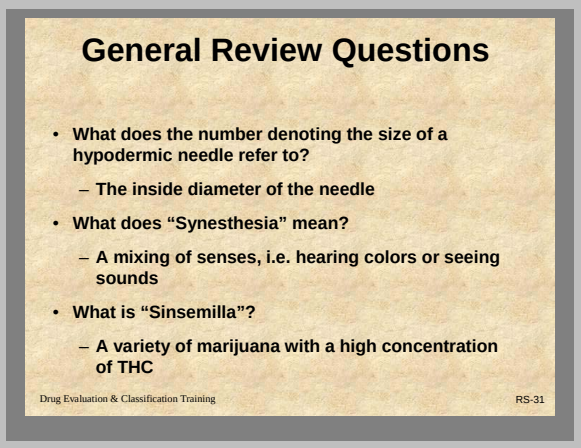
What is pupillary unrest?

- The continuous irregular change in the size of the pupils that may be observed under room or steady light conditions.

What does "Bruxism" mean?

- Grinding the teeth

Review RS-32: General Review Questions



What does the number denoting the size of an hypodermic needle refer to?

- The inside diameter of the needle.

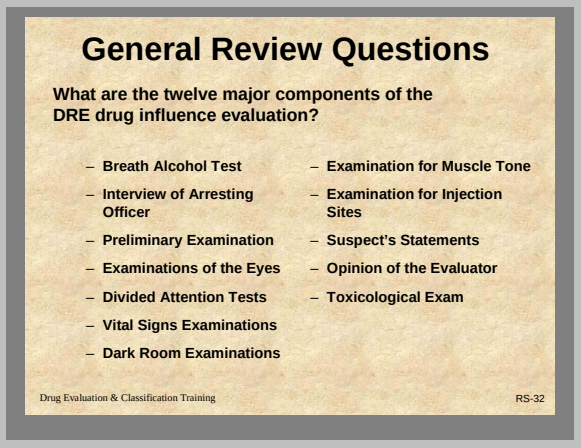
What does "Synesthesia" mean?

- A mixing of senses, i.e. hearing colors or seeing sounds.

What is "Sinsemilla?"

- A variety of marijuana with a high concentration of THC.

Review RS-33: General Review Questions

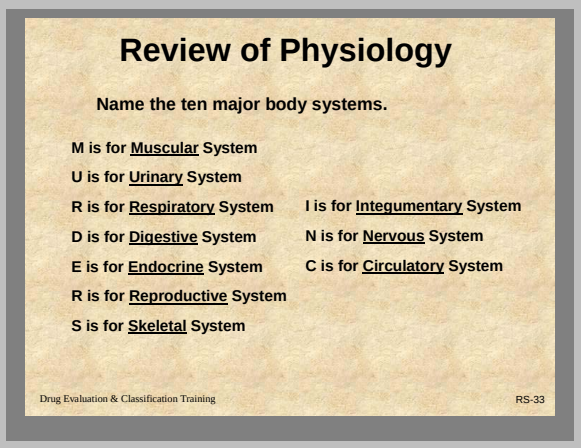


List students' responses on the dry-erase board or flip chart.

What are the twelve major components of the DRE Examination?

- Breath Alcohol Test
- Interview of Arresting Officer
- Preliminary Examination
- Examinations of the Eyes
- Divided Attention Tests
- Vital Signs Examinations
- Dark Room Examinations
- Examination for Muscle Tone
- Examination for Injection Sites
- Suspect's Statements
- Opinion of the Evaluator
- Toxicology Exam

Review RS-34: Review of Physiology



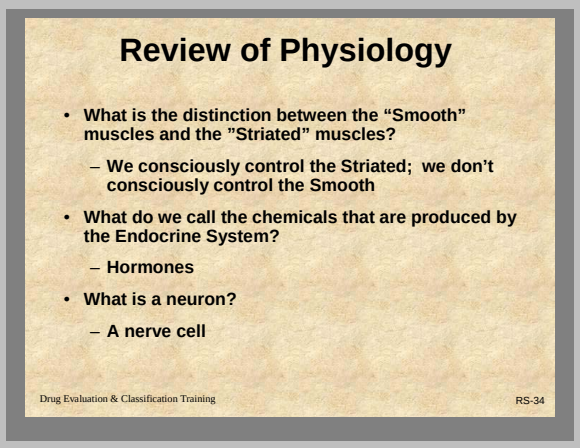
List the students' responses on the dry-erase board or flip chart.

Name the ten major body systems.

- Muscular System
- Urinary System
- Respiratory System

- Digestive System
- Endocrine System
- Reproductive System
- Skeletal System
- Integumentary System
- Nervous System
- Circulatory System

Review RS-35: Review of Physiology



What is the distinction between the "Smooth" muscles and the "Striated" muscles?

- We consciously control the Striated; we don't consciously control the Smooth.

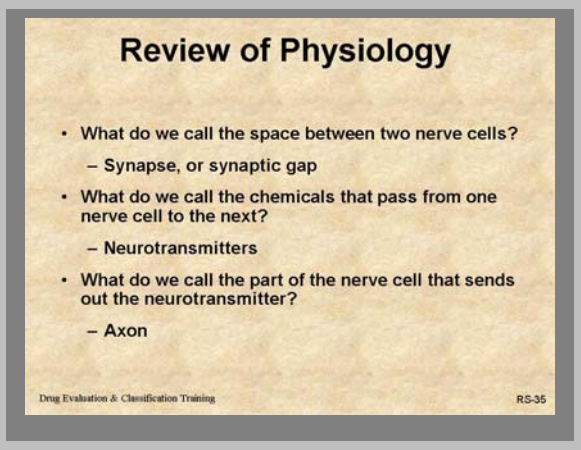
What do we call the chemicals that are produced by the Endocrine system?

- Hormones

What is a neuron?

- A nerve cell

Review RS-36: Review of Physiology



What do we call the space between two nerve cells?

- The synapse, or synaptic gap

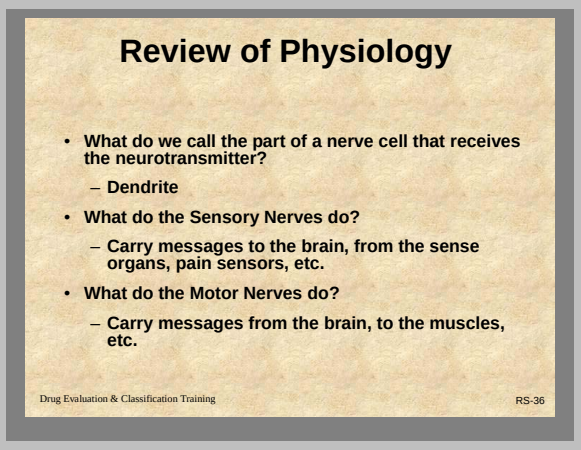
What do we call the chemicals that pass from one nerve cell to the next?

- Neurotransmitters

What do we call the part of a nerve cell that sends out the neurotransmitter?

- Axon

Review RS-37: Review of Physiology



What do we call the part of a nerve cell that receives the neurotransmitter?

- Dendrite

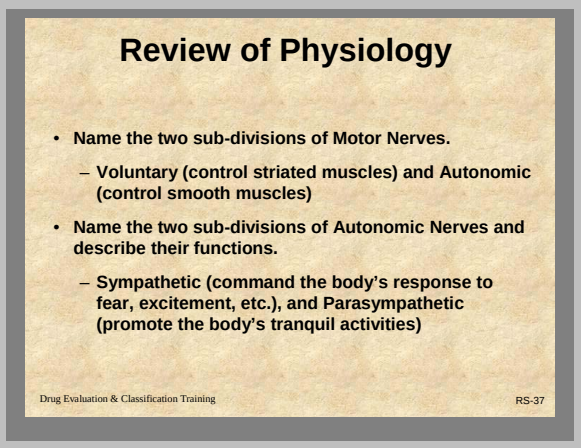
What do the Sensory Nerves do?

- Carry message to the brain, from the sense organs, pain sensors, etc.

What do the Motor Nerves do?

- Carry message from the brain, to the muscles, etc.

Review RS-38: Review of Physiology



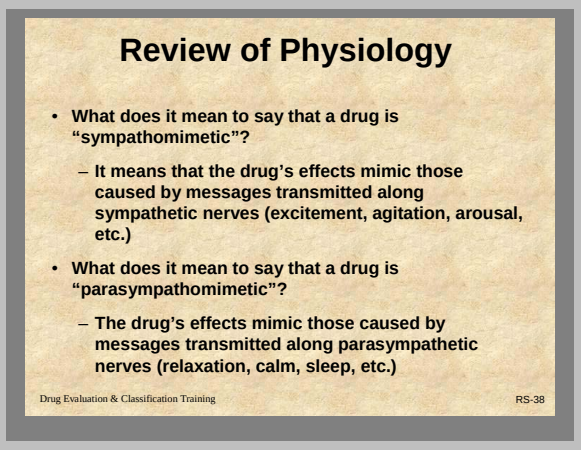
Name the two subdivisions of Motor Nerves.

- Voluntary (control striated muscles) and Autonomic (control smooth muscles)

Name the two subdivisions of Autonomic Nerves and describe their functions.

- Sympathetic (command the body's response to fear, excitement, etc), and Parasympathetic (promote the body's tranquil activities).

Review RS-39: Review of Physiology



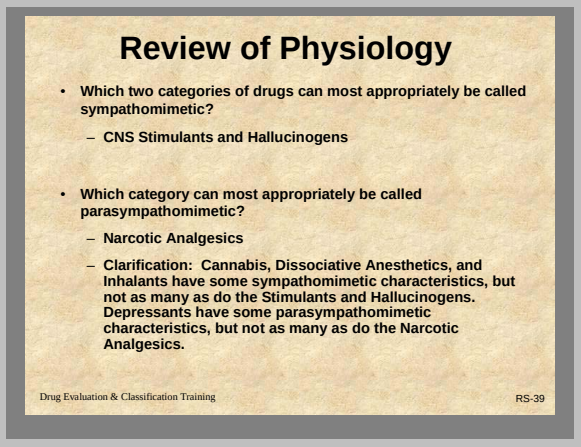
What does it mean to say that a drug is "sympathomimetic?"

- It means that the drug's effects mimic those caused by messages transmitted along sympathetic nerves (excitement, agitation, arousal, etc.)

What does it mean to say that a drug is "parasympathomimetic?"

- The drugs effects mimic those caused by messages transmitted along parasympathetic nerves (relaxation, calm, sleep, etc.)

Review RS-40: Review of Physiology



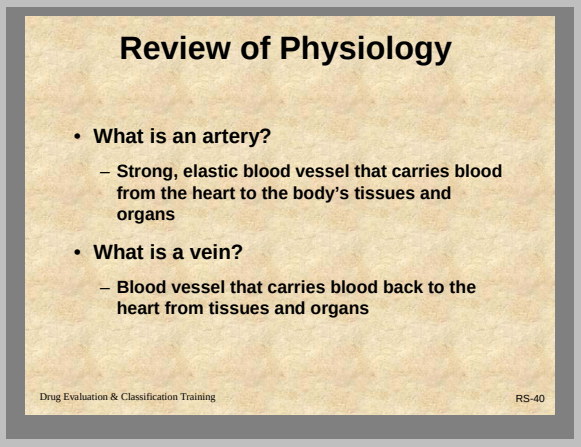
Which two categories of drugs can most appropriately be called sympathomimetic?

- CNS Stimulants and Hallucinogens

Which category can most appropriately be called parasympathomimetic?

- Narcotic Analgesics
    - Clarification: Cannabis, Dissociative Anesthetics and Inhalants have some sympathomimetic characteristics, but not as many as do the CNS Stimulants and Hallucinogens. Depressants have some para-sympathomimetic characteristics, but not as many as do the Narcotic Analgesics.

Review RS-41: Review of Physiology



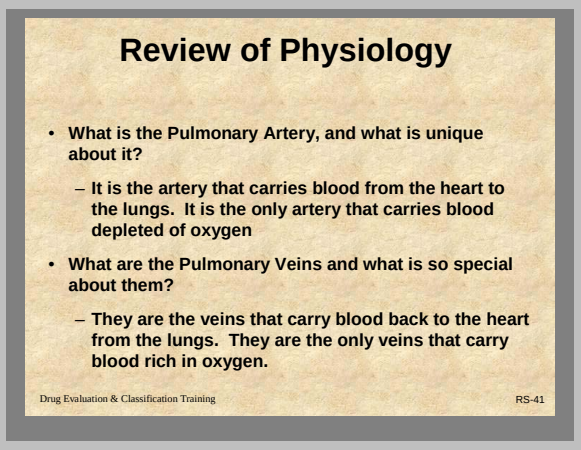
What is an artery?

- Strong, elastic blood vessel that carries blood from the heart to the body's tissues and organs.

What is a vein?

- Blood vessel that carries blood from the heart to the body's tissues and organs.

Review RS-42: Review of Physiology



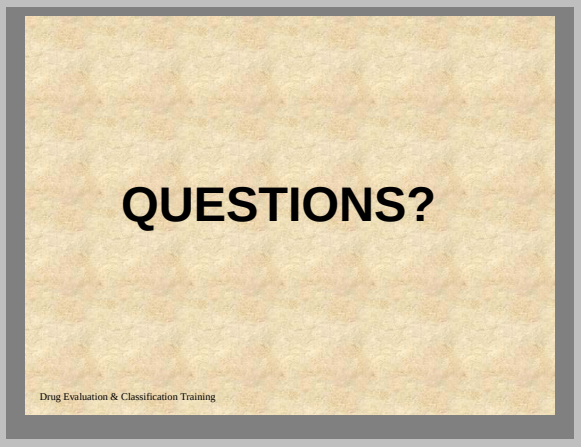
What is the Pulmonary Artery, and what is unique about it?

- It is the artery that carries blood from the heart to the lungs. It is the only artery that carries blood depleted of oxygen.

What are the Pulmonary Veins, and what is so special about them?

- They are the veins that carry blood back to the heart from the lungs. They are the only veins that carry blood rich in oxygen.

Review RS-43: Questions



Solicit students' questions about physiology. Solicit any additional questions that the students might have.

Administer quiz number five to the students. Allow 20 minutes for the students to complete the quiz. Review the quiz with the class, and allow the students to retain the quiz for their independent study.

Thank the students for attending the optional review session.

A SELF-TEST FOR REVIEW AND STUDY

Circle the letters corresponding to the correct answers. Note that some questions have **more than one** correct answer.

1. Suppose you examine a suspect that you know is under the combined influence of Demerol and Thorazine. Which of the following would you **not** expect to find in that suspect? (Circle all that you wouldn't expect to see.)

   A. Tachycardia is present
   B. Horizontal Gaze Nystagmus is present
   C. Hypotension is present
   D. Mydriasis is present
   E. Lack of Convergence is present

2. The Autonomic Nervous System has **sympathetic** nerves and _____ nerves.

   A. parasympathetic
   B. metasympathetic
   C. postsympathetic
   D. mesosympathetic
   E. pilosympathetic

3. Suppose you examine a suspect that you know is under the combined influence of Ketamine and Methamphetamine, and you observe that he or she exhibits Horizontal Gaze Nystagmus. This is an example of ....

   A. A Synergistic Effect
   B. An Antagonistic Effect
   C. The Null Effect
   D. An Overlapping Effect
   E. An Additive Effect

4. The technical term meaning "constricted pupils" is ....

   A. Mydriasis
   B. Occulosis
   C. Miosis
   D. Bruxism
   E. Ptosis

5. **Chloral Hydrate** is an example of ....

A. a Non-Barbiturate
B. an Anti-Psychotic Tranquilizer
C. an Anti-Depressant
D. a Barbiturate
E. an Anti-Anxiety Tranquilizer

6. **Numorphan** is an example of ....
A. a Synthetic Opiate
B. an Analog of Phencyclidine
C. a Natural Alkaloid of Opium
D. an Opium Derivative
E. a non-Amphetamine-based Stimulant

7. Which of the following ordinarily will cause Horizontal Gaze Nystagmus? (Circle all that usually cause nystagmus.)

A. Methamphetamine
B. Valium
C. The combination of Cocaine and Xanax
D. The combination of Cannabis and LSD
E. The combination of Heroin and Dilaudid

8. **Ritalin** is an example of ....

A. a CNS Stimulant
B. a Narcotic Analgesic
C. an Hallucinogen
D. a CNS Depressant
E. an Analog of Phencyclidine

9. Suppose you examine a suspect that you know is under the combined influence of Heroin and PCP, and you observe that he or she exhibits **miosis**. This is most likely due to ....

A. The "Downside" of Heroin
B. An Overlapping Effect between the two drugs
C. An Antagonistic Effect between the two drugs
D. An Additive Effect between the two drugs
E. The "Downside" of PCP

10. Which of the following usually will be true in a subject who is under the influence of an Hallucinogen? (Circle all that usually will be true.)

A. Pupils will be constricted
B. Body temperature will be elevated
C. Eyes will be unable to converge
D. Blood pressure will be elevated
E. Horizontal Gaze Nystagmus will be present

11. Which of the following is not classified as an Hallucinogen? (Circle all that **are not** Hallucinogens.)

A. ETOH
B. DOM
C. MDMA
D. MPPP
E. THC

12. Which of the following ordinarily will leave body temperature within the normal range? (Circle all that usually don't affect body temperature.)

A. CNS Stimulants
B. Dissociative Anesthetics
C. Cannabis
D. CNS Depressants
E. All of the above **usually do** affect body temperature

13. Suppose you examine a suspect that you know is under the combined influence of Percodan and Cannabis, and you find that the suspect's pulse rate is 74 bpm. This is most likely due to ....

A. An Additive Effect between the two drugs
B. The "Downside" of Cannabis
C. An Overlapping Effect between the two drugs
D. An Antagonistic Effect between the two drugs
E. The "Downside" of Percodan

14. How many distinct, validated clues have been established for the Romberg Balance test?

A. Eight
B. Six
C. Four
D. Three
E. There are **no validated** clues for that test.

15. A person under the combined influence of Ritalin and LSD usually will have above normal blood pressure. This is an example of ....

A. An Overlapping Effect
B. A Synergistic Effect
C. The Null Effect
D. An Additive Effect
E. An Antagonistic Effect

16. The gap between two nerve cells is called the ....

A. Vesicle
B. Neuron
C. Synapse
D. Dendrite
E. Axon

17. **"Ptosis"** most nearly means ....

A. Dilated pupils
B. Grinding the teeth
C. Constricted pupils
D. Droopy eyelids
E. Goose bumps

18. How many distinct, validated clues have been established for the Walk-and-Turn test?

A. Eight
B. Six
C. Four
D. Three
E. There are **no validated** clues for that test.

19. Which of the following are not subcategories of Inhalants? (Circle all that are not proper names for Inhalant Subcategories.)

A. Fluorocarbons
B. Anesthetic Gases
C. Aerosols
D. Volatile Solvents
E. Propellants

20. **Phencyclidine** is best described as ....

A. parasympathomimetic
B. an anti-depressant
C. a cellular stimulant
D. psychotophobic
E. a dissociative anesthetic

21. Which of the following usually **will not cause** the pupils to dilate? (Circle all that usually do not cause dilation.)

A. MDMA
B. Methaqualone
C. Desoxyn
D. Peyote
E. Ketamine

22. Which subcategory or subcategories of Inhalants usually cause blood pressure to **be below normal**? (Circle all that usually cause below normal blood pressure.)

A. Anesthetic Gases
B. Propellants
C. Volatile Solvents
D. Aerosols
E. Fluorocarbons

23. Which of the following are **Natural Alkaloids** of opium? (Circle all that are Natural Alkaloids.)

A. Lortab
B. Dilaudid
C. Codeine
D. Thebaine
E. Hycodan

24. **"Crank"** is a street name for ....

A. Heroin
B. Cocaine
C. PCP
D. Methamphetamine
E. LSD

25. Which of the following are **not validated clues** for the One Leg Stand test? (Circle all that aren't validated clues.)

A. Hopping
B. Raising the arms
C. Putting the foot down
D. Failing to count out loud
E. Swaying

26. Which of the following would be considered **sympathomimetic** drugs? (Circle all that are sympathomimetic.)

A. MDMA
B. Dexedrine
C. Xanax
D. Oxycontin
E. Desoxyn

27. Suppose you examine a suspect, and you observe **all** of the following: Horizontal Gaze Nystagmus is present, with an onset of approximately 30 degrees; BAC is 0.00; eyes are unable to converge; pupil size is 5.5 mm in near-total darkness and 3.5 mm in direct light; pupil reaction to light is within normal; pulse rate is 100 bpm; blood pressure is 148/96; body temperature is 99.8 degrees. In your opinion, this suspect is under the influence of ....

A. a combination of a CNS Depressant and a CNS Stimulant
B. a CNS Depressant alone
C. a Dissociative Anesthetic alone
D. a combination of a Dissociative Anesthetic and a CNS Stimulant
E. a combination of a CNS Depressant and Cannabis

28. The only artery that carries **de-oxygenated** blood is the _____ artery.

A. Carotid
B. Brachial
C. Pulmonary
D. Radial
E. Coronal

29. Suppose a subject is under the influence of **Hycodan** and nothing else. Indicate whether each of the following will be true or false:

A.	T F	Horizontal Gaze Nystagmus will not be present
B.	T F	Pupils will be constricted
C.	T F	Bradycardia will be present
D.	T F	Eyes will be able to converge
E.	T F	Hypotension will be present

30. **"Bruxism"** most nearly means ....

A. Dilated pupils
B. Grinding the teeth
C. Constricted pupils
D. Droopy eyelids
E. Goose bumps

31. Suppose a suspect is under the influence of a combination of Marijuana and Cocaine, but nothing else. Indicate whether each of the following will be true or false:

A.	T F	Pulse rate will be elevated
B.	T F	Pupils will be dilated
C.	T F	Horizontal Gaze Nystagmus will be present
D.	T F	Eyes will be able to converge
E.	T F	Blood pressure will be elevated

32. How many distinct, validated clues have been established for the Finger-to-Nose test?

A. Eight
B. Six
C. Four
D. Three
E. There are **no validated** clues for this test.

33. The drug _____ is an example of an Anti-Anxiety Tranquilizer. (Circle all that are Anti-Anxiety Tranquilizers.)

A. Librium
B. Valium
C. Amobarbital
D. Chloral Hydrate
E. Xanax

ANSWER KEY FOR THE SELF-TEST

1. Correct answers are A and D.
   Demerol is a Narcotic Analgesic, Thorazine is a CNS Depressant. The combination should **not produce** elevated heart rate (Tachycardia) nor dilated pupils (Mydriasis). But Horizontal Gaze Nystagmus and Lack of Convergence should be present, due to the Depressant, Thorazine. And, lowered blood pressure (Hypotension) should be present as an Additive Effect of both drugs.

2. Correct answer is A, **parasympathetic**.

3. Correct answer is D, **Overlapping**.
   Ketamine is an Analog of PCP, a drug that usually does cause Horizontal Gaze Nystagmus. Methamphetamine is a CNS Stimulant, a type of drug that doesn't affect nystagmus. This is a case of **action plus no action equals action**, i.e., an Overlapping Effect.

4. Correct answer is C, **Miosis**.

5. Correct answer is A, **Non-Barbiturate**.

6. Correct answer is D, **Opiate Derivative**.

7. Correct answers are B and C.
   Valium is a CNS Depressant, which of course causes nystagmus. The combination of Cocaine and Xanax gives us a Stimulant and a Depressant (Xanax), which causes Nystagmus via an Overlapping Effect. None of the other drugs mentioned cause Nystagmus: Methamphetamine is a Stimulant; LSD is an Hallucinogen; Heroin and Dilaudid are Narcotics; Cannabis, of course, is its own category.

8. Correct answer is A, **CNS Stimulant**.

9. Correct answer is B, **Overlapping**.
   Heroin, a Narcotic, causes constriction of the pupils (Miosis); PCP does not affect pupil size. This is another case of **action plus no action equals action**.

10. Correct answers are B and D.
    Hallucinogens are **sympathomimetic** drugs, and therefore usually elevate the vital signs. But they have no affect on either Nystagmus or Lack of Convergence. And, instead of constricting the pupils, Hallucinogens usually cause pupils to dilate.

11. Correct answers are A, D and E.
    ETOH is the chemical name for Ethyl Alcohol, the common beverage form of alcohol that remains the most commonly-abused drug. **MPPP** is a synthetic opiate. **THC** is the primary active ingredient in Cannabis. But "MDMA" (also known as "Ecstasy") and "DOM" (also known as "STP") **are** Hallucinogens.

12. Correct answers are C and D, **Cannabis and Depressants**.

13. Correct answer is D, **Antagonistic**.
A pulse rate of 74 bpm is within the normal range. Percodan, a Narcotic Analgesic, usually lowers the pulse, while Cannabis usually elevates the pulse. The Antagonistic Effect of the two drugs has put this suspect's pulse into a precarious, and probably temporary, state of balance.

14. Correct answer is E, **no validated clues**.
It is important to understand that, when we say there are no validated clues for Romberg, that does **not mean** that the test is invalid. It simply means that we do not have the research data to attest that specific clues on that test are statistically reliable indicators of impairment. Those kinds of research data, at the present time, are available only for Horizontal Gaze Nystagmus, Walk and Turn and One Leg Stand.

15. Correct answer is D, **Additive**.
Ritalin (a Stimulant) and LSD (an Hallucinogen) both usually elevate blood pressure.

16. Correct answer is C, **Synapse**.

17. Correct answer is D, **Droopy Eyelids**.

18. Correct answer is A, **Eight**.
Of the eight **validated** clues for Walk and Turn, two may be observed during the Instructions Stage of the test. They are <u>can't keep balance</u> (which means the suspect breaks away from the heel-to-toe stance) and <u>starts too soon</u>. The other six clues pertain to the Walking Stage of the test. They include:

- <u>misses heel-to-toe</u>
- <u>uses arms to balance</u>
- <u>steps off line</u>
- <u>stops walking</u>
- <u>turns improperly</u>
- <u>takes the wrong number of steps</u>

Although these eight are the only <u>validated</u> clues for Walk and Turn, they aren't the only things that might be observed that could serve as evidence of impairment. All of your observations of the suspect are important.

19. Correct answers are A and E, **Fluorocarbons and Propellants**.
The only proper names for subcategories of Inhalants are Volatile Solvents, Aerosols and Anesthetic Gases.

20. Correct answer is E, dissociative anesthetic.

21. Correct answer is E, **Ketamine**.
Ketamine is an analog of PCP, a drug that doesn't affect pupil size. MDMA and Peyote are Hallucinogens, and Desoxyn is a CNS Stimulant; all of those dilate pupils. Methaqualone is a very special CNS Depressant; unlike almost all other Depressants, Methaqualone does affect pupil size (by dilating the pupils).

22. Correct answer is A, **Anesthetic Gases**.
Volatile Solvents and Aerosols usually produce above-normal blood pressure. "Fluorocarbons" and "Propellants" are, of course, not proper names for subcategories of Inhalants.

23. Correct answers are C and D, **Codeine and Thebaine**.
Lortab, Dilaudid and Hycodan are all **opium derivatives**. Dilaudid derives from Morphine, and Hycodan and Lortab from Codeine.

24. Correct answer is D, **Methamphetamine**.

25. Correct answer is D, **Failing to Count Out Loud**.
Hopping, Raising the Arms, Putting the Foot Down and Swaying are the four (and only four) **validated** clues of impairment for One Leg Stand.

26. Correct answers are A, B and E: **MDMA, Dexedrine and Desoxyn**.
Dexedrine and Desoxyn are members of the Amphetamine family of CNS Stimulants. MDMA is a "Psychedelic Amphetamine" belonging to the Hallucinogens. CNS Stimulants and Hallucinogens are the two categories that make up the **sympathomimetic** drugs. That means they simulate the responses that the body makes to messages conveyed along the **sympathetic** nerves, i.e., elevated vital signs, dilated pupils, etc. Three other categories, namely the Inhalants, Phencyclidine and Cannabis have **some** sympathomimetic characteristics, but they are not considered to be fully sympathomimetic, and not to the degree of the CNS Stimulants and Hallucinogens. Xanax and Oxycontin aren't even close to being sympathomimetic. Xanax (a Depressant) and Oxycontin (a Narcotic) are better described as wholly or partially **parasympathomimetic**.

27. Correct answer is C, **a Dissociative Anesthetic**.
Dissociative Anesthetics, by themselves, can account for all of the observations listed. Dissociative Anesthetics cause Nystagmus, and Lack of Convergence; they do not affect pupil size, so the pupils remain within the normal range; they do not affect the reaction of the pupils to light; they usually elevate all three vital signs.

A Depressant, by itself, could not account for the elevated vitals, and usually would slow the pupils' reaction to light.

If we had a combination of a Depressant and a Stimulant, we'd expect to see the pupils dilated beyond the normal range (due to an Overlapping Effect), and we'd expect to see the reaction of the pupils slowed (due to an Additive Effect). Also,

although it is possible that the vital signs could all be elevated with a combination of Depressant and Stimulant, we'd probably expect to see some "moderation" of the vitals due to an Antagonistic Effect.

If we had a combination of a Dissociative Anesthetic and a Stimulant, we could expect to see pupil dilation and some slowing of the reaction to light, due to Overlapping Effects.

If we had a combination of a Dissociative Anesthetic and a Stimulant, we could expect to see the temperature within the normal range, since neither of those drugs temperature.

28. Correct answer is C, **Pulmonary**.

29. Correct answers are:
    (A) True: **no nystagmus** will be present
    (B) True: we will see miosis, or **constricted pupils**
    (C) True: we will find a slow pulse, or **Bradycardia**
    (D) True: we won't see a Lack of Convergence, so the eyes **will be able to converge**
    (E) True: we will find a lowered blood pressure, or **Hypotension**
    Hycodan is a Narcotic Analgesic, and these observations will be consistent with impairment by Narcotics.

30. Correct answer is B, **Grinding the Teeth**

31. Correct answers are:
    (A) True: An Additive Effect will **elevate the pulse** for this combo
    (B) True: **pupils will dilate** due to an Overlapping or Additive Effect
    (C) False: neither drug causes Nystagmus, so the Null Effect will also **cause no nystagmus**
    (D) False: Marijuana causes Lack of Convergence, so the Overlapping Effect means the **eyes won't converge**
    (E) True: An Additive Effect will **elevate the blood pressure**

32. Correct answer is E, **no validated clues**

33. Correct answer are A, B and E: **Librium, Valium** and **Xanax**