

Basic Mixers

Name: _____

Date: _____

Score: ____ / 74 P F

True or False: Circle T if the entire sentence is true, and F if any part of the sentence is false. (2 points each)

- T F 1. Mixers can be so big that they are several feet across.
- T F 2. Mixers allow you to combine sounds floating through the air.
- T F 3. Mixers always have knobs on each channel to set gain.
- T F 4. The headphones jack usually has a separate volume knob.
- T F 5. The gain knob lets you move the sound from the left output to the right output.
- T F 6. Signals can't go in an output.
- T F 7. Console is another name for mixer.
- T F 8. The small holes on mixers which allow you to connect other devices are called jacks.
- T F 9. Most mixers have between eight and sixteen channels.
- T F 10. You can't use a mixer to combine sounds from different instruments.

Multiple Choice: Circle the letter of the best answer to each question. (4 points each)

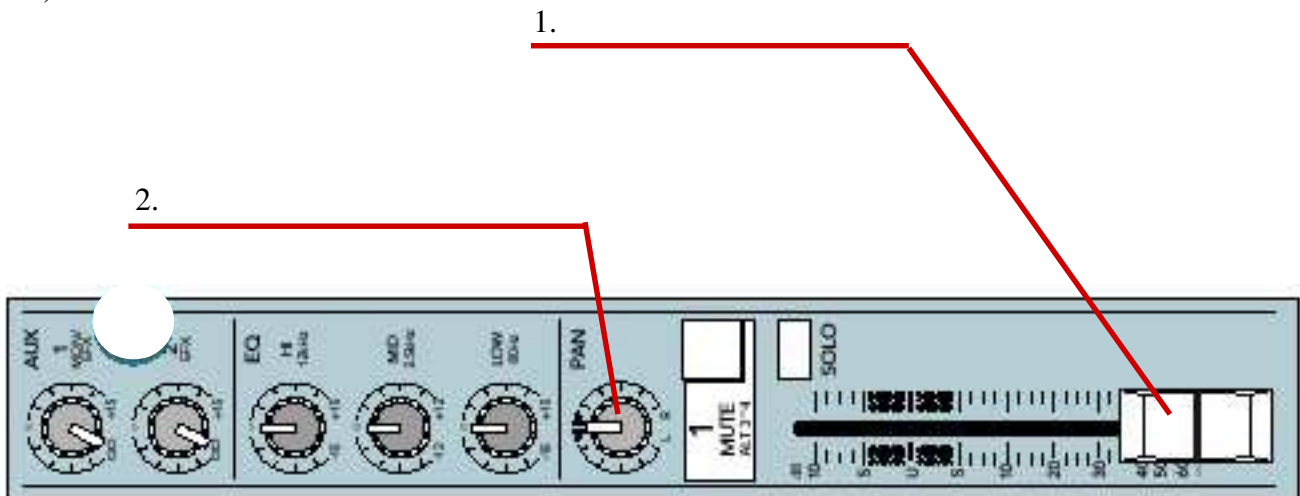
1. If you are listening to the inputs of a mixer using headphones and you move the master volume control up and down, what will happen to the sound you hear in the headphones?
- A. The sound will get louder and softer
 - B. Nothing will change
 - C. The speakers might blow up
 - D. None of these answers are right
2. One instrument which puts out sounds in electric form is a:
- A. Trumpet
 - B. Flute
 - C. Synthesizer
 - D. All of these instruments put out sound in electric form.

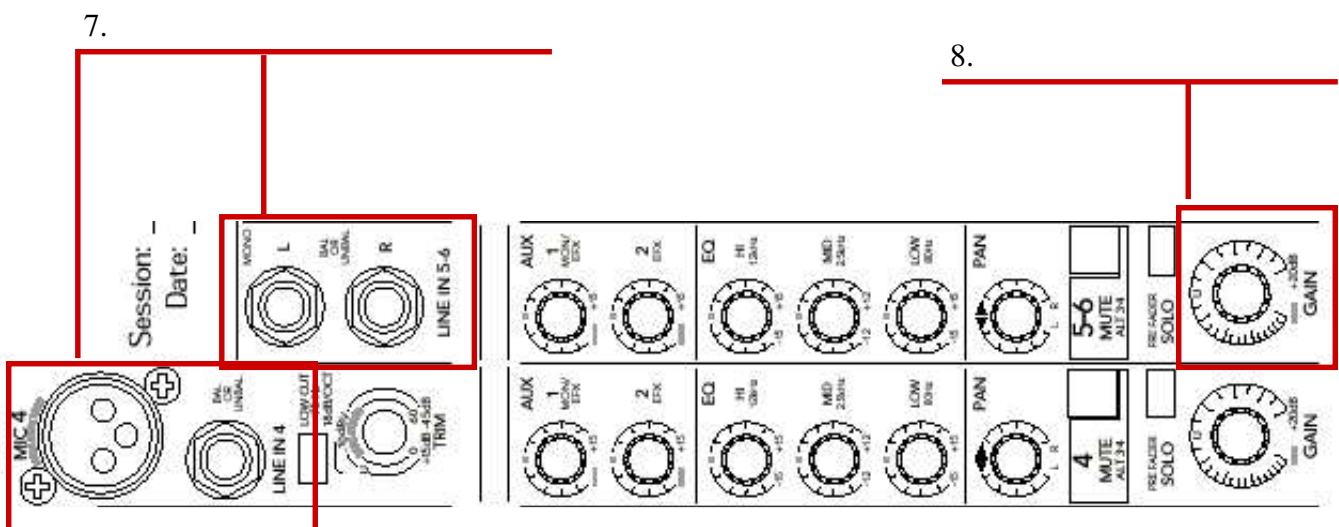
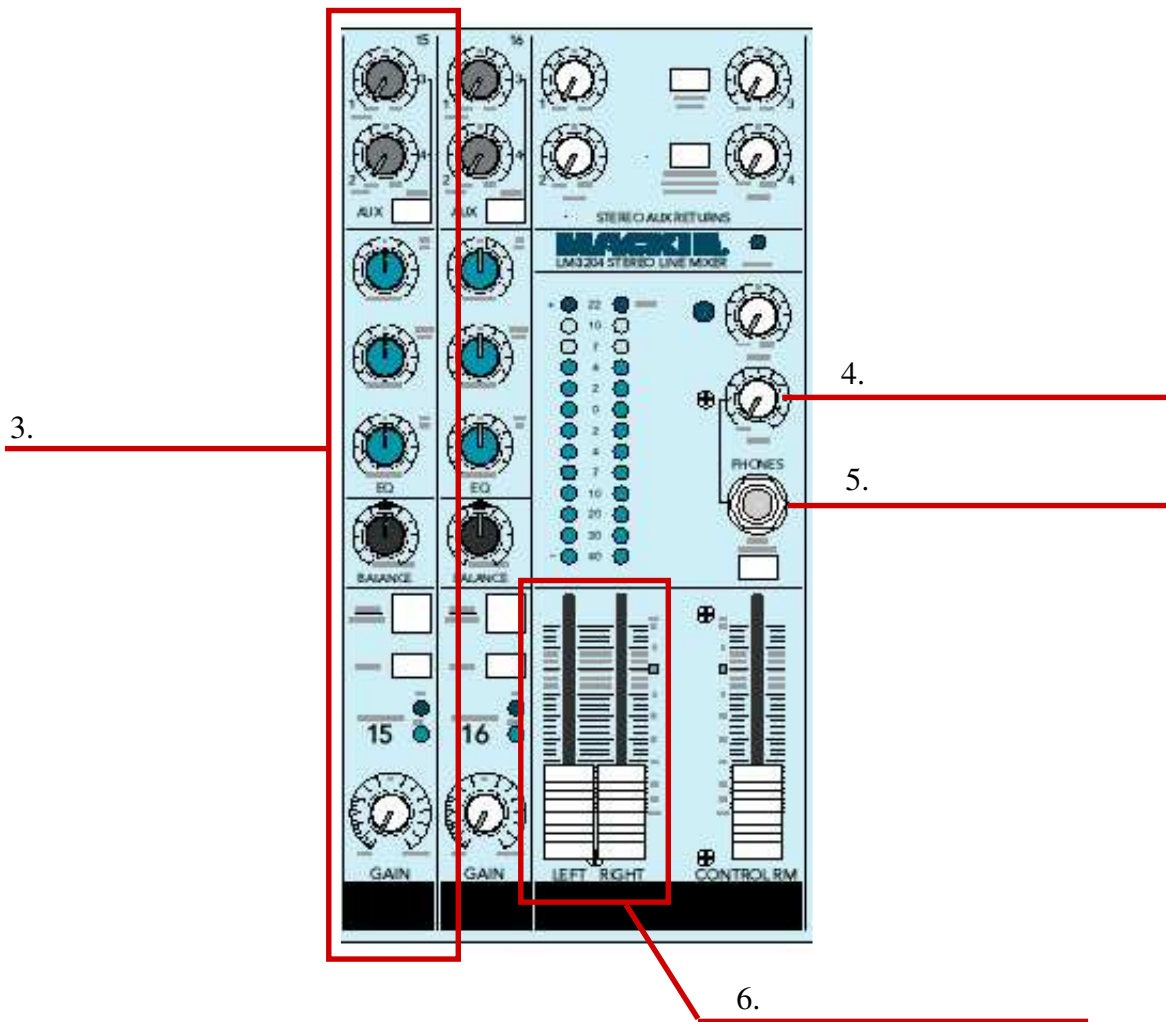
3. You should always connect an input to
- A. Another input
 - B. An output
 - C. An input or an output
 - D. None of these answers are correct

Matching: Write the number of the best definition (the right column) next to each word in the left column.. (2 points each)

- | | |
|---------------------|---|
| ___ Cable | 1. Another name for a mixer |
| ___ Channel | 2. A special box for rack mountable equipment |
| ___ Console | 3. A jack which puts out signals |
| ___ Input | 4. A wire used to connect inputs and outputs |
| ___ Rack | 5. A jack which accepts incoming signals |
| ___ Master Controls | 6. A small hole which allows you to connect devices |
| ___ Output | 7. An input, a pan knob, and a gain knob |
| ___ Jack | 8. Controls the volume of every channel at once |
| ___ Desk | |

Application: Look at the pictures of these mixers and label the parts the lines are pointing to. (3 points each)





Microphones and Speakers

Name: _____

Date: _____

Score: ____ / 54 P F

True or False: Circle T if the entire sentence is true, and F if any part of the sentence is false. (2 points each)

- T F 1. A microphone's output must be preamplified before it can be used with other studio equipment.
- T F 2. The 3-pin connector on the back of a microphone is called an XLD connector.
- T F 3. A microphone is a device which takes sound waves traveling through the air and converts them into a tiny electrical signal.
- T F 4. To connect a microphone to a preamplifier, we must use an instrument cable.
- T F 5. The output of a mixer must pass through an amplifier before it will drive speakers.
- T F 6. Signals can't go in an output.
- T F 7. The preamplifier performs a simple job: it raises the mic's output level to mic level.
- T F 8. Preamp is another name for amplifier.
- T F 9. Most mixers have between eight and sixteen channels.
- T F 10. You only need five different devices to make a basic PA system.

Multiple Choice: Circle the letter of the answer which best completes the sentence. (4 points each)

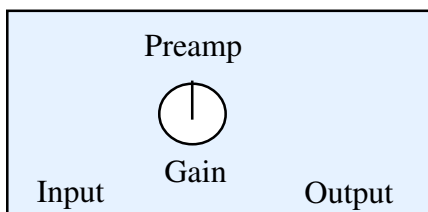
1. A speaker is
- A. A device which turns sound waves into electrical signals
 - B. A device which turns electrical signals into sound waves
 - C. The output of a mixer
 - D. The person that will talk at my brother's high school graduation
2. An amplifier's job is to
- A. Add energy to signals to bring them up to line level
 - B. Add energy to signals to make them strong enough to make speakers work
 - C. Make speakers heavy
 - D. All of these answers are correct

3. You should always connect an input to
- A. Another input
 - B. An output
 - C. An input or an output
 - D. None of these answers are correct

Matching: Write the number of the best definition (the right column) next to each word in the left column. (2 points each)

- | | |
|------------------|--|
| ___ Mic Cable | 1. The part of a mic that collects sound |
| ___ Amplifier | 2. A device which raises a mic's level to line level |
| ___ Preamplifier | 3. A device which turns sound waves into an electrical signal |
| ___ Microphone | 4. A wire used to connect a mic to an input |
| ___ Speaker | 5. A jack which accepts incoming signals |
| ___ PA system | 6. A device which adds energy to a signal to drive speakers |
| ___ Diaphragm | 7. A device which turns electrical signals into sound waves |
| | 8. A group of devices which allows many people to hear someone's voice |

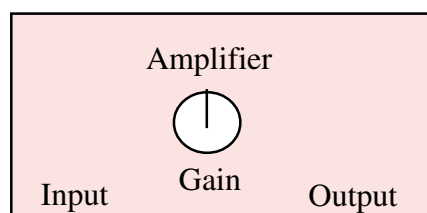
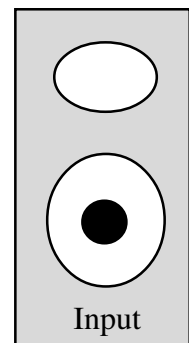
Application: draw lines to represent cables in the PA system below. Show how the different devices should be connected together to make a PA system. (8 points)



Mic



Speaker



Equalization

Name: _____

Date: _____

Score: ____ / 60 P F

True or False: Circle T if the entire sentence is true, and F if any part of the sentence is false. (2 points each)

- T F 1. In shelving EQ, each knob allows you to adjust the volume level of a specific range of sounds.
- T F 2. EQ can also be used as an effect to simulate the sound of a clock radio's speaker or someone talking over the telephone.
- T F 3. When a knob or slider on an EQ unit is set in the middle, it has no effect.
- T F 4. To connect a microphone to a preamplifier, we must use a microphone cable.
- T F 5. The simplest kind of EQ might be a single knob on a boom box that says "tone."
- T F 6. 3-band EQ has three controls: Hi, Mid, and Lo.
- T F 7. Mixers always have knobs on each channel to set gain.
- T F 8. The faders toward the left side of the graphic EQ unit adjust the volume of the low sounds.
- T F 9. In a recording studio, EQ is used to make sounds work better together.
- T F 10. You only need five different devices to make a basic PA system.
- T F 11. In almost any sound, there are high sounds and low sounds.

Multiple Choice: Circle the letter of the best answer. (4 points each)

1. A band is
- A. A range of sounds, like high or low
 - B. Some guys with guitars
 - C. A knob on a shelving EQ unit
 - D. A graphic EQ unit
2. You can tell a graphic EQ unit from a shelving EQ unit because
- A. Graphic EQ units usually have sliders instead of knobs
 - B. Graphic EQ units usually have more bands than shelving EQ units
 - C. Graphic EQ units are usually bigger than shelving EQ units because they have more controls
 - D. All of these answers are correct

3. When you turn the bass (or 'lo') control up, the sound
- A. Becomes more deep and full
 - B. Can get muddy if you turn it up too far
 - C. Will not change
 - D. A + B are correct
4. When you turn the treble (or 'hi') control down, the sound
- A. Becomes more mellow
 - B. Will not change
 - C. Can become dull if you turn it down too far
 - D. A + C are correct
5. The Treble and Bass controls in your car are an example of
- A. Shelving EQ
 - B. Graphic EQ
 - C. Both of these
 - D. None of the above

Matching: Write the number of the best definition (the right column) next to each word in the left column.
(2 points each)

- | | |
|-----------------|--|
| ___ Bass | 1. A control that lets us adjust volume of the high part of the sound |
| ___ Amplifier | 2. A control that lets us adjust volume of the low part of the sound |
| ___ Channel | 3. An EQ unit with many faders which allow control of many bands |
| ___ Band | 4. The part of a mic that collects sound |
| ___ Treble | 5. A jack which accepts incoming signals |
| ___ PA system | 6. A device which adds energy to a signal to drive speakers |
| ___ Graphic EQ | 7. A range of frequencies |
| ___ Shelving EQ | 8. A group of devices which allows many people to hear someone's voice |
| ___ Diaphragm | 9. An EQ unit with a few controls, usually labeled "Hi," "Mid," and "Lo" |
| | 10. An input, a pan knob, and a gain knob |

Mixers Part 2

Name: _____

Date: _____

Score: ____ / 90 P F

True or False: Circle T if the entire sentence is true, and F if any part of the sentence is false. (2 points each)

- T F 1. In shelving EQ, each knob allows you to adjust the volume level of a specific range of sounds.
- T F 2. Aux returns are inputs which only have gain control, but no pan or EQ.
- T F 3. Most mixers have 2-6 aux sends per channel.
- T F 4. All mixers use faders to set each channel's gain.
- T F 5. The solo button mutes all channels except the soloed channel.
- T F 6. Almost all mixers have EQ built into every channel.
- T F 7. Insert cables have two black rings on them so that they can send and return audio using just one cable.
- T F 8. Most mixers have a solo level knob which determines the volume of soloed channels.
- T F 9. The gain control on a mixer's preamplifier is called the 'trim' control.
- T F 10. An amplifier adds power to a signal so that speakers will work.
- T F 11. The mute button instantly turns the gain all the way down on a channel.

Multiple Choice: Circle the letter of the best answer. (4 points each)

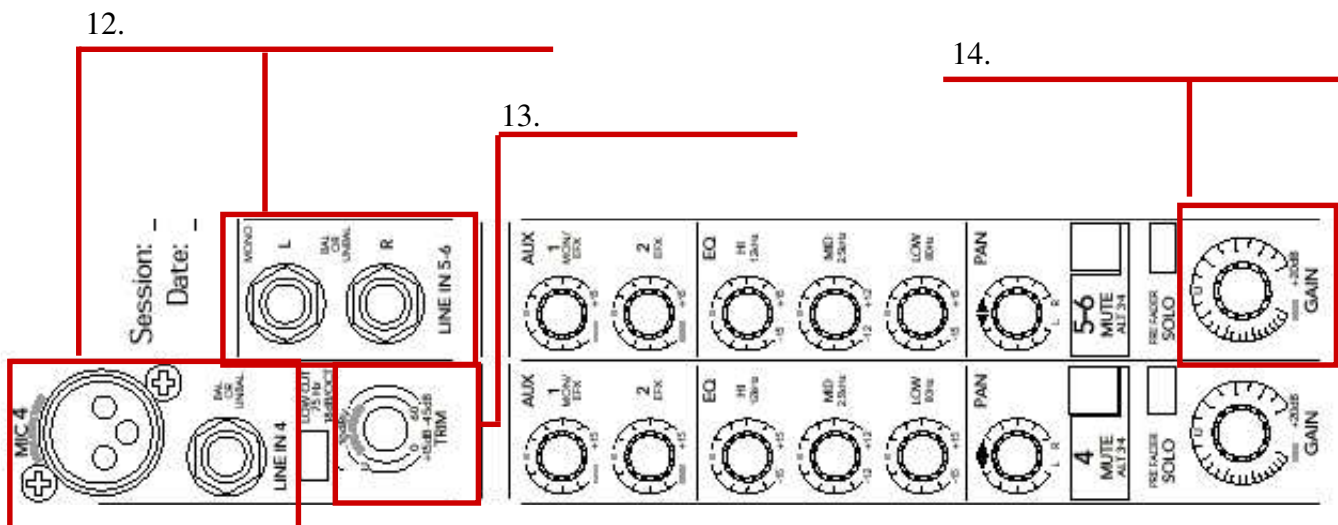
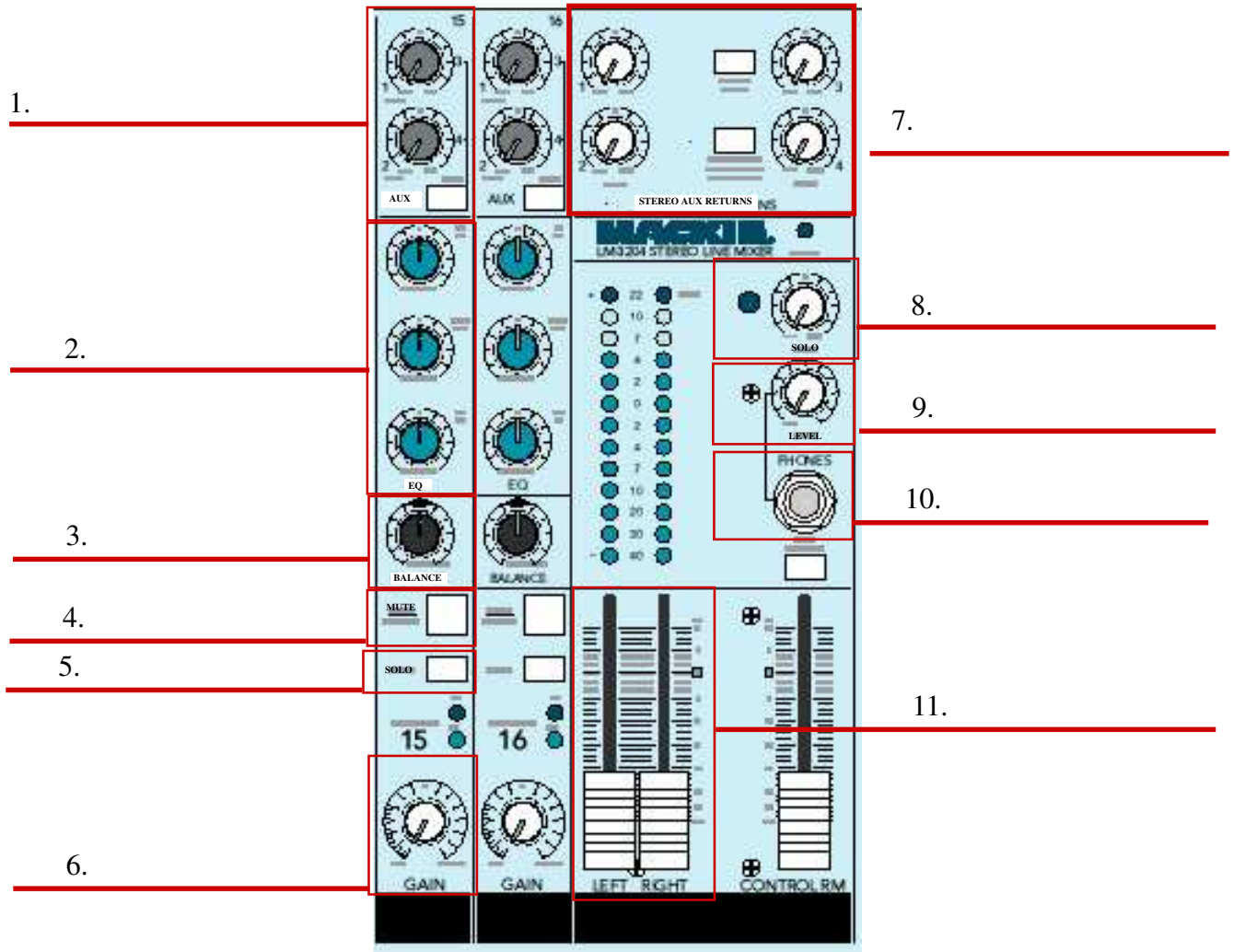
1. An aux send
- A. Takes all of a signal out of the channel and returns all of it to the same channel
 - B. Makes a copy of a signal and sends it to another device
 - C. Determines the EQ amount
 - D. None of these answers is right
2. An insert
- A. Takes all of a signal out of the channel and returns all of it to the same channel
 - B. Makes a copy of a signal and sends it to another device
 - C. Determines the EQ amount
 - D. None of these answers is right

3. Phantom power is
- A. + 48 volts
 - B. -48 volts
 - C. +9 volts
 - D. A + B are correct
4. When you turn the treble (or 'hi') control down, the sound
- A. Becomes more mellow
 - B. Will not change
 - C. Can become dull if you turn it down too far
 - D. A + C are correct
5. Aux sends are used to
- A. Make a copy of the signal in any channel and send it somewhere else
 - B. Create a separate mix for the monitor speakers on stage
 - C. Make a copy of the signal in any channel to send it to an effects box
 - D. All of these answers are correct

Matching: Write the number of the best definition (the right column) next to each word in the left column.
(2 points each)

- | | |
|-------------------|--|
| ___ Aux Return | 1. A wire which has one 1/4" connector on one end and two 1/4" connectors on the other end |
| ___ Trim | 2. A wire which has one XLR connector on each end |
| ___ Insert | 3. The gain control on a preamp built into a mixer |
| ___ Band | 4. A button which instantly turns down the gain on one channel |
| ___ Aux Send | 5. A pair of input jacks which have only a gain control (no pan or EQ) |
| ___ Mute | 6. A button on a channel which instantly mutes all other channels |
| ___ Solo | 7. A range of frequencies |
| ___ Phantom Power | 8. A control on each channel which allows you to send a copy of the channel's signal to another device |
| ___ Insert Cable | 9. A jack which takes all of the signal out of a channel and returns all of the signal to a channel |
| ___ Mic Cable | 10. Voltage which travels down a mic cable and gives power to a mic |

Application: Look at the pictures of these mixers and label the parts the lines are pointing to. (2 points each)



Digital Delay

Name: _____

Date: _____

Score: ____ / 74 P F

True or False: Circle T if the entire sentence is true, and F if any part of the sentence is false. (2 points each)

- T F 1. Digital delay allows us to create an echo.
- T F 2. Sounds move through the air in waves called sound waves.
- T F 3. When a knob or slider on an EQ unit is set in the middle, it has no effect.
- T F 4. Sound waves can bounce off hard, smooth surfaces.
- T F 5. When echoes come back too quickly to us in a small room, we hear ambience instead of echoes.
- T F 6. The headphones jack usually has a separate volume knob.
- T F 7. Feedback controls the number of times the echo repeats.
- T F 8. Delay time is measured in microseconds.
- T F 9. In a recording studio, EQ is used to make sounds work better together.
- T F 10. In ping-pong delay, the echo moves from side to side.
- T F 11. Refraction is another name for echo.

Multiple Choice: Circle the letter of the best answer. (4 points each)

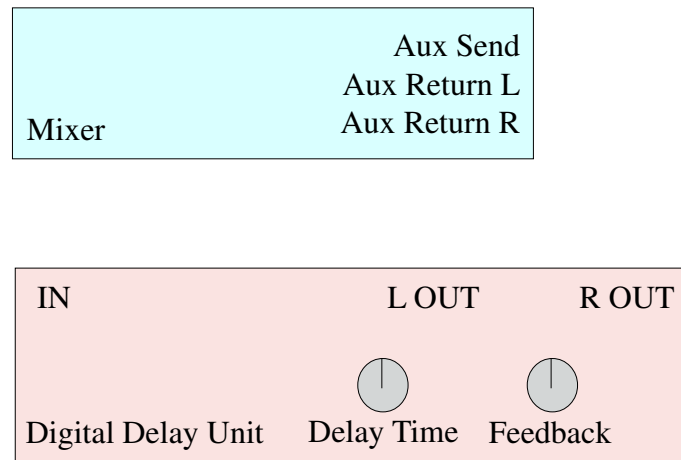
1. You probably wouldn't want to connect a delay unit's input to
- A. The mixer's aux returns
 - B. A channel's insert
 - C. A channels's input
 - D. Any of the choices listed above
2. You can tell a graphic EQ unit from a shelving EQ unit because
- A. Graphic EQ units usually have sliders instead of knobs
 - B. Graphic EQ units usually have more bands than shelving EQ units
 - C. Graphic EQ units are usually bigger than shelving EQ units because they have more controls
 - D. All of these answers are correct

3. Sound would be most likely to bounce off of
- A. Thick shag carpet
 - B. Your skin
 - C. Britney Spears's head
 - D. A cement wall
4. It is important to match the delay time to the song's tempo because
- A. Britney Spears's engineer does it
 - B. We want the echoes to fall on the beats
 - C. The EQ works better that way
 - D. It is a trick question; it's not really important to match the delay time to the tempo.
5. If you are listening to the inputs of a mixer using headphones and you move the master volume control up and down, what will happen to the sound you hear in the headphones?
- A. The sound will get louder and softer
 - B. Nothing will change
 - C. The speakers might blow up
 - D. None of these answers are right

Matching: Write the number of the best definition (the right column) next to each word in the left column. (2 points each)

- | | |
|------------------|---|
| ___ Jack | 1. A type of delay that allows you to set one delay time and feedback amount |
| ___ Echo | 2. A control that lets us adjust volume of the low part of the sound |
| ___ Reflection | 3. An EQ unit with many faders which allow control of many bands |
| ___ Mono Delay | 4. A type of delay that allows you to set separate delay times for the left and right channels |
| ___ Feedback | 5. The control that determines how many times the delay repeats |
| ___ Repeat | 6. A device which adds energy to a signal to drive speakers |
| ___ Delay Time | 7. A sound wave that bounces off of a hard surface |
| ___ Regeneration | 8. A group of devices which allows many people to hear someone's voice |
| ___ Stereo Delay | 9. The amount of time between the start of the original sound and that start of the delayed sound, measured in milliseconds |
| | 10. A small hole which accepts a plug |

Application: draw lines on the picture below showing how you would connect the delay unit to the mixer. (6 points)



Draw marks on the knobs on the mixer below to show where you would set the knobs to put delay on the signal in channel one. (The delay unit has been connected to aux send 1) (8 points)

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Aux 1 <input type="radio"/> Aux 2
Aux 1	Aux 1	Aux 1	Aux 1	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Aux 2	Aux 2	Aux 2	Aux 2	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Hi	Hi	Hi	Hi	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Lo	Lo	Lo	Lo	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Pan	Pan	Pan	Pan	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Gain	Gain	Gain	Gain	
CHANNEL 1	CHANNEL 2	CHANNEL 3	CHANNEL 4	<input type="radio"/> Master <input type="radio"/> Phones

Digital Reverb

Name: _____

Date: _____

Score: ____ / 77 P F

True or False: Circle T if the entire sentence is true, and F if any part of the sentence is false. (2 points each)

- T F 1. The 3-pin connector on the back of a microphone is called an XLR connector.
- T F 2. Reverb time is another name for decay time.
- T F 3. The most important function of reverb in the studio is to make sounds sound like they are in a real acoustic space.
- T F 4. Decay time determines how long the reverb lasts.
- T F 5. When echoes come back too quickly to us in a small room, we hear ambience instead of echoes.
- T F 6. Predelay is usually set from 30-100 milliseconds.
- T F 7. A reverb unit's diffusion setting determines how many reflections make up the reverberation.
- T F 8. Delay time is measured in milliseconds.
- T F 9. We usually don't want to put reverb on low signals such as bass or the kick drum.
- T F 10. When many individual reflections in a big room come back to our ears very quickly, we hear them as reverb.
- T F 11. Regeneration is another name for feedback on a delay unit.

Multiple Choice: Circle the letter of the best answer. (4 points each)

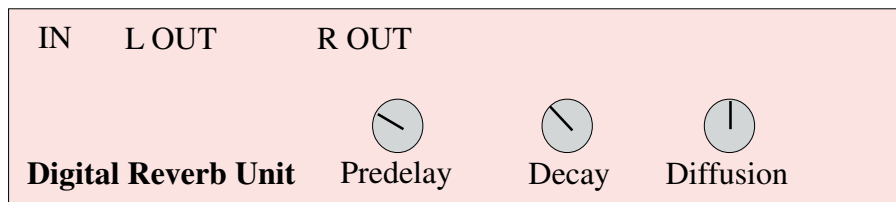
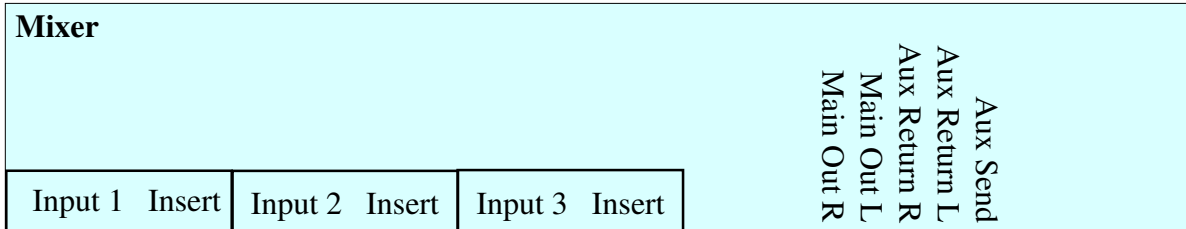
1. The first thing used to create reverb in studio was
- A. A digital reverb unit
 - B. A reverb plate
 - C. A specially designed room called a chamber
 - D. None of these answers are correct
2. We usually connect a reverb unit to a mixer's
- A. Insert jacks
 - B. Aux sends and returns
 - C. Channel inputs and aux sends
 - D. All of these answers are correct

3. Which one of these is NOT a type of reverb we learned about?
- A. Plate
 - B. Chamber
 - C. Room
 - D. Hall
 - E. We learned about all of these.
4. It is important to match the delay time to the song's tempo because
- A. Brittany Spears's engineer does it
 - B. We want the echoes to fall on the beats
 - C. The EQ works better that way
 - D. It is a trick question; it's not really important to match the delay time to the tempo.
5. Predelay on a reverb unit is
- A. The time in milliseconds between the start of the original sound and the start of the reverb
 - B. The time between the individual reflections that make up the reverb
 - C. The time in microseconds between the start of the original sound and the start of the reverb
 - D. None of these answers are right
6. A longer predelay time
- A. Makes it seem like the sound is in a smaller room
 - B. Makes it seem like the sound is in a room with curtains
 - C. Makes it seem like the sound is in a bigger room
 - D. Changes how thick the reverb sounds

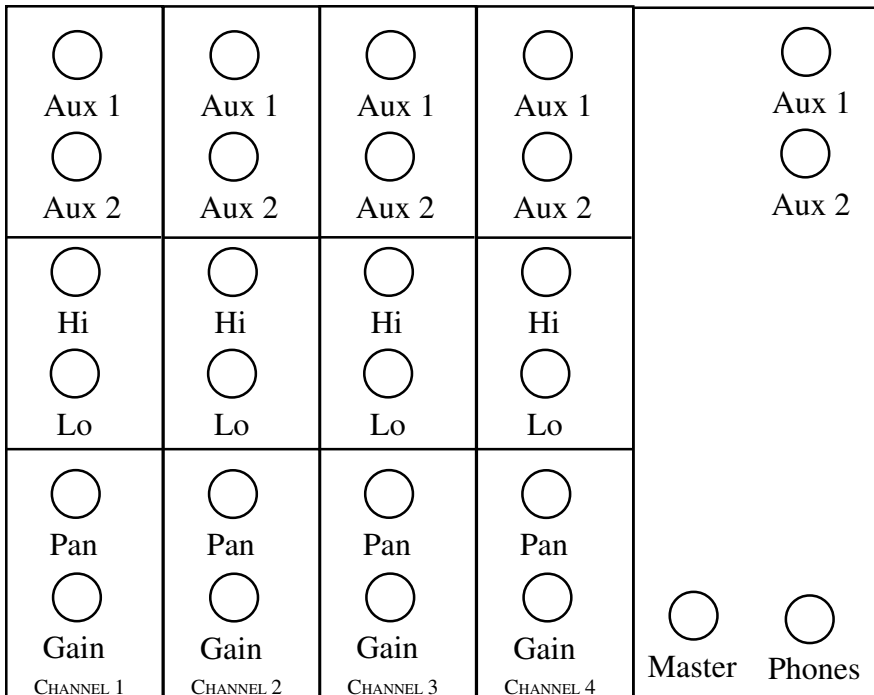
Matching: Write the number of the best definition (the right column) next to each word in the left column.
(2 points each)

- | | |
|-----------------|---|
| ___ Diffusion | 1. A type of delay that allows you to set one delay time and feedback amount |
| ___ Decay Time | 2. A type of reverb which simulates the large bare rooms in old recording studios with microphones and speakers in them used to create reverb |
| ___ Hall | 3. A control which determines the time between the start of the sound and the start of the reverb |
| ___ Mono Delay | 4. A control which determines how thick the reverb sounds |
| ___ Chamber | 5. A control which determines how long the reverb lasts |
| ___ Room | 6. A type of reverb which simulates a large acoustic space |
| ___ Predelay | 7. A type of reverb which simulates a smaller acoustic space than a hall |
| ___ Reverb Time | |

Application: draw lines on the picture below showing how you would connect the reverb unit to the mixer. Connect the microphone to channel one. (7 points)



Draw marks on the knobs on the mixer below to show where you would set the knobs to put reverb on the signal in channel one. (The reverb unit has been connected to aux send 1) (8 points)



Digital Chorus

Name: _____

Date: _____

Score: ____ / 76 P F

True or False: Circle T if the entire sentence is true, and F if any part of the sentence is false. (2 points each)

- T F 1. Digital chorus is created by using a very short delay and then constantly changing the delay time.
- T F 2. We cannot change the depth of the chorus effect on most chorus units.
- T F 3. All mixers have EQ built into every channel.
- T F 4. The delay time on the chorus unit changes how distinctly different the chorused and unchorused signals are.
- T F 5. The chorus mix control allows you to determine the volume level of the whole channel.
- T F 6. Predelay on a reverb unit is usually set from 300-1000 milliseconds.
- T F 7. If we turn the chorus depth control up, it makes it sound like the pitch gets higher and lower.
- T F 8. A singer's voice can be chorused to make it sound thicker and richer.
- T F 9. If the chorus unit is connected to the channel's insert, then the chorus depth should be set to 100%.
- T F 10. The chorus rate determines how many reflections make up the chorused signal.
- T F 11. Sounds move through the air in waves called small waves.

Multiple Choice: Circle the letter of the best answer. (4 points each)

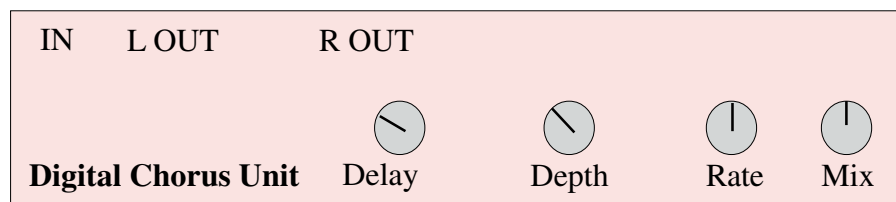
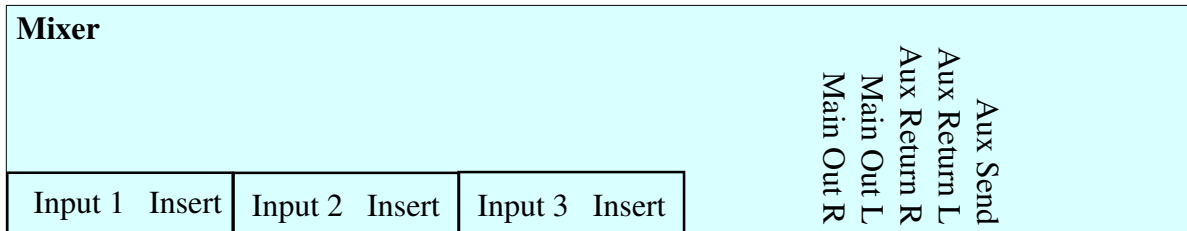
1. On a Chorus unit, we usually want to set the delay time to
- A. 1.5 - 3.5 milliseconds
 - B. 15-35 milliseconds
 - C. 150-350 milliseconds
 - D. None of these answers are correct
2. We usually connect a chorus unit to a mixer's
- A. Insert jacks
 - B. Aux sends and returns
 - C. Channel inputs and aux sends
 - D. All of these answers are correct

3. Which one of these is NOT something you can change about a typical chorus unit?
- A. Mix
 - B. Depth
 - C. Delay
 - D. Rate
 - E. You can change all of these
4. An insert
- A. Takes all of a signal out of the channel and returns all of it to the same channel
 - B. Makes a copy of a signal and sends it to another device
 - C. Determines the EQ amount
 - D. None of these answers is right
5. Predelay on a chorus unit is
- A. The time in milliseconds between the start of the original sound and the start of the chorus
 - B. The time it takes to go from a long delay to a short delay time
 - C. The starting delay time in microseconds (before it is constantly changed)
 - D. This is a trick question; chorus units don't have a predelay control
6. Chorus rate is
- A. Measured in Hertz
 - B. Changes how quickly the delay time changes from fast to slow and back again
 - C. What makes the sound warbly if it is set too high
 - D. All of these answers are correct

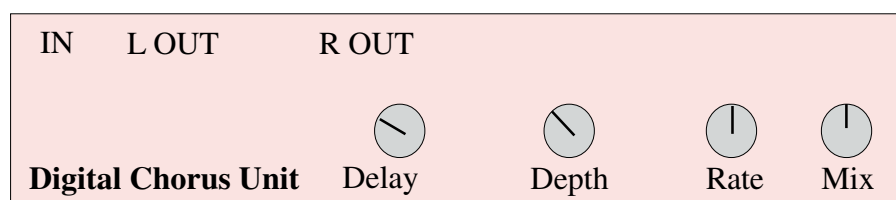
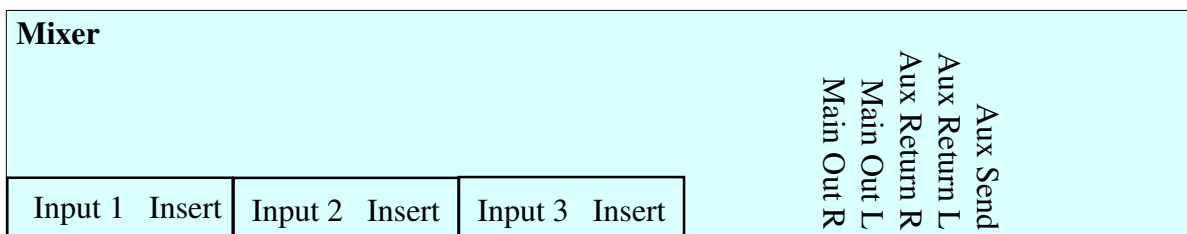
Matching: Write the number of the best definition (the right column) next to each word in the left column. (2 points each)

- | | |
|-----------------|---|
| ___ Diffusion | 1. A control which determines how much longer or shorter a chorus unit's delay time gets as it changes |
| ___ Rate | 2. A type of reverb which simulates the large bare rooms in old recording studios with microphones and speakers in them used to create reverb |
| ___ Delay | 3. A control which determines the starting time between the original sound and the chorused sound |
| ___ Depth | 4. A control which determines how thick the reverb sounds |
| ___ Chamber | 5. A control which determines how long the reverb lasts |
| ___ Room | 6. A control on a chorus unit which controls how much chorused signal is output and how much "unchorused" signal is output. |
| ___ Mix | 7. A control which determines how long it takes the delay time to go from short to long and back again. |
| ___ Reverb Time | 8. A type of reverb which simulates a smaller acoustic space than a hall |

Application: draw lines on the picture below showing how you would connect the chorus unit to the mixer if you wanted all of the channels to be able to use the chorus unit. Connect the microphone to channel one. (7 points)



Draw lines on the picture below showing how you would connect the chorus unit to the mixer if you wanted only channel one to be able to use the chorus unit. Connect the microphone to channel one. (7 points)



QUIZ

8

Compressors

Name: _____

Date: _____

Score: ____ / 89 P F

True or False: Circle T if the entire sentence is true, and F if any part of the sentence is false. (2 points each)

- T F 1. Digital chorus is created by using a very short delay and then constantly changing the delay time.
- T F 2. The 3-pin connector on the back of a microphone is called an XLR connector.
- T F 3. Limiters are usually used on an entire mix instead of just one channel.
- T F 4. Regeneration is another name for feedback on a delay unit.
- T F 5. Sound waves can bounce off soft, smooth surfaces.
- T F 6. Predelay on a reverb unit is usually set from 30-100 milliseconds.
- T F 7. If we turn the chorus depth control up, it makes it sound like the pitch gets higher and lower.
- T F 8. Compressors and limiters aren't usually connected to a mixer's aux sends and returns.
- T F 9. If a chorus unit is connected to a channel's insert, then the chorus depth should be set to 100%.
- T F 10. In a recording studio, EQ is used to make sounds work better together.
- T F 11. The volume level at which a compressor starts to work is called the threshold.
- T F 12. Decay time determines how long the reverb lasts.
- T F 13. Feedback controls the number of times the echo repeats.
- T F 14. Delay time is measured in milliseconds.
- T F 15. The attack control on a compressor determines how long it takes the compressor to stop turning down the volume.
- T F 16. Compressors and limiters make the whole mix louder by turning down the volume.
- T F 17. The gain impression meter tells us how much the compressor or limiter is attenuating the volume.
- T F 18. A \$40 compressor is just as good as a \$5000 compressor.
- T F 19. If you set the attack and release controls correctly, you shouldn't be able to hear the compressor doing its job.

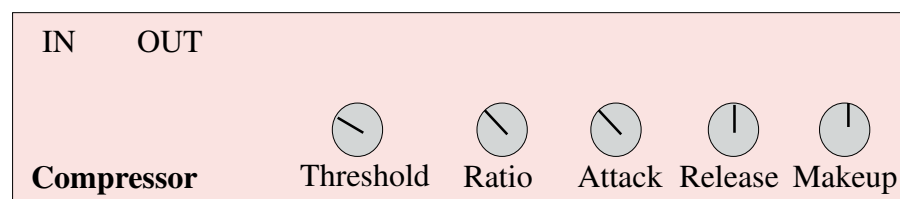
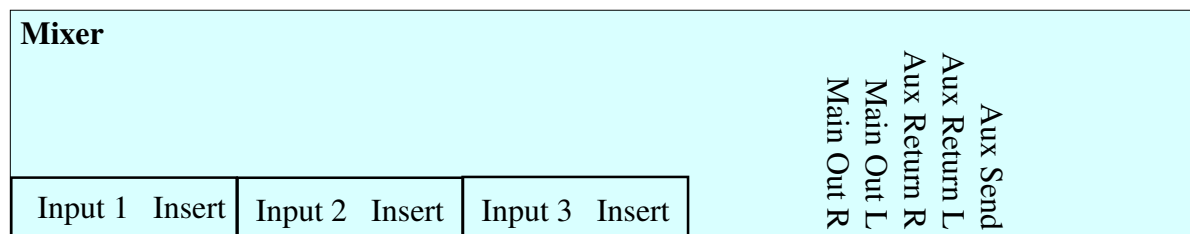
Multiple Choice: Circle the letter of the best answer. (4 points each)

1. On a compressor, which ratio is a good starting point?
 - A. 2:1
 - B. 3:1
 - C. 6:1
 - D. None of these answers are correct
2. A limiter is just a compressor with which ratio?
 - A. 2:1
 - B. 3:1
 - C. 6:1
 - D. None of these answers are correct
3. You probably wouldn't want to connect a delay unit's input to
 - A. The mixer's aux returns
 - B. A channel's insert
 - C. A channel's input
 - D. Any of the choices listed above
4. An insert
 - A. Takes all of a signal out of the channel and returns all of it to the same channel
 - B. Makes a copy of a signal and sends it to another device
 - C. Determines the EQ amount
 - D. None of these answers is right
5. You can tell a graphic EQ unit from a shelving EQ unit because
 - A. Graphic EQ units usually have sliders instead of knobs
 - B. Graphic EQ units usually have more bands than shelving EQ units
 - C. Graphic EQ units are usually bigger than shelving EQ units because they have more controls
 - D. All of these answers are correct
6. Which one of these is NOT a type of reverb we learned about?
 - A. Plate
 - B. Chamber
 - C. Room
 - D. Hall
 - E. We learned about all of these.
7. A longer predelay time
 - A. Makes it seem like the sound is in a smaller room
 - B. Makes it seem like the sound is in a room with curtains
 - C. Makes it seem like the sound is in a bigger room
 - D. Changes how thick the reverb sounds

Matching: Write the number of the best definition (the right column) next to each word in the left column. (2 points each)

___ Attack	1. The volume level
___ Release	2. The volume level at which the compressor or limiter starts to work
___ Ratio	3. The unit of measure for volume level
___ Attenuate	4. A control which determines how quickly a compressor starts to turn down the volume
___ Makeup Gain	5. A control which determines how quickly a compressor stops turning down the volume
___ Decibels	6. A control which determines the output level of a compressor or limiter
___ Threshold	7. Another word for turn down
___ Dynamic Level	8. Two numbers separated by a colon which gives us an example of how many decibels the compressor will put out compared to how many decibels come in

Application: draw lines on the picture below showing how you would connect the compressor to the mixer so that the microphone's input can be compressed. Connect the microphone to channel one. (7 points)



QUIZ

9

Synth History

Name: _____

Date: _____

Score: ____ / 64 P F

True or False: Circle T if the entire sentence is true, and F if any part of the sentence is false. (2 points each)

- T F 1. The first synthesizer was patented in 1897.
- T F 2. The best-selling classical album performed on a synthesizer was recorded by Thaddeus Cahill.
- T F 3. Early synthesizers could only play one note at a time.
- T F 4. Sounds on synthesizers are called patches because of the patch cables once used to make sounds.
- T F 5. A monophonic synthesizer is one that can play more than one note at a time.
- T F 6. Most mixers have 2-6 aux sends per channel.
- T F 7. The preamplifier performs a simple job: it raises the mic's output level to mic level.
- T F 8. Preamp is another name for amplifier.
- T F 9. Most mixers have between eight and sixteen channels.
- T F 10. You only need five different devices to make a basic PA system.
- T F 11. Synthesizers have become more expensive as history has progressed.

Multiple Choice: Circle the letter of the best answer. (4 points each)

- 1. Which of the following people didn't help to design the first modern synthesizer?
 - A. Wendy Carlos
 - B. Robert Moog
 - C. Thaddeus Cahill
 - D. Vladimir Usachevsky
- 2. Multitimbral means
 - A. A synthesizer can play more than one note at a time
 - B. A synthesizer can play more than one sound at a time
 - C. A synthesizer can play one note at a time
 - D. A synthesier can play one sound at a time
- 3. Mother keyboards
 - A. Can play other synthesizers
 - B. Can't make any sound
 - C. Use MIDI to play tone modules
 - D. All of the choices listed above are correct

4. Which is NOT an advantage of tone modules over keyboards?
- A. Tone modules cost less than keyboards
 - B. Tone modules take less space than keyboards
 - C. Tone modules are easier to play than keyboards
 - D. None of these answers are right
5. An amplifier's job is to
- A. Add energy to signals to bring them up to line level
 - B. Add energy to signals to make them strong enough to make speakers work
 - C. Make speakers heavy
 - D. All of these answers are correct
6. You should always connect an input to
- A. Another input
 - B. An output
 - C. An input or an output
 - D. None of these answers are correct
7. A speaker is
- A. A device which turns sound waves into electrical signals
 - B. A device which turns electrical signals into sound waves
 - C. The output of a mixer
 - D. The person that will talk at my brother's high school graduation

Matching: Write the number of the best definition (the right column) next to each word in the left column.
(2 points each)

- | | |
|-------------------|--|
| ___ Module | 1. The ability of some synthesizers to play more than one note at a time |
| ___ Polyphony | 2. The individual devices which made up some early synthesizers |
| ___ Home Keyboard | 3. The things used to connect modules on early synthesizers |
| ___ MIDI | 4. A synthesizer without a keyboard |
| ___ Tone Module | 5. A 5-pin jack found on the back of most modern synthesizers and tone modules |
| ___ Patch Cords | 6. A keyboard which makes no sound but controls other synthesizers |
| ___ Polyphonic | 7. The number of notes a synthesizer can play at one time |
| | 8. A keyboard which has built-in speakers and auto-accompaniments |

QUIZ
10

Programs & Patches

Name: _____

Date: _____

Score: ____ / 46 P F

True or False: Circle T if the entire sentence is true, and F if any part of the sentence is false. (2 points each)

- T F 1. Some synthesizers have a large knob called an agra dial which allows you to change patches.
- T F 2. A general MIDI synthesizer is one which has certain sounds in certain locations in memory.
- T F 3. All sounds work equally well with anything you play on the keyboard.
- T F 4. Sounds on synthesizers are called patches because of the patch cables once used to make sounds.
- T F 5. A mono patch is a sound that only lets you play one note at a time.
- T F 6. Increment buttons decrease the patch number by one.
- T F 7. Some synthesizers have one button per patch in memory.
- T F 8. Some synthesizers only produce one kind of sound, like organ sounds.
- T F 9. It is possible to make the same exact sound on two different models of synthesizers.

Multiple Choice: Circle the letter of the best answer. (4 points each)

1. Which of the following is **not** a kind of raw sound early synthesizers could produce?
- A. Saw
 - B. Square
 - C. String
 - D. Pulse
2. Sine waves sound
- A. Hollow
 - B. Pure
 - C. Buzzy
 - D. None of the choices listed above are correct
3. Which of the following is not one of the ways you can change sounds on a synthesizer?
- A. Turning the alpha dial
 - B. Pressing an increment or decrement button
 - C. Pressing a bank and then a number button
 - D. All of these are ways we learned about

4. Saw waves sound
 - A. Hollow
 - B. Pure
 - C. Buzzy
 - D. None of the choices listed above are correct

5. An insert
 - A. Takes all of a signal out of the channel and returns all of it to the same channel
 - B. Makes a copy of a signal and sends it to another device
 - C. Determines the EQ amount
 - D. None of these answers is right

6. Square waves sound
 - A. Hollow
 - B. Pure
 - C. Buzzy
 - D. None of the choices listed above are correct

7. Which one of these is NOT a type of reverb we learned about?
 - A. Plate
 - B. Chamber
 - C. Room
 - D. Hall
 - E. We learned about all of these

QUIZ

11

Realtime Controls

Name: _____

Date: _____

Score: ____/65 P F

True or False: Circle T if the entire sentence is true, and F if any part of the sentence is false. (2 points each)

- T F 1. Some synthesizers have a large knob called an alpha dial which allows you to change patches.
- T F 2. A reverb unit's diffusion setting determines how many reflections make up the reverberation.
- T F 3. Almost every modern keyboard synthesizer can create release velocity messages.
- T F 4. A paddle or stick is used by some manufacturers instead of pitch bend and modulation wheels.
- T F 5. Modulation wheels should be set in the middle (just like the pitch bend wheel) when they are not in use.
- T F 6. Most of the time, modulation wheels are set up to add vibrato to a patch.
- T F 7. Ribbon controllers are found on every synthesizer being made today.
- T F 8. Modulation wheels have no effect on the patch when they are pulled all the way towards you.
- T F 9. It isn't possible to make the same exact sound on two different models of synthesizers.
- T F 10. Breath controllers are used all of the time by synthesists and are very popular.
- T F 11. Velocity sensing changes more than volume; it can actually cause a sound to change sounds completely on some synthesizers.
- T F 12. Modulation wheels are spring-loaded, so they always snap back to the right place when you take your hand off of them.

Multiple Choice: Circle the letter of the best answer. (3 points each)

1. Which of the following is **not** a controller that you operate with your feet? (unless you're *really* wild and crazy)
- A. Footswitch
 - B. Expression Pedal
 - C. Paddle
 - D. Pedalboard
2. An X-Y pad controls how many different things about a sound at once?
- A. One
 - B. Two
 - C. Three
 - D. It is a trick question; X-Y pads don't allow you to control anything about sound.

3. Which of the following is not one of the ways you can change sounds on a synthesizer?
 - A. Turning the alpha dial
 - B. Pressing an increment or decrement button
 - C. Pressing a bank and then a number button
 - D. All of these are ways we learned about
4. Saw waves sound
 - A. Hollow
 - B. Pure
 - C. Buzzy
 - D. None of the choices listed above are correct
5. Which of these couldn't be alternate controller?
 - A. Guitar
 - B. Drums
 - C. Footswitch
 - D. Accordion
 - E. A huge beach ball with sensors in its skin, tossed into the audience at a concert
 - F. Your voice
6. Square waves sound
 - A. Hollow
 - B. Pure
 - C. Buzzy
 - D. None of the choices listed above are correct
7. Aftertouch senses
 - A. How hard you strike each key
 - B. How quickly you release each key
 - C. If you press into the keys after you play them
 - D. None of the above
8. Pitch bend wheels
 - A. Make the pitch go higher when you push them away from you
 - B. Shouldn't be used too much because this is unmusical
 - C. Can help us simulate acoustic instruments capable of gliding from pitch to pitch
 - D. All of the above
9. Velocity senses
 - A. How hard you strike each key
 - B. How quickly you release each key
 - C. If you press into the keys after you play them
 - D. None of the above

Matching: Write the number of the best definition (the right column) next to each word in the left column.
(2 points each)

- | | |
|-----------------------|---|
| ___ Pedalboard | 1. A controller that can sense if your foot is up or down |
| ___ Expression Pedal | 2. An individual device which made up some early synthesizers |
| ___ Footswitch | 3. A controller that allows you to rock your foot forward and back |
| ___ Ribbon Controller | 4. A controller which can sense where your finger is horizontally |
| ___ X-Y Pad | 5. A controller which can sense where your hand is in the air |
| ___ Module | 6. A controller which can tell where your finger is horizontally & vertically |
| ___ Polyphony | 7. The number of notes a synthesizer can play at one time |
| | 8. A controller which acts like a keyboard for your feet |

QUIZ
12

A Taste of Programming

Name: _____
Date: _____
Score: ____/120 P F

True or False: Circle T if the entire sentence is true, and F if any part of the sentence is false. (2 points each)

- T F 1. Tone modules are typically easier to program than keyboards.
- T F 2. Compressors and limiters make the whole mix louder by turning down the volume.
- T F 3. Almost every modern keyboard synthesizer can respond to release velocity messages.
- T F 4. Most mixers have 2-6 aux sends per channel.
- T F 5. Modulation wheels should be set in the middle (just like the pitch bend wheel) when they are not in use.
- T F 6. Most of the time, modulation wheels are set up to add vibrato to a patch.
- T F 7. Synthesizers with few front panel controls are easier to program than those with many.
- T F 8. Modulation wheels have no effect on the patch when they are pulled all the way towards you.
- T F 9. It isn't possible to make the same exact sound on two different models of synthesizers.
- T F 10. If a chorus unit is connected to a channel's insert, then the chorus depth should be set to 50%.
- T F 11. Digital chorus is created by using a very short delay and then constantly changing the delay time.
- T F 12. Insert cables have two black rings on them so that they can send and return audio using just one cable.
- T F 13. Predelay is usually set from 30-100 milliseconds.
- T F 14. When many individual reflections in a big room come back to our ears very quickly, we hear them as reverb.
- T F 15. Decay time determines how long the reverb lasts.
- T F 16. If you set the attack and release controls correctly, you shouldn't be able to hear the compressor doing its job.
- T F 17. Synthesizers have become more expensive as time has gone on.
- T F 18. A monophonic synthesizer is one that can play more than one note at a time.
- T F 19. Early synthesizers could only play one note at a time.
- T F 20. The volume level at which a compressor starts to work is called the threshold.

Multiple Choice: Circle the letter of the best answer. (3 points each)

1. On a limiter, which ratio is a good starting point?
 - A. 2:1
 - B. 3:1
 - C. 6:1
 - D. It is a trick question; you can't set the ratio on a limiter.
2. The release control
 - A. Determines how long it takes to get to full volume
 - B. Determines how long it takes to descend from full volume to the sustain level
 - C. Determines the level the sound holds at while a key is held
 - D. Determines how long it takes the sound to die away after you let the key up
3. Which of the following is not one of the ways you can change sounds on a synthesizer?
 - A. Turning the alpha dial
 - B. Pressing an increment or decrement button
 - C. Pressing a bank and then a number button
 - D. All of these are ways we learned about
4. Saw waves sound
 - A. Hollow
 - B. Pure
 - C. Buzzy
 - D. None of the choices listed above are correct
5. The attack control
 - A. Determines how long it takes to get to full volume
 - B. Determines how long it takes to descend from full volume to the sustain level
 - C. Determines the level the sound holds at while a key is held
 - D. Determines how long it takes the sound to die away after you let the key up
6. Square waves sound
 - A. Hollow
 - B. Pure
 - C. Buzzy
 - D. None of the choices listed above are correct
7. Aftertouch senses
 - A. How hard you strike each key
 - B. How quickly you release each key
 - C. If you press into the keys after you play them
 - D. None of the above

8. The decay control
 - A. Determines how long it takes to get to full volume
 - B. Determines how long it takes to descend from full volume to the sustain level
 - C. Determines the level the sound holds at while a key is held
 - D. Determines how long it takes the sound to die away after you let the key up
9. If you make changes to a sound and then switch to another sound
 - A. The changes you make disappear
 - B. The changes you made will still be there when you come back to that sound
 - C. The changes you made to the first sound will be applied to the second sound
 - D. None of the above
10. An insert
 - A. Takes all of a signal out of the channel and returns all of it to the same channel
 - B. Makes a copy of a signal and sends it to another device
 - C. Determines the EQ amount
 - D. None of these answers is right
11. The first thing used to create reverb in studio was
 - A. A digital reverb unit
 - B. A reverb plate
 - C. A specially designed room called a chamber
 - D. None of these answers are correct
12. Which one of these is NOT a type of reverb we learned about?
 - A. Plate
 - B. Chamber
 - C. Room
 - D. Hall
 - E. We learned about all of these.
13. Phantom power is
 - A. + 48 volts
 - B. -48 volts
 - C. +9 volts
 - D. A + B are correct
14. A longer predelay time
 - A. Makes it seem like the sound is in a smaller room
 - B. Makes it seem like the sound is in a room with curtains
 - C. Makes it seem like the sound is in a bigger room
 - D. Changes how thick the reverb sounds

Matching: Write the number of the best definition (the right column) next to each word in the left column. (2 points each)

- | | |
|----------------------|---|
| ___ Threshold | 1. A range of sounds, high or low |
| ___ Expression Pedal | 2. An individual device which made up some early synthesizers |
| ___ Q | 3. A controller that allows you to rock your foot forward and back |
| ___ Solo | 4. A button which instantly turns down the gain on one channel |
| ___ Ratio | 5. The unit of measure for volume level |
| ___ Insert | 6. A type of reverb which simulates a large acoustic space |
| ___ Polyphony | 7. A control which determines how much longer or shorter a chorus unit's delay time gets as it changes |
| ___ Attenuate | 8. The volume level at which the compressor or limiter starts to work |
| ___ Aux Return | 9. A control which adds a sparkling whistling quality to the sound as the Fc is changed. |
| ___ Aux Send | 10. Two numbers separated by a colon which gives us an example of how many decibels the compressor will put out compared to how many decibels come in |
| ___ Insert Cable | 11. To reduce the volume level |
| ___ Band | 12. A button on a channel which instantly mutes all other channels |
| ___ Mute | 13. A cable with one connector on one end and two on the other |
| ___ Chamber | 14. A pair of inputs with only gain controls |
| ___ Hall | 15. A type of reverb which simulates the bare-walled rooms first used to artificially create reverb in studios |
| ___ Resonance | 16. The number of notes a synthesizer can play at one time |
| ___ Decibels | 17. A control on a chorus unit which controls how much chorused signal is output and how much "unchorused" signal is output. |
| ___ Depth | 18. A jack which is an input and an output |
| ___ Mix | 19. A control found on every channel which allows you to send a copy of the signal to another device for processing |