

UPC Chapter 9 Vents –Student Copy

RV 3.23.24

How to take this course

1. Download and print the test questions.
2. Log in to your account with your ID and password.
3. Viewing your status page, scroll down and click on "[Click here to start this course.](#)"
4. Begin viewing the web pages. Refer to your printed test to find the correct answers. The questions track the web pages.
5. As you find the answers, circle them on your printed copy.
6. At the end of each section, you'll enter the quiz which is the same as your printed test. Refer to your circled answers when actually answering the quiz on the web.
7. Upon passing, you will proceed to the next section. If you failed to pass, you will be moved back to the beginning of that section for more review.

These are useful tables for this class and on the job

TABLE 702.1 DRAINAGE FIXTURE UNIT VALUES (DFU) Abbreviated for Private usage		
PLUMBING FIXTURE	MIN. TRAP ARM	PRIVATE DFU
Bathtub/Shower (BT)	1½"	2.0
Lavatory single (LAV)	1¼"	1.0
Sink – domestic (KS)	1½"	2.0
Water closet (WC)	3"	3.0
Clothes Washer (ACW)	2"	3.0

Table 1002.2 Horizontal Lengths of Trap Arms		
Trap Arm Pipe Diameter	Min. Distance Trap to Vent	Max. Length of Trap Arm
1 ¼"	2 ½ in.	30 in.
1 ½"	3 in.	42 in.
2"	4 in.	60 in.
3"	6 in.	72 in.

Pipe Dia.	Area
1 ½"	1.77 sq. inches
2"	3.14 sq. inches
3"	7.07 sq. inches
4"	12.56 sq. inches

Table 703.2 MAX. UNIT LOADING & LENGTHS Drainage Piping					
Pipe Dia Inches	1 1/4	1 1/2	2	3	4
Max Vertical DFUs	1	2	16	48	256
Max Horizontal DFUs	1	1	8	35	216

Vent Piping - Horizontal and Vertical					
Pipe Dia Inches	1 1/4	1 1/2	2	3	4
Maximum DFUs	1	8	24	84	256
Max Length (feet)	45	60	120	212	300

PIPE SIZE	1 ½"	2"	2 ½"	3"	3 ½"	4"	4 ½"	5"
1 1/4" NA	Increased 1 size	Increased 2 sizes						
1 ½"		Increased 1 size		Increased 3 sizes		Increased 4 sizes		
2"				Increased 2 sizes		Increased 3 sizes		Increased 5 sizes
2 ½"								
3"						Increased 2 sizes		Increased 4 sizes
3 ½"								
4"								Increased 2 sizes

UPC Chapter 9 Vents –Student Copy

RV 3.23.24

Quiz 1 Lesson 1

1. VTR is an abbreviation for _____.
 - Vent Through the Roof
 - Vent Through the Rafters
 - Vertical Terminal Register
 - Vertical Temperature Reflection
 - none of the answers provided
2. A soil vent is the _____.
 - vertical vent for a water closet
 - large diameter pipe for transferring potting soil to 20 pound bags
 - natural expulsion of methane gas from a compost pile
 - underground chamber venting mechanism for a septic tank
 - none of the answers provided
3. A soil stack is a _____.
 - large pile of garden material
 - large pile of dirty laundry
 - vertical drain pipe that carries waste from commercial food grinders
 - horizontal pipe that serves as a side vent from a FOG catch basin
 - vertical drain pipe that carries soil waste from a water closet (WC)
4. A waste vent is _____.
 - a vent pipe that is no longer in service
 - a pipe that discharges methane from a garbage or waste dump
 - a vertical vent pipe that does not carry any soil from a sanitary fixture
 - installed in a pressurized fermentation tank for expelling residue
 - none of the answers provided
5. A waste stack _____.
 - is any other vertical drain pipe that does not carry soil from a sanitary fixture
 - is the same as a waste vent except that it is installed horizontally instead of vertically
 - must be made from galvanized steel
 - has a 6-inch minimum diameter
 - none of the answers provided
6. An individual vent serves _____ fixture.
 - one
 - two
 - three or more
 - 2 branches of a
7. Relief vents _____.
 - are those with the primary function of providing circulation of air between drainage and vent systems
 - overflow excess waste water into a secondary chamber
 - have a 2-inch minimum diameter
 - none of the answers provided
8. A circuit vent _____.
 - serves more than one fixture
 - is installed before the last fixture
 - extends up to the open air
 - can connect to another vent that extends to the outside
 - all of the answers provided
9. Branch vents are _____.
 - vents extending horizontally that connect multiple vents together
 - found only on branch drain lines
 - found only on branched waste lines
 - found on Treed Systems
 - none of the answers provided

Lesson 2

10. "S" traps will self-siphon.
 - True
 - False
11. Venting a trap _____.
 - allows pathogens into an area
 - makes a room smell
 - allows waste water to flood above the rim of a fixture
 - maintains the water seal
 - none of the answers provided
12. To maintain a water seal, the vent system needs to protect the seal from _____ of differential pressure.
 - 1 inch
 - 1.5 inches
 - 2 inches
 - 3 inches
 - none of the answers provided

UPC Chapter 9 Vents –Student Copy

RV 3.23.24

13. Moving waste water in a horizontal drainage pipe

- _____.
- generates positive air pressure in front of the waste water
- generates negative pressure behind the waste water
- can slow down due to air pressure differences
- can drop out the debris it is carrying if it moves too slowly in the drain line
- all of the answers provided

14. The target velocity of waste water in a horizontal drain line is _____.

- 1 to 2 feet per second
- 2 to 3 feet per second
- 3 to 5 feet per second
- 5 to 6 feet per second
- none of the answers provided

15. Ideally, a horizontal drainpipe shouldn't be more than _____ full.

- 1/4
- 1/3
- 1/2
- 2/3
- 7/8

16. Proper venting _____.

- reduces friction losses to keep the waste material flowing through the drainage pipe
- keeps the trap seal in place which prevents the entry of sewer gases
- keeps the trap seal in place which prevents potential exposure to infectious diseases
- all of the answers provided
- none of the answers provided

Quiz 2 Lesson 3

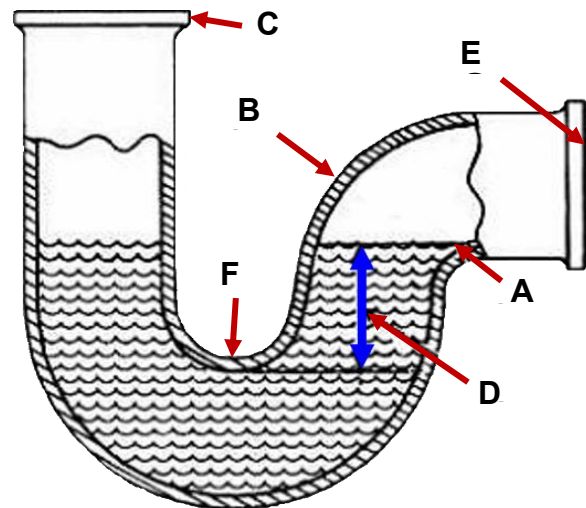
1. A common trap is the P-trap and is named because it _____.

- receives "Pee" from urinals and water closets
- is shaped like the letter P
- was originally manufactured by Peabody Manufacturing and was abbreviated to P
- was invented by a Russian named Pavlovski
- none of the answers provided

Use the drawing below to answer questions 2 – 7 in identifying the parts of a P-trap.

2..The SEAL is identified by which letter?

- A
- B
- C
- D
- E



3. The CROWN WEIR is identified by which letter?

- A
- B
- C
- E
- F

4. The TOP DIP is identified by which letter?

- A
- B
- C
- D
- F

5. The CROWN is identified by which letter?

- B
- C
- D
- E
- F

6. The INLET is identified by which letter?

- A
- B
- C
- E
- F

7. The OUTLET is identified by which letter?

- A
- B
- C
- D
- E

8. Excessive trap arm length can result in _____ .
(Choose the best answer.)

- material and cost overruns
- an increase in labor for installation
- a vent opening below the trap weir height

UPC Chapter 9 Vents –Student Copy

RV 3.23.24

- a vent opening above the trap weir height
 - none of the answers provided
9. The minimum distance from a 2-inch diameter trap arm to the vent is _____ inches.
- 2 ½
 - 3
 - 4
 - 6
 - 8
10. The minimum distance from a 4-inch diameter trap arm to the vent is _____ inches.
- 2 ½
 - 3
 - 4
 - 6
 - 8
11. The minimum distance from a 1½-inch diameter trap arm to the vent is _____ inches.
- 2 ½
 - 3
 - 4
 - 6
 - 8
12. The maximum length of a 2-inch diameter trap arm is _____ inches.
- 30
 - 42
 - 60
 - 72
 - 120
13. The maximum length of a 1½-inch diameter trap arm is _____ inches.
- 30
 - 42
 - 60
 - 72
 - 120
14. The maximum length of a 3-inch diameter trap arm is _____ inches.
- 30
 - 42
 - 60
 - 72
 - 120
15. To avoid a possible blocked vent, use a sanitary tee to connect the trap arm to a vertical drain/vent.
- True
 - False

TABLE 702.1 DRAINAGE FIXTURE UNIT VALUES (DFU) - Private usage		
PLUMBING FIXTURE	MIN. SIZE TRAP ARM	PRIVATE DFU
Bathtub/Shower (BT)	1 ½	2.0
Lavatory single (LAV)	1 ¼	1.0
Sink – domestic (KS)	1 ½	2.0
Water closet (WC)	3	3.0
Clothes washer (ACW)	2	3.0

Answer questions 16-20 to correctly size the vent for a clothes washer (ACW); the vent is 28 feet in length.

16. The minimum trap arm size for an ACW is _____.
- 1 ¼ inches
 - 1 ½ inches
 - 2 inches
 - 3 inches
17. The clothes washer for private use is rated at _____ DFU.
- 1.0
 - 2.0
 - 3.0
 - 4.0
 - 5.0

Nominal size	Outside Diameter (OD)	Inside Diameter ID - inches		
		Type K (Green)	Type L (Blue)	Type M (Red)
3/8	1/2	0.402	0.430	0.450
1/2	5/8	0.528	0.545	0.569
5/8	3/4	0.652	0.668	0.690
3/4	7/8	0.745	0.785	0.811
1	1 1/8	0.995	1.025	1.055
1 1/4	1 3/8	1.245	1.265	1.291
1 1/2	1 5/8	1.481	1.505	1.527
2	2 1/8	1.959	1.985	2.009
2 1/2	2 5/8	2.435	2.465	2.495
3	3 1/8	2.907	2.945	2.981

Trap Arm Pipe Diameter	Min. Distance Trap to Vent	Max. Length of Trap Arm
1 1/4"	2 1/2 in.	30 in.
1 1/2"	3 in.	42 in.
2"	4 in.	60 in.
3"	6 in.	72 in.

18. The minimum distance from the clothes waster trap arm to the vent is _____ inches.

- 2 1/2
- 3
- 4
- 6
- 8

19. The maximum length ACW of the trap arm is _____ inches.

- 30
- 42
- 60
- 72
- 120

SIZE OF PIPE (inches)	1 1/4	1 1/2	2	3*	4
Drainage Piping					
Maximum DFUs					
Vertical	1	2	16	48	256
Horizontal	1	1	8	35	216
Vent Piping					
Horizontal and Vertical					
Maximum DFUs	1	8	24	84	256
Maximum Lengths (feet)	45	60	120	212	300

20. The vent minimum diameter for an ACW vent with 28 feet of vertical run _____.

- 1 1/4 inches
- 1 1/2 inches
- 2 inches
- 3 inches
- 4 inches

UPC Chapter 9 Vents –Student Copy

RV 3.23.24

Quiz 3 Lesson 4

1. Vent piping shall be permitted to be omitted on an interceptor where such interceptor acts as a primary settling tank and discharges through a horizontal indirect waste pipe into a secondary interceptor.
 - True
 - False
2. Traps serving sinks that are part of the equipment of soda fountains need not be vented where their location and construction make it impossible to do so. In this case, they shall discharge by means of approved indirect waste pipes into a floor sink or other approved type of receptor.
 - True
 - False
3. DWV copper tubing has _____ or _____ colored printing on the tube sides.
 - black – red
 - black – white
 - red – blue
 - yellow – green
 - yellow – light orange
4. Type K copper piping is labeled with _____ lettering.
 - red
 - yellow
 - green
 - blue
 -
5. Type L copper piping is labeled with _____ lettering.

Questions 10 -15 are to correctly size the following double bath system diagram. Vertical height – 18 feet

10. The total DFU load for this system is _____.
 - 3.0
 - 11.0
 - 14.0
 - 17.0
 - 22.0
11. Minimum size building sewer is _____.
 - 1 ½ inches
 - 2 inches
 - 3 inches
 - 4 inches
 - 6 inches
12. Minimum size for vent A is _____.
 - 1 ¼ inches
 - 1 ½ inches
 - 2 inches
 - 3 inches
 - 4 inches

- red
 - yellow
 - green
 - blue
6. Type M copper piping is labeled with _____ lettering.
 - red
 - yellow
 - green
 - blue
 7. Type DWV copper piping is labeled with _____ lettering.
 - red
 - yellow
 - green
 - blue
 8. Type _____ copper tubing has the thickest wall.
 - K
 - L
 - M
 - DWV

Lesson 5:

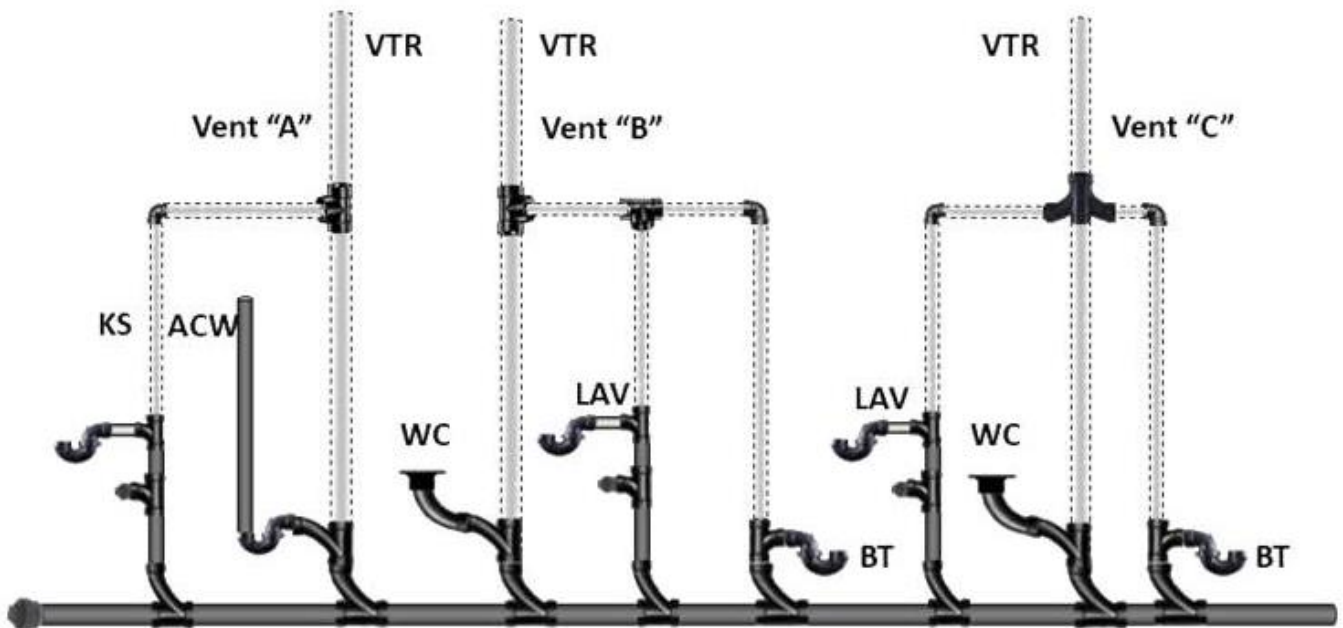
9. A water closet (WC) needs a vent of at least _____ in diameter.
 - 1 ¼ inches
 - 1 ½ inches
 - 2 inches
 - 3 inches
 - 4 inches
13. Minimum size for vent B is _____.
 - 1 ¼ inches
 - 1 ½ inches
 - 2 inches
 - 3 inches
 - 4 inches
14. Minimum size for vent C is _____.
 - 1 ¼ inches
 - 1 ½ inches
 - 2 inches
 - 3 inches
 - 4 inches
15. Does the design of the system as shown in questions 10 to 14 as calculated meet current code for vents, and if not what additional area needs to be added?
 - Design is correct, no additional venting is required

UPC Chapter 9 Vents – Student Copy RV 3.23.24

- Vent system is undersized, increase Vent "A" to 2" inches
- Vent system is undersized, increase all vents to 3" inches
- Vent system is undersized, increase all vents to 3" inches

Drainage Piping					
Pipe Dia Inches	1 1/4	1 1/2	2	3	4
Max Vertical DFUs	1	2	16	48	256
Max Horizontal DFUs	1	1	8	35	216
Vent Piping - Horizontal and Vertical					
Pipe Dia Inches	1 1/4	1 1/2	2	3	4
Maximum DFUs	1	8	24	84	256
Max Length (feet)	45	60	120	212	300

<u>Pipe Dia.</u>	<u>Area</u>
1 1/2"	1.77 sq. inches
2"	3.14 sq. inches
3"	7.07 sq. inches
4"	12.56 sq. inches



PIPE SIZE	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	4 1/2"	5"
1 1/4" NA	Increased 1 size	Increased 2 sizes						
1 1/2"		Increased 1 size		Increased 3 sizes		Increased 4 sizes		
2"				Increased 2 sizes		Increased 3 sizes		Increased 5 sizes
2 1/2"								
3"						Increased 2 sizes		Increased 4 sizes
3 1/2"								
4"								Increased 2 sizes

UPC Chapter 9 Vents –Student Copy

RV 3.23.24

Lesson 6

16. Which of the following pipe size(s) are referenced in the UPC, but are generally not commercially available for purchase?
- 1 ¼ inch pipe size
 - 2 ½ inch pipe size
 - 3 ½ inch pipe size
 - all of the answers provided
 - none of the answers provided
17. A pipe diameter is increased from 2 to 3 inches. This would mean that the increase would be _____ larger.
- 1 pipe size
 - 1 ½ pipe sizes
 - 2 pipe sizes
 - 2 ½ pipe sizes
 - 3 pipe sizes
18. A building drain of 4 inches is installed that has 4 fixtures with 2-inch diameter vents (VTR) at each fixture. Does this meet code requirements? (*Choose the best answer.*)
- Yes – because 2 vents at 2 inches is 4 inches.
 - Yes – because 4 vents at 2 inches has a cross section greater than a 4-inch drain.
 - Yes – all 4 fixtures will probably not be used at the same time.
 - No – because sanitary tees used for vent fittings were not inverted.
 - Yes – because the cross-sectional area of the vents equals the cross-sectional area of the building drain.

Quiz 4 Lesson 7

1. Vent pipes from fixtures located upstream from pumps that obstruct the free flow of air and outside atmosphere shall not be used for meeting the cross-sectional area venting requirements.
- True
 - False
2. The maximum horizontal length permitted for a 1½-inch diameter vent is _____ feet.
- 15
 - 20
 - 40
 - 60
 - 70.6
3. The maximum horizontal length permitted for a 2-inch diameter vent is _____ feet.
- 15
 - 20
 - 40
 - 60
 - 70.6

4. The maximum horizontal length permitted for a 3 inch diameter vent is _____ feet.
- 15
 - 20
 - 40
 - 60
 - 70.6
5. A 2-inch vent is to be installed which has a horizontal run of 45 feet. It _____. (*Choose the best answer.*)
- can be installed without any problem
 - can be installed if decreased to a 1 ½ inch diameter vent
 - cannot be installed since it is oversized
 - cannot be installed since the horizontal run is over 30 feet
 - can be installed but the vent must be increased at least 1 pipe size
6. Generally speaking, increasing the size of the vent pipe 1 diameter size results in _____.
- ½ the friction loss
 - ¼ the friction loss
 - 2x the velocity of the air
 - 4x the velocity of the air
 - none of the answers provided
7. Ideal horizontal velocity of waste water in a horizontal drain at a 2% slope shall be _____.
- 2 feet– 3 feet per second
 - 3 feet – 5 feet per second
 - 6 feet – 9 feet per second
 - none of the answers provided
8. _____ is the best fitting to use when connecting a horizontal drain line to a vertical drain line.
- A wye combo
 - A P trap
 - An inverted 3 x4 reducer
 - A double fixture fitting
9. Vent pipes shall use _____ fittings.
- Inverted
 - converted
 - re-vented
 - diverted
10. Vent pipes shall _____ the drainage pipe they serve.
- be graded so as to drip back by gravity to pool and hold condensate for
 - be below the center line of
 - be above the center line of
 - none of the answers provided

UPC Chapter 9 Vents –Student Copy

RV 3.23.24

11. A vent connected to a horizontal drainage pipe shall have its invert _____.
 - above the center line of the drainage pipe
 - below the center line of the drainage pipe
 - parallel to the center line of the drainage pipe
 - above and perpendicular to the center line of the drainage pipe
12. A vent must be at least _____ above the flood rim before offsetting horizontally.
 - 1 inch
 - 6 inches
 - 16 inches
 - 18 inches
 - 24 inches
13. A sanitary tee can be used on its “back” when installing a vent on a horizontal drain line.
 - True
 - False
14. Once a vent pipe penetrates the roof, it may be reduced by _____ pipe size(s).
 - 1
 - 2
 - the code does not address this situation
 - the code does not allow the vent pipe to be reduced in size
15. Two fixtures using a common vertical vent pipe may be installed on the same level if _____ fitting(s) is/are used.
 - a double fixture tee
 - a double sanitary tee
 - a combo wye 1/8 bend
 - two back-to-back long sweep
 - none of the answers provided
3. Each vent shall terminate not less than _____ from an openable window, door, opening, air intake, or vent shaft.
 - 1 foot
 - 3 feet
 - 5 feet
 - 10 feet
 - 15 feet
4. Each vent shall terminate not less than _____ above an openable window, door, opening, air intake, or vent shaft.
 - 1 foot
 - 3 feet
 - 5 feet
 - 10 feet
 - 15 feet
5. Each vent shall terminate not less than _____ in any direction from a lot line, alley or street.
 - 1 foot
 - 3 feet
 - 5 feet
 - 10 feet
 - 15 feet
6. If a vent is within _____ of a roof that is used for parking, then the vent must be at least _____ above the roof.
 - 10 feet – 10 feet
 - 10 feet – 20 feet
 - 7 feet – 10 feet
 - 10 feet – 7 feet
 - none of the answers provided
7. Vent pipes for outdoor installations shall extend not less than _____ above the surrounding ground, and shall be securely supported.
 - 1 foot
 - 3 feet
 - 5 feet
 - 10 feet
 - 15 feet

Quiz 5 Lesson 9

1. Each vent pipe or stack shall extend through its flashing and terminate vertically not less than _____ inches above the roof.
 - 6
 - 12
 - 18
 - 24
 - 30
2. Each vent pipe or stack shall extend through its flashing and terminate vertically...not less than _____ from a vertical surface.
 - 1 foot
 - 1 ½ feet
 - 2 feet
 - 5 feet
 - 8 feet
8. The weight of a lead used for flashing on a vent terminal through the roof will need to be at least _____ per square foot.
 - 1 pound
 - 3 pounds
 - 5 pounds
 - 10 pounds
 - 15 pounds
9. In areas with frost or snow that have a minimum design temperature below 0°F, vent terminals shall be no less than _____ in diameter, and in no event can they be smaller than the required vent pipe.

UPC Chapter 9 Vents –Student Copy

RV 3.23.24

- 1 ¼ inches
 - 1 ½ inches
 - 2 inches
 - 3 inches
 - 4 inches
10. In areas where there is frost or snow, change in vent diameter will need to be made inside the building not less than _____ below the roof in an insulated space.
- 1 foot
 - 3 feet
 - 5 feet
 - 10 feet
 - 15 feet
11. In areas where there is frost or snow, the vent shall terminate not less than _____ above the roof.
- 1 inch
 - 3 inches
 - 5 inches
 - 10 inches
 - 15 inches
12. Each drainage stack that extends _____ or more stories shall be served by a parallel vent stack.
- 1
 - 3
 - 5
 - 10
 - 15
13. Each vent drainage stack shall also be connected to the drainage stack at each _____ floor, counting _____ from the uppermost fixture drain.
- 5th – down
 - 5th – up
 - 3rd – down
 - 3rd – up
 - none of the answers provided
14. The yoke vent connection to the vent stack shall be placed not less than _____ inches above the floor level.
- 24
 - 36
 - 42
 - 48
 - 60

Quiz 6 Lesson 10

1. Vertical wet venting is limited to vertical drainage piping receiving the discharge from the trap arm of _____ fixture unit fixtures.
- one- and two-
 - two- and three-
 - three- and four-
 - four- and five-
2. Vertical wet venting also serves as a vent not exceeding _____ fixture(s).
- one
 - two
 - three
 - four
 - five
3. A wet vent _____.
- is a vertical drain pipe from one fixture that acts as a vent for the fixture below
 - is installed under the flood rim
 - carries water but no waste material
 - is glued together with a “wet” bonding agent that cures in water
 - none of the answers provided
4. When installing a wet vent, all of the fixtures must be located _____.
- in the same building
 - within the same story
 - horizontally from one another
 - within 15 feet of one another
 - none of the answers provided
5. The maximum length allowed for a wet vent is _____.
- 1 foot
 - 3 feet
 - 6 feet
 - 9 feet
 - 16 feet
6. The diameter of the wet vent shall be not less than _____ pipe size(s) larger than the minimum sized waste pipe of the upper fixtures.
- the same
 - 1
 - 2
 - 2 ½
 - 3
7. The minimum diameter size for a wet vent is _____.
- 1 ¼ inches
 - 1 ½ inches
 - 2 inches

UPC Chapter 9 Vents –Student Copy

RV 3.23.24

- 3 inches
- 4 inches

Lesson 11

8. Common vent sizing shall be the sum of the fixture units served, but, in no case shall it be smaller than the minimum vent pipe size required for a fixture served.
- True
 - False
9. An automatic clothes washer with a standpipe may empty above the laundry tub.
- True
 - False
10. An automatic clothes washer with a standpipe is rated for _____.
- 1 DFU
 - 2 DFU
 - 3 DFU
 - 4 DFU
 - 5 DFU
11. A wet vent carrying 5 DFU needs a minimum pipe diameter of _____.
- 1 ¼ inches
 - 1 ½ inches
 - 2 inches
 - 3 inches
 - 4 inches

Quiz 7 Lesson 12

1. On island fixtures, vents below the floor level shall have a slope of not less than _____ inch per foot.
- 1/8
 - 1/4
 - 5/16
 - 1/2
 - 1
2. The return bend used under the drain board shall be a one piece fitting or an assembly of a _____ degree, a _____ degree, and a _____ degree elbow in the order named.
- 45 – 90 – 45
 - 90 – 45 – 90
 - 90 – 180 – 90
 - 22 ½ – 90 – 22 ½
 - none of the answers provided

Lesson 13

3. Combination waste vent systems are used primarily for _____.
- floor sinks in markets

- demonstration tables
- similar applications
- all of the answers provided

4. A combination waste branch that exceeds _____ feet shall be separately vented in an approved manner.
- 5
 - 10
 - 15
 - 20
 - 30
5. A combination waste pipe is to be sized not less than _____ pipe size(s) larger than the requirements shown in Chapter 7.
- 1
 - 2
 - 3
 - 4
 - 5
6. A combination waste system may service _____.
- floor sinks
 - floor sinks and water closets (WCs)
 - floor sinks, water closets (WCs) and urinals
 - floor sinks, water closets (WCs), urinals and kitchen sinks
 - none of the answers provided
7. The maximum number of fixtures that a circuit vent can connect to is _____.
- 2
 - 4
 - 6
 - 8
 - 12

8. The vent for a circuit vent is to be connected between the _____ most upstream fixture drains.
- 2
 - 3
 - 4
 - 6

Lesson 14

9. There is/are _____ conditions that mandate(s) the installation of a relief vent for a circuited vented horizontal branch.
- two
 - one
 - four
 - three