

PRACTICE EXAM 11: ARRT RADIOGRAPHY SIMULATION (200 QUESTIONS)

This practice exam contains 200 scored-style questions based on the ARRT Radiography content specifications effective March 1, 2027. Allow 230 minutes. Select the single best answer for each question. A scaled score of 75 is the ARRT passing standard; it is not equivalent to 75 percent correct.

1. Clinical Vignette 001 - At an ambulatory imaging center, which technique best protects a sterile field during a bedside procedure?

- A. Reach across the sterile field
- B. Keep sterile items above waist level
- C. Turn away from the sterile field
- D. Place sterile supplies below the waist

2. Clinical Vignette 002 - During a hospital quality audit, when transferring a weak patient from wheelchair to table, which action is safest?

- A. Pull the patient by both arms
- B. Ask the patient to hold the tube stand
- C. Use a gait belt and obtain assistance
- D. Perform the transfer without locking wheels

3. Clinical Vignette 003 - While assisting with an urgent examination, which documentation entry is most appropriate after contrast extravasation?

- A. Record findings, actions, and notifications
- B. Delete the injection record
- C. Document only if surgery is required

D. Describe blame rather than observations

4. Clinical Vignette 004 - At a community diagnostic facility, before beginning an examination, which action best satisfies correct patient identification?

- A. Confirm only the room assignment
- B. Ask a relative to identify the patient
- C. Match the examination to the schedule
- D. Use two independent patient identifiers

5. Clinical Vignette 005 - At an ambulatory imaging center, a competent adult withdraws consent immediately before imaging. What should the radiographer do first?

- A. Complete the ordered images quickly
- B. Ask security to prevent departure
- C. Stop and clarify the patient's decision
- D. Document refusal after performing imaging

6. Clinical Vignette 006 - During a hospital quality audit, which action is most appropriate when a patient has limited English proficiency?

- A. Rely on a young family member
- B. Use a qualified medical interpreter
- C. Speak louder using technical terminology
- D. Skip the explanation to save time

7. Clinical Vignette 007 - While assisting with an urgent examination, after removing gloves following contact with body fluids, what should the radiographer do next?

- A. Touch the control console immediately
- B. Put the same gloves back on

- C. Wipe hands on a clean towel
- D. Perform appropriate hand hygiene

8. Clinical Vignette 008 - At a community diagnostic facility, a patient becomes pale, diaphoretic, and confused during an examination. What is the priority response?

- A. Stop imaging and assess the patient
- B. Finish the final exposure first
- C. Send the patient out unassisted
- D. Reduce image-processing brightness

9. Clinical Vignette 009 - At an ambulatory imaging center, which technique best protects a sterile field during a bedside procedure?

- A. Reach across the sterile field
- B. Turn away from the sterile field
- C. Keep sterile items above waist level
- D. Place sterile supplies below the waist

10. Clinical Vignette 010 - During a hospital quality audit, when transferring a weak patient from wheelchair to table, which action is safest?

- A. Pull the patient by both arms
- B. Ask the patient to hold the tube stand
- C. Perform the transfer without locking wheels
- D. Use a gait belt and obtain assistance

11. Clinical Vignette 011 - While assisting with an urgent examination, which documentation entry is most appropriate after contrast extravasation?

- A. Record findings, actions, and notifications

- B. Delete the injection record
- C. Document only if surgery is required
- D. Describe blame rather than observations

12. Clinical Vignette 012 - A 72 kg patient is prescribed 1.2 mL/kg of contrast. What volume is calculated?

- A. 72 mL
- B. 86.4 mL
- C. 84 mL
- D. 90 mL

13. Clinical Vignette 013 - At an ambulatory imaging center, a competent adult withdraws consent immediately before imaging. What should the radiographer do first?

- A. Complete the ordered images quickly
- B. Ask security to prevent departure
- C. Stop and clarify the patient's decision
- D. Document refusal after performing imaging

14. Clinical Vignette 014 - During a hospital quality audit, which action is most appropriate when a patient has limited English proficiency?

- A. Rely on a young family member
- B. Speak louder using technical terminology
- C. Skip the explanation to save time
- D. Use a qualified medical interpreter

15. Clinical Vignette 015 - While assisting with an urgent examination, after removing gloves following contact with body fluids, what should the radiographer do next?

- A. Perform appropriate hand hygiene
- B. Touch the control console immediately
- C. Put the same gloves back on
- D. Wipe hands on a clean towel

16. Clinical Vignette 016 - At a community diagnostic facility, a patient becomes pale, diaphoretic, and confused during an examination. What is the priority response?

- A. Finish the final exposure first
- B. Send the patient out unassisted
- C. Reduce image-processing brightness
- D. Stop imaging and assess the patient

17. Clinical Vignette 017 - At an ambulatory imaging center, which technique best protects a sterile field during a bedside procedure?

- A. Reach across the sterile field
- B. Keep sterile items above waist level
- C. Turn away from the sterile field
- D. Place sterile supplies below the waist

18. Clinical Vignette 018 - During a hospital quality audit, when transferring a weak patient from wheelchair to table, which action is safest?

- A. Use a gait belt and obtain assistance
- B. Pull the patient by both arms
- C. Ask the patient to hold the tube stand
- D. Perform the transfer without locking wheels

19. Clinical Vignette 019 - While assisting with an urgent examination, which documentation entry is most appropriate after contrast extravasation?

- A. Delete the injection record
- B. Record findings, actions, and notifications
- C. Document only if surgery is required
- D. Describe blame rather than observations

20. Clinical Vignette 020 - At a community diagnostic facility, before beginning an examination, which action best satisfies correct patient identification?

- A. Confirm only the room assignment
- B. Ask a relative to identify the patient
- C. Use two independent patient identifiers
- D. Match the examination to the schedule

21. Clinical Vignette 021 - At an ambulatory imaging center, a competent adult withdraws consent immediately before imaging. What should the radiographer do first?

- A. Complete the ordered images quickly
- B. Ask security to prevent departure
- C. Stop and clarify the patient's decision
- D. Document refusal after performing imaging

22. Clinical Vignette 022 - During a hospital quality audit, which action is most appropriate when a patient has limited English proficiency?

- A. Rely on a young family member
- B. Use a qualified medical interpreter
- C. Speak louder using technical terminology
- D. Skip the explanation to save time

23. Clinical Vignette 023 - While assisting with an urgent examination, after removing gloves following contact with body fluids, what should the radiographer do next?

- A. Touch the control console immediately
- B. Put the same gloves back on
- C. Wipe hands on a clean towel
- D. Perform appropriate hand hygiene

24. Clinical Vignette 024 - At a community diagnostic facility, a patient becomes pale, diaphoretic, and confused during an examination. What is the priority response?

- A. Stop imaging and assess the patient
- B. Finish the final exposure first
- C. Send the patient out unassisted
- D. Reduce image-processing brightness

25. Clinical Vignette 025 - At an ambulatory imaging center, which technique best protects a sterile field during a bedside procedure?

- A. Reach across the sterile field
- B. Turn away from the sterile field
- C. Place sterile supplies below the waist
- D. Keep sterile items above waist level

26. Clinical Vignette 026 - During a hospital quality audit, when transferring a weak patient from wheelchair to table, which action is safest?

- A. Pull the patient by both arms
- B. Use a gait belt and obtain assistance
- C. Ask the patient to hold the tube stand
- D. Perform the transfer without locking wheels

27. Clinical Vignette 027 - While assisting with an urgent examination, which documentation entry is most appropriate after contrast extravasation?

- A. Record findings, actions, and notifications
- B. Delete the injection record
- C. Document only if surgery is required
- D. Describe blame rather than observations

28. Clinical Vignette 028 - At a community diagnostic facility, before beginning an examination, which action best satisfies correct patient identification?

- A. Confirm only the room assignment
- B. Ask a relative to identify the patient
- C. Use two independent patient identifiers
- D. Match the examination to the schedule

29. Clinical Vignette 029 - At an ambulatory imaging center, a competent adult withdraws consent immediately before imaging. What should the radiographer do first?

- A. Complete the ordered images quickly
- B. Ask security to prevent departure
- C. Document refusal after performing imaging
- D. Stop and clarify the patient's decision

30. Clinical Vignette 030 - During a hospital quality audit, which action is most appropriate when a patient has limited English proficiency?

- A. Use a qualified medical interpreter
- B. Rely on a young family member
- C. Speak louder using technical terminology
- D. Skip the explanation to save time

31. Clinical Vignette 031 - While assisting with an urgent examination, after removing gloves following contact with body fluids, what should the radiographer do next?

- A. Touch the control console immediately
- B. Perform appropriate hand hygiene
- C. Put the same gloves back on
- D. Wipe hands on a clean towel

32. Clinical Vignette 032 - During a morning trauma rotation, which SI unit expresses absorbed radiation dose?

- A. Sievert
- B. Coulomb per kilogram
- C. Gray
- D. Becquerel

33. Clinical Vignette 033 - While completing a preprocedure verification, why does increasing distance reduce radiation intensity?

- A. Energy spreads over a larger area
- B. Photons lose all frequency in air
- C. The focal spot stops producing photons
- D. The detector absorbs photons before exposure

34. Clinical Vignette 034 - At a high-volume radiography department, which interaction is the principal source of occupational scatter during diagnostic radiography?

- A. Pair production in the detector
- B. Compton interaction in the patient
- C. Photodisintegration in the tube housing
- D. Coherent emission from the filament

35. Clinical Vignette 035 - An exposure uses 400 mA for 0.03 second. What mAs is produced?

- A. 3 mAs
- B. 40 mAs
- C. 120 mAs
- D. 12 mAs

36. Clinical Vignette 036 - During a morning trauma rotation, what is the primary purpose of the line-focus principle?

- A. Increase actual focal-track temperature
- B. Eliminate all off-focus radiation
- C. Create a small effective focal spot
- D. Prevent thermionic emission entirely

37. Clinical Vignette 037 - While completing a preprocedure verification, which cells are generally most radiosensitive?

- A. Mature neurons with little division
- B. Resting skeletal muscle fibers
- C. Highly specialized adipose cells
- D. Rapidly dividing, less differentiated cells

38. Clinical Vignette 038 - At a high-volume radiography department, a stochastic radiation effect is characterized by which relationship?

- A. Severity always rises above a threshold
- B. Probability increases as dose increases
- C. It occurs only after skin erythema
- D. It has a fixed latency of one day

39. Clinical Vignette 039 - During a post-exposure image review, which SI unit expresses absorbed radiation dose?

- A. Sievert
- B. Coulomb per kilogram
- C. Gray
- D. Becquerel

40. Clinical Vignette 040 - Intensity is 36 units at 3 meters. What intensity is expected at 6 meters?

- A. 9 units
- B. 6 units
- C. 18 units
- D. 72 units

41. Clinical Vignette 041 - While completing a preprocedure verification, which interaction is the principal source of occupational scatter during diagnostic radiography?

- A. Compton interaction in the patient
- B. Pair production in the detector
- C. Photodisintegration in the tube housing
- D. Coherent emission from the filament

42. Clinical Vignette 042 - At a high-volume radiography department, increasing kilovoltage primarily changes which beam property?

- A. Focal spot dimensions only
- B. Photon energy and penetrating ability
- C. Anode rotation speed only
- D. Detector matrix dimensions only

43. Clinical Vignette 043 - During a post-exposure image review, what is the primary purpose of the line-focus principle?

- A. Increase actual focal-track temperature
- B. Eliminate all off-focus radiation
- C. Create a small effective focal spot
- D. Prevent thermionic emission entirely

44. Clinical Vignette 044 - During a morning trauma rotation, which cells are generally most radiosensitive?

- A. Mature neurons with little division
- B. Resting skeletal muscle fibers
- C. Highly specialized adipose cells
- D. Rapidly dividing, less differentiated cells

45. Clinical Vignette 045 - While completing a preprocedure verification, a stochastic radiation effect is characterized by which relationship?

- A. Severity always rises above a threshold
- B. It occurs only after skin erythema
- C. Probability increases as dose increases
- D. It has a fixed latency of one day

46. Clinical Vignette 046 - At a high-volume radiography department, which SI unit expresses absorbed radiation dose?

- A. Gray
- B. Sievert
- C. Coulomb per kilogram
- D. Becquerel

47. Clinical Vignette 047 - During a post-exposure image review, why does increasing distance reduce radiation intensity?

- A. Photons lose all frequency in air
- B. The focal spot stops producing photons
- C. The detector absorbs photons before exposure
- D. Energy spreads over a larger area

48. Clinical Vignette 048 - A technique uses 6 mAs at 100 cm SID. What mAs maintains exposure at 200 cm SID?

- A. 12 mAs
- B. 24 mAs
- C. 18 mAs
- D. 36 mAs

49. Clinical Vignette 049 - While completing a preprocedure verification, increasing kilovoltage primarily changes which beam property?

- A. Focal spot dimensions only
- B. Anode rotation speed only
- C. Photon energy and penetrating ability
- D. Detector matrix dimensions only

50. Clinical Vignette 050 - At a high-volume radiography department, what is the primary purpose of the line-focus principle?

- A. Increase actual focal-track temperature
- B. Eliminate all off-focus radiation
- C. Prevent thermionic emission entirely
- D. Create a small effective focal spot

51. Clinical Vignette 051 - During a post-exposure image review, which cells are generally most radiosensitive?

- A. Mature neurons with little division
- B. Rapidly dividing, less differentiated cells
- C. Resting skeletal muscle fibers
- D. Highly specialized adipose cells

52. Clinical Vignette 052 - During a morning trauma rotation, a stochastic radiation effect is characterized by which relationship?

- A. Probability increases as dose increases
- B. Severity always rises above a threshold
- C. It occurs only after skin erythema
- D. It has a fixed latency of one day

53. Clinical Vignette 053 - While assisting with an urgent examination, where should a personnel dosimeter normally be worn when using a lead apron?

- A. At the ankle beneath clothing
- B. At the collar outside the apron
- C. On the control booth wall
- D. Inside a storage drawer

54. Clinical Vignette 054 - At a community diagnostic facility, which fluoroscopic feature allows review without continuing exposure?

- A. Magnification mode selection
- B. High-level control activation
- C. Last-image-hold display
- D. Automatic exposure-rate increase

55. Clinical Vignette 055 - At an ambulatory imaging center, which action most directly reduces patient dose while preserving necessary anatomy?

- A. Collimate closely to the area of interest
- B. Open the field beyond the receptor
- C. Repeat every image for comparison
- D. Increase exposure without evaluation

56. Clinical Vignette 056 - During a hospital quality audit, during mobile radiography, where should the operator stand when practical?

- A. Directly beside the tube housing
- B. Within the primary beam path
- C. Against the image receptor
- D. As far from the patient as feasible

57. Clinical Vignette 057 - While assisting with an urgent examination, what is the best first response when an exposure indicator suggests substantial overexposure but the image is diagnostic?

- A. Repeat solely to lower the indicator
- B. Delete the image without review
- C. Increase processing brightness only
- D. Review technique and correct future exposures

58. Clinical Vignette 058 - At a community diagnostic facility, which practice best reduces repeat exposures?

- A. Verify positioning and technique before exposure
- B. Use the same factors for every patient
- C. Exclude patients from instructions
- D. Ignore receptor and marker placement

59. Clinical Vignette 059 - Scatter intensity is 20 units at 2 meters. What is expected at 4 meters?

- A. 4 units
- B. 10 units
- C. 5 units
- D. 40 units

60. Clinical Vignette 060 - During a hospital quality audit, where should a personnel dosimeter normally be worn when using a lead apron?

- A. At the ankle beneath clothing
- B. At the collar outside the apron
- C. On the control booth wall
- D. Inside a storage drawer

61. Clinical Vignette 061 - While assisting with an urgent examination, which fluoroscopic feature allows review without continuing exposure?

- A. Magnification mode selection
- B. High-level control activation
- C. Automatic exposure-rate increase
- D. Last-image-hold display

62. Clinical Vignette 062 - At a community diagnostic facility, which action most directly reduces patient dose while preserving necessary anatomy?

- A. Open the field beyond the receptor
- B. Collimate closely to the area of interest
- C. Repeat every image for comparison
- D. Increase exposure without evaluation

63. Clinical Vignette 063 - At an ambulatory imaging center, during mobile radiography, where should the operator stand when practical?

- A. As far from the patient as feasible
- B. Directly beside the tube housing
- C. Within the primary beam path
- D. Against the image receptor

64. Clinical Vignette 064 - During a hospital quality audit, what is the best first response when an exposure indicator suggests substantial overexposure but the image is diagnostic?

- A. Repeat solely to lower the indicator
- B. Delete the image without review
- C. Review technique and correct future exposures
- D. Increase processing brightness only

65. Clinical Vignette 065 - While assisting with an urgent examination, which practice best reduces repeat exposures?

- A. Use the same factors for every patient
- B. Exclude patients from instructions
- C. Ignore receptor and marker placement
- D. Verify positioning and technique before exposure

66. Clinical Vignette 066 - Pulse rate decreases from 20 pulses per second to 5. What percentage remains?

- A. 25 percent
- B. 20 percent
- C. 50 percent
- D. 75 percent

67. Clinical Vignette 067 - At an ambulatory imaging center, where should a personnel dosimeter normally be worn when using a lead apron?

- A. At the ankle beneath clothing
- B. At the collar outside the apron
- C. On the control booth wall
- D. Inside a storage drawer

68. Clinical Vignette 068 - During a hospital quality audit, which fluoroscopic feature allows review without continuing exposure?

- A. Magnification mode selection
- B. High-level control activation
- C. Last-image-hold display
- D. Automatic exposure-rate increase

69. Clinical Vignette 069 - While assisting with an urgent examination, which action most directly reduces patient dose while preserving necessary anatomy?

- A. Open the field beyond the receptor
- B. Repeat every image for comparison
- C. Collimate closely to the area of interest
- D. Increase exposure without evaluation

70. Clinical Vignette 070 - At a community diagnostic facility, during mobile radiography, where should the operator stand when practical?

- A. Directly beside the tube housing
- B. As far from the patient as feasible
- C. Within the primary beam path
- D. Against the image receptor

71. Clinical Vignette 071 - At an ambulatory imaging center, what is the best first response when an exposure indicator suggests substantial overexposure but the image is diagnostic?

- A. Review technique and correct future exposures
- B. Repeat solely to lower the indicator
- C. Delete the image without review
- D. Increase processing brightness only

72. Clinical Vignette 072 - During a hospital quality audit, which practice best reduces repeat exposures?

- A. Use the same factors for every patient
- B. Exclude patients from instructions
- C. Ignore receptor and marker placement
- D. Verify positioning and technique before exposure

73. Clinical Vignette 073 - While assisting with an urgent examination, why is pulsed fluoroscopy useful for dose management?

- A. It removes the need for collimation
- B. It produces radiation in timed pulses
- C. It eliminates all scattered radiation
- D. It guarantees identical dose for every case

74. Clinical Vignette 074 - At a community diagnostic facility, where should a personnel dosimeter normally be worn when using a lead apron?

- A. At the ankle beneath clothing
- B. On the control booth wall
- C. Inside a storage drawer
- D. At the collar outside the apron

75. Clinical Vignette 075 - Exposure time decreases from 0.09 second to 0.03 second at unchanged mA. What percentage remains?

- A. 33.3333 percent
- B. 25 percent
- C. 50 percent
- D. 66.6667 percent

76. Clinical Vignette 076 - During a hospital quality audit, which action most directly reduces patient dose while preserving necessary anatomy?

- A. Open the field beyond the receptor
- B. Repeat every image for comparison
- C. Collimate closely to the area of interest
- D. Increase exposure without evaluation

77. Clinical Vignette 077 - While assisting with an urgent examination, during mobile radiography, where should the operator stand when practical?

- A. Directly beside the tube housing
- B. Within the primary beam path
- C. Against the image receptor
- D. As far from the patient as feasible

78. Clinical Vignette 078 - During a post-exposure image review, which finding most strongly indicates patient rotation on a PA chest image?

- A. Both lungs fully included
- B. Unequal medial clavicle-to-spine distances
- C. Scapulae projected outside the lungs
- D. Ten posterior ribs visible

79. Clinical Vignette 079 - During a morning trauma rotation, what is the primary purpose of a radiographic grid?

- A. Increase the useful field size
- B. Remove the need for collimation
- C. Reduce scatter reaching the detector
- D. Correct all patient motion

80. Clinical Vignette 080 - While completing a preprocedure verification, what is the expected effect of patient motion on a radiographic image?

- A. Reduced recorded spatial resolution
- B. Increased detector bit depth
- C. Elimination of geometric distortion
- D. Higher anode heat capacity

81. Clinical Vignette 081 - At a high-volume radiography department, increasing object-to-image receptor distance produces which change?

- A. Less magnification and more sharpness
- B. Greater magnification and unsharpness
- C. No geometric effect at all
- D. Higher detector quantum efficiency

82. Clinical Vignette 082 - During a post-exposure image review, what commonly causes quantum mottle in digital radiography?

- A. Insufficient photons reaching the detector
- B. Excessive monitor luminance alone
- C. A matrix containing too many pixels
- D. Use of an anatomical side marker

83. Clinical Vignette 083 - A 36 cm field is represented by 1,800 pixels. What is pixel size in millimeters?

- A. 0.02 mm
- B. 1 mm
- C. 0.2 mm
- D. 2 mm

84. Clinical Vignette 084 - While completing a preprocedure verification, what does greater bit depth provide in a digital imaging system?

- A. A physically smaller focal spot
- B. A shorter source-to-image distance
- C. Complete elimination of scatter
- D. More available grayscale values

85. Clinical Vignette 085 - At a high-volume radiography department, which finding most strongly indicates patient rotation on a PA chest image?

- A. Both lungs fully included
- B. Scapulae projected outside the lungs
- C. Unequal medial clavicle-to-spine distances
- D. Ten posterior ribs visible

86. Clinical Vignette 086 - During a post-exposure image review, what is the primary purpose of a radiographic grid?

- A. Increase the useful field size
- B. Remove the need for collimation
- C. Correct all patient motion
- D. Reduce scatter reaching the detector

87. Clinical Vignette 087 - During a morning trauma rotation, what is the expected effect of patient motion on a radiographic image?

- A. Reduced recorded spatial resolution
- B. Increased detector bit depth
- C. Elimination of geometric distortion
- D. Higher anode heat capacity

88. Clinical Vignette 088 - While completing a preprocedure verification, increasing object-to-image receptor distance produces which change?

- A. Less magnification and more sharpness
- B. Greater magnification and unsharpness
- C. No geometric effect at all
- D. Higher detector quantum efficiency

89. Clinical Vignette 089 - At a high-volume radiography department, what commonly causes quantum mottle in digital radiography?

- A. Excessive monitor luminance alone
- B. A matrix containing too many pixels
- C. Insufficient photons reaching the detector
- D. Use of an anatomical side marker

90. Clinical Vignette 090 - During a post-exposure image review, which adjustment most directly reduces magnification?

- A. Increase object-to-receptor distance
- B. Increase source-to-image receptor distance
- C. Use a larger focal spot
- D. Increase postprocessing brightness

91. Clinical Vignette 091 - The SID is 150 cm and source-to-object distance is 100 cm. What is magnification factor?

- A. 1.5 times
- B. 0.67 times
- C. 1.25 times
- D. 2.5 times

92. Clinical Vignette 092 - While completing a preprocedure verification, which finding most strongly indicates patient rotation on a PA chest image?

- A. Both lungs fully included
- B. Scapulae projected outside the lungs
- C. Ten posterior ribs visible
- D. Unequal medial clavicle-to-spine distances

93. Clinical Vignette 093 - At a high-volume radiography department, what is the primary purpose of a radiographic grid?

- A. Increase the useful field size
- B. Remove the need for collimation
- C. Reduce scatter reaching the detector
- D. Correct all patient motion

94. Clinical Vignette 094 - During a post-exposure image review, what is the expected effect of patient motion on a radiographic image?

- A. Reduced recorded spatial resolution
- B. Increased detector bit depth
- C. Elimination of geometric distortion
- D. Higher anode heat capacity

95. Clinical Vignette 095 - During a morning trauma rotation, increasing object-to-image receptor distance produces which change?

- A. Less magnification and more sharpness
- B. Greater magnification and unsharpness
- C. No geometric effect at all
- D. Higher detector quantum efficiency

96. Clinical Vignette 096 - While completing a preprocedure verification, what commonly causes quantum mottle in digital radiography?

- A. Excessive monitor luminance alone
- B. A matrix containing too many pixels
- C. Use of an anatomical side marker
- D. Insufficient photons reaching the detector

97. Clinical Vignette 097 - At a high-volume radiography department, which adjustment most directly reduces magnification?

- A. Increase object-to-receptor distance
- B. Use a larger focal spot
- C. Increase source-to-image receptor distance
- D. Increase postprocessing brightness

98. Clinical Vignette 098 - During a post-exposure image review, what does greater bit depth provide in a digital imaging system?

- A. A physically smaller focal spot
- B. More available grayscale values
- C. A shorter source-to-image distance
- D. Complete elimination of scatter

99. Clinical Vignette 099 - During a morning trauma rotation, which finding most strongly indicates patient rotation on a PA chest image?

- A. Unequal medial clavicle-to-spine distances
- B. Both lungs fully included
- C. Scapulae projected outside the lungs
- D. Ten posterior ribs visible

100. Clinical Vignette 100 - While completing a preprocedure verification, what is the primary purpose of a radiographic grid?

- A. Increase the useful field size
- B. Remove the need for collimation
- C. Correct all patient motion
- D. Reduce scatter reaching the detector

101. Clinical Vignette 101 - At a high-volume radiography department, what is the expected effect of patient motion on a radiographic image?

- A. Increased detector bit depth
- B. Elimination of geometric distortion
- C. Reduced recorded spatial resolution
- D. Higher anode heat capacity

102. Clinical Vignette 102 - A 28.8 cm field is recorded across 1,440 pixels. What is pixel size in millimeters?

- A. 0.02 mm
- B. 2 mm
- C. 5 mm
- D. 0.2 mm

103. Clinical Vignette 103 - During a morning trauma rotation, what commonly causes quantum mottle in digital radiography?

- A. Excessive monitor luminance alone
- B. Insufficient photons reaching the detector
- C. A matrix containing too many pixels
- D. Use of an anatomical side marker

104. Clinical Vignette 104 - During a morning trauma rotation, which system enables standardized exchange of medical images and related information?

- A. DICOM
- B. ALARA
- C. HVL
- D. AEC

105. Clinical Vignette 105 - While completing a preprocedure verification, a repeating line artifact appears on images from one detector only. What is the best first action?

- A. Perform detector inspection and quality control
- B. Repeat every patient examination
- C. Replace the x-ray tube immediately
- D. Increase window width permanently

106. Clinical Vignette 106 - At a high-volume radiography department, which component converts alternating current to unidirectional current in an x-ray circuit?

- A. Collimators
- B. Rectifiers
- C. Phototimers
- D. Protective aprons

107. Clinical Vignette 107 - During a post-exposure image review, what is the function of the rotating anode?

- A. Generate electrons by photoemission
- B. Measure patient entrance exposure
- C. Select the detector matrix
- D. Spread heat over a larger focal track

108. Clinical Vignette 108 - During a morning trauma rotation, what should occur when a digital detector fails a uniformity test?

- A. Continue until artifacts become severe
- B. Mask every artifact electronically
- C. Remove it from use and report the failure
- D. Increase exposure for all examinations

109. Clinical Vignette 109 - While completing a preprocedure verification, which standard supports consistent grayscale presentation across diagnostic monitors?

- A. Inverse-square exposure function
- B. Grayscale standard display function
- C. Line-focus geometry function
- D. Anode heel correction function

110. Clinical Vignette 110 - A single-phase exposure uses 90 kVp, 250 mA, and 0.04 second. How many heat units result?

- A. 900 HU
- B. 90 HU
- C. 1000 HU
- D. 9000 HU

111. Clinical Vignette 111 - During a post-exposure image review, which system enables standardized exchange of medical images and related information?

- A. ALARA
- B. HVL
- C. DICOM
- D. AEC

112. Clinical Vignette 112 - During a morning trauma rotation, a repeating line artifact appears on images from one detector only. What is the best first action?

- A. Repeat every patient examination
- B. Replace the x-ray tube immediately
- C. Increase window width permanently
- D. Perform detector inspection and quality control

113. Clinical Vignette 113 - While completing a preprocedure verification, which component converts alternating current to unidirectional current in an x-ray circuit?

- A. Collimators
- B. Rectifiers
- C. Phototimers
- D. Protective aprons

114. Clinical Vignette 114 - At a high-volume radiography department, what is the function of the rotating anode?

- A. Generate electrons by photoemission
- B. Measure patient entrance exposure
- C. Spread heat over a larger focal track
- D. Select the detector matrix

115. Clinical Vignette 115 - During a post-exposure image review, what should occur when a digital detector fails a uniformity test?

- A. Remove it from use and report the failure
- B. Continue until artifacts become severe
- C. Mask every artifact electronically
- D. Increase exposure for all examinations

116. Clinical Vignette 116 - During a morning trauma rotation, which standard supports consistent grayscale presentation across diagnostic monitors?

- A. Inverse-square exposure function
- B. Line-focus geometry function
- C. Anode heel correction function
- D. Grayscale standard display function

117. Clinical Vignette 117 - While completing a preprocedure verification, what is the role of the automatic exposure control backup timer?

- A. Terminate exposure if the primary control fails
- B. Select the patient's positioning angle
- C. Increase field size automatically
- D. Erase all detector calibration data

118. Clinical Vignette 118 - A detector spans 44.8 cm with 2,240 pixels. What is pixel size in millimeters?

- A. 0.02 mm
- B. 2 mm
- C. 20 mm
- D. 0.2 mm

119. Clinical Vignette 119 - During a post-exposure image review, a repeating line artifact appears on images from one detector only. What is the best first action?

- A. Repeat every patient examination
- B. Perform detector inspection and quality control
- C. Replace the x-ray tube immediately
- D. Increase window width permanently

120. Clinical Vignette 120 - During a morning trauma rotation, which component converts alternating current to unidirectional current in an x-ray circuit?

- A. Collimators
- B. Phototimers
- C. Rectifiers
- D. Protective aprons

121. Clinical Vignette 121 - While completing a preprocedure verification, what is the function of the rotating anode?

- A. Spread heat over a larger focal track
- B. Generate electrons by photoemission
- C. Measure patient entrance exposure
- D. Select the detector matrix

122. Clinical Vignette 122 - At a high-volume radiography department, what should occur when a digital detector fails a uniformity test?

- A. Continue until artifacts become severe
- B. Remove it from use and report the failure
- C. Mask every artifact electronically
- D. Increase exposure for all examinations

123. Clinical Vignette 123 - During a post-exposure image review, which standard supports consistent grayscale presentation across diagnostic monitors?

- A. Inverse-square exposure function
- B. Line-focus geometry function
- C. Grayscale standard display function
- D. Anode heel correction function

124. Clinical Vignette 124 - During a morning trauma rotation, what is the role of the automatic exposure control backup timer?

- A. Select the patient's positioning angle
- B. Increase field size automatically
- C. Erase all detector calibration data
- D. Terminate exposure if the primary control fails

125. Clinical Vignette 125 - While completing a preprocedure verification, which system enables standardized exchange of medical images and related information?

- A. ALARA
- B. HVL
- C. AEC
- D. DICOM

126. Clinical Vignette 126 - At a high-volume radiography department, a repeating line artifact appears on images from one detector only. What is the best first action?

- A. Perform detector inspection and quality control
- B. Repeat every patient examination
- C. Replace the x-ray tube immediately
- D. Increase window width permanently

127. Clinical Vignette 127 - During a post-exposure image review, which component converts alternating current to unidirectional current in an x-ray circuit?

- A. Collimators
- B. Rectifiers
- C. Phototimers
- D. Protective aprons

128. Clinical Vignette 128 - During a morning trauma rotation, what is the function of the rotating anode?

- A. Generate electrons by photoemission
- B. Measure patient entrance exposure
- C. Spread heat over a larger focal track
- D. Select the detector matrix

129. Clinical Vignette 129 - At an ambulatory imaging center, for suspected cervical trauma, which image should be obtained before moving the neck?

- A. Forced flexion lateral image
- B. Open-mouth image with rotation
- C. Upright oblique image first
- D. Horizontal-beam lateral cervical image

130. Clinical Vignette 130 - During a hospital quality audit, which projection best demonstrates the odontoid process through the open mouth?

- A. Lateral lumbar projection
- B. AP open-mouth projection
- C. PA axial skull projection
- D. Tangential patellar projection

131. Clinical Vignette 131 - While assisting with an urgent examination, for a lateral cervical spine, what anatomy must be visible to assess the cervicothoracic junction?

- A. C7 through the top of T1
- B. Only C1 through C3
- C. The entire sacrum and coccyx
- D. Both femoral necks

132. Clinical Vignette 132 - At a community diagnostic facility, which position best demonstrates the zygapophyseal joints of the lumbar spine?

- A. AP axial clavicle position
- B. Lateral knee position
- C. Posterior oblique position
- D. PA wrist position

133. Clinical Vignette 133 - At an ambulatory imaging center, an AP pelvis image shows foreshortened femoral necks. What positioning error is most likely?

- A. Excessive cephalic tube angle
- B. Overflexion of both knees
- C. Excessive source distance
- D. Insufficient internal leg rotation

134. Clinical Vignette 134 - During a hospital quality audit, which projection is commonly used to demonstrate the sacroiliac joint farthest from the receptor?

- A. AP axial toes projection
- B. Lateral sternum projection
- C. Posterior oblique projection
- D. PA hand projection

135. Clinical Vignette 135 - While assisting with an urgent examination, for suspected cervical trauma, which image should be obtained before moving the neck?

- A. Forced flexion lateral image
- B. Horizontal-beam lateral cervical image
- C. Open-mouth image with rotation
- D. Upright oblique image first

136. Clinical Vignette 136 - At a community diagnostic facility, which projection best demonstrates the odontoid process through the open mouth?

- A. AP open-mouth projection
- B. Lateral lumbar projection
- C. PA axial skull projection
- D. Tangential patellar projection

137. Clinical Vignette 137 - At an ambulatory imaging center, for a lateral cervical spine, what anatomy must be visible to assess the cervicothoracic junction?

- A. Only C1 through C3
- B. The entire sacrum and coccyx
- C. Both femoral necks
- D. C7 through the top of T1

138. Clinical Vignette 138 - During a hospital quality audit, which position best demonstrates the zygapophyseal joints of the lumbar spine?

- A. Posterior oblique position
- B. AP axial clavicle position
- C. Lateral knee position
- D. PA wrist position

139. Clinical Vignette 139 - While assisting with an urgent examination, an AP pelvis image shows foreshortened femoral necks. What positioning error is most likely?

- A. Excessive cephalic tube angle
- B. Overflexion of both knees
- C. Insufficient internal leg rotation
- D. Excessive source distance

140. Clinical Vignette 140 - At a community diagnostic facility, which projection is commonly used to demonstrate the sacroiliac joint farthest from the receptor?

- A. AP axial toes projection
- B. Posterior oblique projection
- C. Lateral sternum projection
- D. PA hand projection

141. Clinical Vignette 141 - At an ambulatory imaging center, for suspected cervical trauma, which image should be obtained before moving the neck?

- A. Forced flexion lateral image
- B. Horizontal-beam lateral cervical image
- C. Open-mouth image with rotation
- D. Upright oblique image first

142. Clinical Vignette 142 - During a hospital quality audit, which projection best demonstrates the odontoid process through the open mouth?

- A. AP open-mouth projection
- B. Lateral lumbar projection
- C. PA axial skull projection
- D. Tangential patellar projection

143. Clinical Vignette 143 - While assisting with an urgent examination, for a lateral cervical spine, what anatomy must be visible to assess the cervicothoracic junction?

- A. Only C1 through C3
- B. The entire sacrum and coccyx
- C. Both femoral necks
- D. C7 through the top of T1

144. Clinical Vignette 144 - At a community diagnostic facility, which position best demonstrates the zygapophyseal joints of the lumbar spine?

- A. AP axial clavicle position
- B. Lateral knee position
- C. Posterior oblique position
- D. PA wrist position

145. Clinical Vignette 145 - At an ambulatory imaging center, an AP pelvis image shows foreshortened femoral necks. What positioning error is most likely?

- A. Excessive cephalic tube angle
- B. Insufficient internal leg rotation
- C. Overflexion of both knees
- D. Excessive source distance

146. Clinical Vignette 146 - During a hospital quality audit, which projection is commonly used to demonstrate the sacroiliac joint farthest from the receptor?

- A. AP axial toes projection
- B. Lateral sternum projection
- C. PA hand projection
- D. Posterior oblique projection

147. Clinical Vignette 147 - While assisting with an urgent examination, for suspected cervical trauma, which image should be obtained before moving the neck?

- A. Horizontal-beam lateral cervical image
- B. Forced flexion lateral image
- C. Open-mouth image with rotation
- D. Upright oblique image first

148. Clinical Vignette 148 - At a community diagnostic facility, which projection best demonstrates the odontoid process through the open mouth?

- A. Lateral lumbar projection
- B. PA axial skull projection
- C. AP open-mouth projection
- D. Tangential patellar projection

149. Clinical Vignette 149 - While assisting with an urgent examination, which projection best shows the intercondylar fossa of the knee?

- A. PA axial tunnel projection
- B. AP axial clavicle projection
- C. Lateral nasal bone projection
- D. Oblique cervical spine projection

150. Clinical Vignette 150 - At a community diagnostic facility, why is an upright chest image preferred when evaluating possible pleural air?

- A. Fluid rises above the clavicles
- B. Air rises toward the lung apex
- C. The heart becomes completely undistorted
- D. Respiration is unnecessary

151. Clinical Vignette 151 - At an ambulatory imaging center, which position best demonstrates free intraperitoneal air when the patient cannot stand?

- A. Right lateral decubitus abdomen
- B. Prone abdomen without a beam
- C. Left lateral decubitus abdomen
- D. AP axial sacrum

152. Clinical Vignette 152 - During a hospital quality audit, for a PA chest image, why are the shoulders rolled forward?

- A. Raise the diaphragm during inspiration
- B. Magnify the heart intentionally
- C. Close both costophrenic angles
- D. Move the scapulae away from lung fields

153. Clinical Vignette 153 - While assisting with an urgent examination, which breathing instruction is typical for a routine upright abdomen image?

- A. Breathe rapidly during exposure
- B. Suspend after a deep inspiration
- C. Perform a Valsalva maneuver
- D. Suspend respiration after expiration

154. Clinical Vignette 154 - At a community diagnostic facility, a lateral chest image should be positioned with which side against the receptor for routine imaging?

- A. Left side
- B. Right side
- C. Posterior surface
- D. Anterior surface

155. Clinical Vignette 155 - At an ambulatory imaging center, which projection best shows the intercondylar fossa of the knee?

- A. AP axial clavicle projection
- B. PA axial tunnel projection
- C. Lateral nasal bone projection
- D. Oblique cervical spine projection

156. Clinical Vignette 156 - During a hospital quality audit, why is an upright chest image preferred when evaluating possible pleural air?

- A. Fluid rises above the clavicles
- B. The heart becomes completely undistorted
- C. Air rises toward the lung apex
- D. Respiration is unnecessary

157. Clinical Vignette 157 - While assisting with an urgent examination, which position best demonstrates free intraperitoneal air when the patient cannot stand?

- A. Right lateral decubitus abdomen
- B. Prone abdomen without a beam
- C. Left lateral decubitus abdomen
- D. AP axial sacrum

158. Clinical Vignette 158 - At a community diagnostic facility, for a PA chest image, why are the shoulders rolled forward?

- A. Raise the diaphragm during inspiration
- B. Move the scapulae away from lung fields
- C. Magnify the heart intentionally
- D. Close both costophrenic angles

159. Clinical Vignette 159 - At an ambulatory imaging center, which breathing instruction is typical for a routine upright abdomen image?

- A. Breathe rapidly during exposure
- B. Suspend after a deep inspiration
- C. Perform a Valsalva maneuver
- D. Suspend respiration after expiration

160. Clinical Vignette 160 - During a hospital quality audit, a lateral chest image should be positioned with which side against the receptor for routine imaging?

- A. Left side
- B. Right side
- C. Posterior surface
- D. Anterior surface

161. Clinical Vignette 161 - While assisting with an urgent examination, which projection best shows the intercondylar fossa of the knee?

- A. AP axial clavicle projection
- B. PA axial tunnel projection
- C. Lateral nasal bone projection
- D. Oblique cervical spine projection

162. Clinical Vignette 162 - At a community diagnostic facility, why is an upright chest image preferred when evaluating possible pleural air?

- A. Fluid rises above the clavicles
- B. The heart becomes completely undistorted
- C. Respiration is unnecessary
- D. Air rises toward the lung apex

163. Clinical Vignette 163 - At an ambulatory imaging center, which position best demonstrates free intraperitoneal air when the patient cannot stand?

- A. Right lateral decubitus abdomen
- B. Prone abdomen without a beam
- C. Left lateral decubitus abdomen
- D. AP axial sacrum

164. Clinical Vignette 164 - During a hospital quality audit, for a PA chest image, why are the shoulders rolled forward?

- A. Move the scapulae away from lung fields
- B. Raise the diaphragm during inspiration
- C. Magnify the heart intentionally
- D. Close both costophrenic angles

165. Clinical Vignette 165 - While assisting with an urgent examination, which breathing instruction is typical for a routine upright abdomen image?

- A. Breathe rapidly during exposure
- B. Suspend respiration after expiration
- C. Suspend after a deep inspiration
- D. Perform a Valsalva maneuver

166. Clinical Vignette 166 - At a community diagnostic facility, a lateral chest image should be positioned with which side against the receptor for routine imaging?

- A. Right side
- B. Posterior surface
- C. Anterior surface
- D. Left side

167. Clinical Vignette 167 - At an ambulatory imaging center, which projection best shows the intercondylar fossa of the knee?

- A. PA axial tunnel projection
- B. AP axial clavicle projection
- C. Lateral nasal bone projection
- D. Oblique cervical spine projection

168. Clinical Vignette 168 - During a hospital quality audit, why is an upright chest image preferred when evaluating possible pleural air?

- A. Fluid rises above the clavicles
- B. The heart becomes completely undistorted
- C. Air rises toward the lung apex
- D. Respiration is unnecessary

169. Clinical Vignette 169 - While assisting with an urgent examination, which position best demonstrates free intraperitoneal air when the patient cannot stand?

- A. Left lateral decubitus abdomen
- B. Right lateral decubitus abdomen
- C. Prone abdomen without a beam
- D. AP axial sacrum

170. Clinical Vignette 170 - At a community diagnostic facility, for a PA chest image, why are the shoulders rolled forward?

- A. Raise the diaphragm during inspiration
- B. Move the scapulae away from lung fields
- C. Magnify the heart intentionally
- D. Close both costophrenic angles

171. Clinical Vignette 171 - During a hospital quality audit, for an AP knee, where is the central ray generally directed?

- A. At the ankle mortise without angulation
- B. At the femoral neck with rotation
- C. At the knee joint with habitus adjustment
- D. At the iliac crest during inspiration

172. Clinical Vignette 172 - While assisting with an urgent examination, which view is commonly obtained for suspected shoulder dislocation when abduction is limited?

- A. Weight-bearing AP foot projection
- B. Tangential patella projection
- C. PA axial skull projection
- D. Scapular Y lateral projection

173. Clinical Vignette 173 - At a community diagnostic facility, which wrist projection best demonstrates the scaphoid with reduced foreshortening?

- A. PA wrist with radial deviation
- B. Lateral elbow in extension
- C. PA wrist with ulnar deviation
- D. AP shoulder in external rotation

174. Clinical Vignette 174 - At an ambulatory imaging center, for a lateral elbow, how should the joint be positioned when the patient can cooperate?

- A. Flexed 90 degrees with thumb up
- B. Fully extended with palm down
- C. Flexed 30 degrees with palm down
- D. Internally rotated with thumb down

175. Clinical Vignette 175 - During a hospital quality audit, which ankle projection best demonstrates the mortise joint uniformly open?

- A. AP ankle with strong external rotation
- B. AP mortise with slight internal rotation
- C. Lateral ankle with plantar flexion
- D. PA axial calcaneus projection

176. Clinical Vignette 176 - While assisting with an urgent examination, what is the purpose of externally rotating the arm for an AP shoulder?

- A. Superimpose the greater tubercle
- B. Close the glenohumeral joint intentionally
- C. Project the scapula over the ribs
- D. Place humeral epicondyles parallel to receptor

177. Clinical Vignette 177 - At a community diagnostic facility, which projection best demonstrates the radial head free of ulnar superimposition?

- A. AP oblique elbow with medial rotation
- B. PA axial wrist with flexion
- C. AP oblique elbow with lateral rotation
- D. Lateral shoulder with abduction

178. Clinical Vignette 178 - At an ambulatory imaging center, for an AP knee, where is the central ray generally directed?

- A. At the ankle mortise without angulation
- B. At the knee joint with habitus adjustment
- C. At the femoral neck with rotation
- D. At the iliac crest during inspiration

179. Clinical Vignette 179 - During a hospital quality audit, which view is commonly obtained for suspected shoulder dislocation when abduction is limited?

- A. Scapular Y lateral projection
- B. Weight-bearing AP foot projection
- C. Tangential patella projection
- D. PA axial skull projection

180. Clinical Vignette 180 - While assisting with an urgent examination, which wrist projection best demonstrates the scaphoid with reduced foreshortening?

- A. PA wrist with radial deviation
- B. Lateral elbow in extension
- C. AP shoulder in external rotation
- D. PA wrist with ulnar deviation

181. Clinical Vignette 181 - At a community diagnostic facility, for a lateral elbow, how should the joint be positioned when the patient can cooperate?

- A. Fully extended with palm down
- B. Flexed 30 degrees with palm down
- C. Flexed 90 degrees with thumb up
- D. Internally rotated with thumb down

182. Clinical Vignette 182 - At an ambulatory imaging center, which ankle projection best demonstrates the mortise joint uniformly open?

- A. AP ankle with strong external rotation
- B. Lateral ankle with plantar flexion
- C. PA axial calcaneus projection
- D. AP mortise with slight internal rotation

183. Clinical Vignette 183 - During a hospital quality audit, what is the purpose of externally rotating the arm for an AP shoulder?

- A. Superimpose the greater tubercle
- B. Place humeral epicondyles parallel to receptor
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- A. AP oblique elbow with lateral rotation
- B. AP oblique elbow with medial rotation
- C. PA axial wrist with flexion
- D. Lateral shoulder with abduction

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- A. At the ankle mortise without angulation
- B. At the knee joint with habitus adjustment
- C. At the femoral neck with rotation
- D. At the iliac crest during inspiration

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- A. Weight-bearing AP foot projection
- B. Tangential patella projection
- C. Scapular Y lateral projection
- D. PA axial skull projection

187. Clinical Vignette 187 - During a hospital quality audit, which wrist projection best demonstrates the scaphoid with reduced foreshortening?

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- B. PA wrist with radial deviation
- C. Lateral elbow in extension
- D. AP shoulder in external rotation

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- A. Fully extended with palm down
- B. Flexed 30 degrees with palm down
- C. Internally rotated with thumb down
- D. Flexed 90 degrees with thumb up

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- A. AP mortise with slight internal rotation
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- C. Lateral ankle with plantar flexion
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- A. AP oblique elbow with medial rotation
- B. PA axial wrist with flexion
- C. AP oblique elbow with lateral rotation
- D. Lateral shoulder with abduction

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- A. Scapular Y lateral projection
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- C. Tangential patella projection
- D. PA axial skull projection

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- B. AP oblique elbow with medial rotation
- C. PA axial wrist with flexion
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- A. At the ankle mortise without angulation
- B. At the femoral neck with rotation
- C. At the iliac crest during inspiration
- D. At the knee joint with habitus adjustment

200. Clinical Vignette 200 - While assisting with an urgent examination, which view is commonly obtained for suspected shoulder dislocation when abduction is limited?

- A. Weight-bearing AP foot projection
- B. Scapular Y lateral projection
- C. Tangential patella projection
- D. PA axial skull projection

Practice Exam 11: Answer Key and Explanations

1. B — Sterile items remain in view and above waist level; reaching across, turning away, or lowering them risks contamination. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic

2. C — A gait belt, locked equipment, clear instructions, and sufficient assistance reduce falls and injury to both patient and staff. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

3. A — Objective documentation should include the site, symptoms, estimated amount, interventions, instructions, and required notifications without blame or speculation. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic

4. D — Two independent identifiers reduce wrong-patient errors and must be matched with the order before exposure. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should

apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic error.

5. C — A competent patient may withdraw consent. The radiographer should stop, clarify concerns, notify the responsible provider, and document appropriately. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

6. B — A qualified interpreter supports accurate informed communication, confidentiality, and patient autonomy; untrained relatives can introduce omissions or bias. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic

7. D — Gloves do not replace hand hygiene because contamination may occur during removal or through unnoticed glove defects. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic error.

8. A — Acute changes require stopping the procedure, assessing airway, breathing, circulation, vital signs, and activating emergency support as indicated. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic

9. C — Sterile items remain in view and above waist level; reaching across, turning away, or lowering them risks contamination. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic

10. D — A gait belt, locked equipment, clear instructions, and sufficient assistance reduce falls and injury to both patient and staff. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

11. A — Objective documentation should include the site, symptoms, estimated amount, interventions, instructions, and required notifications without blame or speculation. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic

12. B — Weight multiplied by prescribed volume per kilogram gives 86.4 mL. The kilogram units cancel, leaving milliliters. The other values represent using weight alone, adding an arbitrary amount, or rounding incorrectly. Before administration, the radiographer must still confirm the authorized protocol, patient assessment, applicable volume limit, and supervising provider's requirements. This calculation principle supports a defensible choice while the alternatives misuse

13. C — A competent patient may withdraw consent. The radiographer should stop, clarify concerns, notify the responsible provider, and document appropriately. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

14. D — A qualified interpreter supports accurate informed communication, confidentiality, and patient autonomy; untrained relatives can introduce omissions or bias. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic

15. A — Gloves do not replace hand hygiene because contamination may occur during removal or through unnoticed glove defects. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic error.

16. D — Acute changes require stopping the procedure, assessing airway, breathing, circulation, vital signs, and activating emergency support as indicated. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic

17. B — Sterile items remain in view and above waist level; reaching across, turning away, or lowering them risks contamination. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic

18. A — A gait belt, locked equipment, clear instructions, and sufficient assistance reduce falls and injury to both patient and staff. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

19. B — Objective documentation should include the site, symptoms, estimated amount, interventions, instructions, and required notifications without blame or speculation. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a

different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic

20. C — Two independent identifiers reduce wrong-patient errors and must be matched with the order before exposure. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic error.

21. C — A competent patient may withdraw consent. The radiographer should stop, clarify concerns, notify the responsible provider, and document appropriately. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

22. B — A qualified interpreter supports accurate informed communication, confidentiality, and patient autonomy; untrained relatives can introduce omissions or bias. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic

23. D — Gloves do not replace hand hygiene because contamination may occur during removal or through unnoticed glove defects. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic error.

24. A — Acute changes require stopping the procedure, assessing airway, breathing, circulation, vital signs, and activating emergency support as indicated. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic

25. D — Sterile items remain in view and above waist level; reaching across, turning away, or lowering them risks contamination. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic

26. B — A gait belt, locked equipment, clear instructions, and sufficient assistance reduce falls and injury to both patient and staff. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

27. A — Objective documentation should include the site, symptoms, estimated amount, interventions, instructions, and required notifications without blame or speculation. This patient care principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic

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32. C — The gray measures energy absorbed per unit mass. The sievert reflects biological weighting, while becquerel describes activity. This radiation physics and radiobiology principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

33. A — Divergent radiation spreads across an area proportional to distance squared, producing the inverse-square relationship for a point source. This radiation physics and radiobiology principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure

34. B — Compton interactions redirect photons and produce much of the scatter reaching personnel; their likelihood relates mainly to electron density. This radiation physics and radiobiology principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address

a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat

35. D — Multiplying 400 milliamperes by 0.03 second yields 12 mAs. The distractors result from division or decimal-placement errors. Because mAs represents tube-current-time product, it strongly affects photon quantity and detector exposure. Accurate technique calculation supports consistent image quality while reducing unnecessary exposure, quantum noise, and avoidable repeat imaging. This calculation principle supports a defensible choice while the alternatives misuse the mechanism,

36. C — Angling the target permits a larger actual focal area for heat loading while projecting a smaller effective focal spot for detail. This radiation physics and radiobiology principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid

37. D — Radiosensitivity generally increases with mitotic activity and decreases with cellular differentiation, explaining the vulnerability of marrow and germinal tissues. This radiation physics and radiobiology principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat

38. B — For stochastic effects, increasing dose raises the probability of occurrence, while severity is not considered dose dependent and no threshold is assumed. This radiation physics and radiobiology principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and

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40. A — Doubling distance from 3 to 6 meters reduces intensity to one fourth under the inverse-square law. One fourth of 36 units is 9 units. The alternatives use linear division, simple subtraction, or reverse the relationship. This calculation illustrates why maximizing distance is highly effective for reducing occupational exposure to patient scatter.

41. A — Compton interactions redirect photons and produce much of the scatter reaching personnel; their likelihood relates mainly to electron density. This radiation physics and radiobiology principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat

42. B — Higher kilovoltage increases photon energy and beam penetrability while also influencing quantity, subject contrast, and scatter production. This radiation physics and radiobiology principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

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46. A — The gray measures energy absorbed per unit mass. The sievert reflects biological weighting, while becquerel describes activity. This radiation physics and radiobiology principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

47. D — Divergent radiation spreads across an area proportional to distance squared, producing the inverse-square relationship for a point source. This radiation physics and radiobiology principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure

48. B — The distance ratio is two, and squaring it gives four. Multiplying the original 6 mAs by four produces 24 mAs. The distractors omit the square or apply an incorrect multiplier. Distance compensation maintains detector exposure, although equipment loading, patient dose, motion, and the diagnostic purpose must also be considered. This calculation principle supports a defensible choice while the alternatives misuse

49. C — Higher kilovoltage increases photon energy and beam penetrability while also influencing quantity, subject contrast, and scatter production. This radiation physics and radiobiology principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address

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52. A — For stochastic effects, increasing dose raises the probability of occurrence, while severity is not considered dose dependent and no threshold is assumed. This radiation physics and radiobiology principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and

53. B — A collar-level dosimeter outside the apron monitors exposure to the head and neck and provides a consistent occupational record. This radiation protection principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

54. C — Last-image hold displays the most recent fluoroscopic image without additional irradiation, supporting review and positioning decisions. This radiation protection principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic error.

55. A — Accurate collimation reduces irradiated tissue and scatter, improving image quality while supporting dose optimization. This radiation protection principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic error.

56. D — Distance sharply reduces scatter exposure; the operator should maximize distance, avoid the primary beam, and use shielding when available. This radiation protection principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

57. D — Digital processing can conceal excessive receptor exposure. A diagnostic image generally should not be repeated merely to change an indicator; technique should be corrected. This radiation protection principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and

58. A — Pre-exposure verification of patient, anatomy, centering, collimation, receptor, marker, and technique prevents avoidable errors and repeats. This radiation protection principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic error.

59. C — Doubling the distance reduces intensity to one fourth according to the inverse-square relationship. Twenty units therefore become 5 units. The distractors reflect subtraction, simple halving, or reversing the ratio. Patient scatter is not a perfect point source, yet increasing distance remains a reliable and important occupational radiation-protection practice. This calculation principle supports a defensible choice while the alternatives misuse the

60. B — A collar-level dosimeter outside the apron monitors exposure to the head and neck and provides a consistent occupational record. This radiation protection principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

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66. A — Dividing the new pulse rate by the original rate gives 5 divided by 20, or 0.25. Converting the decimal produces 25 percent. The alternatives confuse absolute pulse rate with percentage or understate the reduction. Lower pulse frequency can reduce output, although automatic adjustments and motion requirements remain clinically important. This calculation principle supports a defensible choice while the alternatives misuse

67. B — A collar-level dosimeter outside the apron monitors exposure to the head and neck and provides a consistent occupational record. This radiation protection principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

68. C — Last-image hold displays the most recent fluoroscopic image without additional irradiation, supporting review and positioning decisions. This radiation protection principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic error.

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73. B — Pulsed operation reduces beam-on time compared with continuous fluoroscopy when pulse rate and other factors are appropriately selected. This radiation protection principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic

74. D — A collar-level dosimeter outside the apron monitors exposure to the head and neck and provides a consistent occupational record. This radiation protection principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

75. A — At constant milliamperage, mAs changes directly with exposure time. Dividing 0.03 by 0.09 gives one third, approximately 33.3 percent. The other choices represent one quarter, one half, or two thirds. Shortening time may reduce motion, but adequate detector exposure must be preserved through a suitable technique adjustment. This calculation principle supports a defensible choice while the alternatives misuse the mechanism,

76. C — Accurate collimation reduces irradiated tissue and scatter, improving image quality while supporting dose optimization. This radiation protection principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic error.

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78. B — Symmetry of the medial clavicles relative to the vertebral column is a standard indicator of rotation on a PA chest projection. This image acquisition and evaluation principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid

79. C — A grid preferentially absorbs obliquely traveling scatter before it reaches the detector, improving image contrast while requiring appropriate exposure. This image acquisition and evaluation principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step,

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80. A — Motion blurs recorded edges and reduces spatial resolution; immobilization, communication, and shorter exposure time can limit the effect. This image acquisition and evaluation principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure

81. B — Greater object-to-receptor distance increases magnification and geometric blur because the divergent beam projects a larger penumbra. This image acquisition and evaluation principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic

82. A — Quantum mottle reflects inadequate photon statistics and poor signal-to-noise ratio; processing cannot recreate signal that was never captured. This image acquisition and evaluation principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure

83. C — Convert 36 centimeters to 360 millimeters, then divide by 1,800 pixels. The result is 0.2 mm per pixel. The distractors arise from conversion and decimal errors. Sampling pitch contributes to spatial resolution, but detector response, focal-spot size, motion, geometry, processing, and display conditions also influence visible detail. This calculation principle supports a defensible choice while the alternatives misuse the mechanism,

84. D — Bit depth determines the number of possible intensity values available to represent image data and therefore supports contrast resolution. This image acquisition and evaluation principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat

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90. B — Increasing source-to-receptor distance reduces beam divergence across the object and therefore reduces magnification, assuming other geometry remains constant. This image acquisition and evaluation principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure

91. A — Magnification factor equals source-to-image distance divided by source-to-object distance. Dividing 150 by 100 gives 1.5. The alternatives represent the reciprocal or unrelated ratios. Magnification increases as the object moves farther from the receptor and generally decreases when source distance increases, provided the other geometric relationships remain comparable. This calculation principle supports a defensible choice while the alternatives misuse the mechanism,

92. D — Symmetry of the medial clavicles relative to the vertebral column is a standard indicator of rotation on a PA chest projection. This image acquisition and evaluation principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid

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101. C — Motion blurs recorded edges and reduces spatial resolution; immobilization, communication, and shorter exposure time can limit the effect. This image acquisition and evaluation principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure

102. D — Convert 28.8 centimeters to 288 millimeters and divide by 1,440 pixels. This produces a 0.2 mm pixel size. The distractors reflect powers-of-ten or inverted calculations. Field of view and matrix establish sampling pitch, while detector construction, focal spot, motion, image geometry, and processing affect final recorded detail. This calculation principle supports a defensible choice while the alternatives misuse the mechanism,

103. B — Quantum mottle reflects inadequate photon statistics and poor signal-to-noise ratio; processing cannot recreate signal that was never captured. This image acquisition and evaluation principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure

104. A — DICOM defines standards for formatting, storing, transmitting, and identifying medical images across compatible imaging and information systems. This equipment operation and quality assurance principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure

105. A — Limiting the artifact to one detector suggests a receptor-related issue requiring inspection, calibration testing, and documentation before further clinical use. This equipment operation and quality assurance principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid

106. B — Rectifiers permit electron flow in the desired direction through the x-ray tube and suppress the reverse half-cycle. This equipment operation and quality assurance principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure

107. D — Rotation distributes electron-bombardment heat over a larger track, allowing higher tube loading while protecting the target. This equipment operation and quality assurance principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

108. C — A failed uniformity test can produce nonuniform response and artifacts; established quality-control procedures require reporting, evaluation, and correction. This equipment operation and quality assurance principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat

109. B — The grayscale standard display function provides a standardized relationship between digital driving levels and displayed luminance. This equipment operation and quality assurance principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address

a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

110. A — For single-phase equipment, heat units equal kilovoltage multiplied by milliamperage and exposure time. Ninety times 250 times 0.04 equals 900 HU. The distractors omit a factor or shift a decimal. Monitoring heat units protects the anode and housing by guiding tube-loading decisions and required cooling intervals. This calculation principle supports a defensible choice while the alternatives misuse the mechanism, omit

111. C — DICOM defines standards for formatting, storing, transmitting, and identifying medical images across compatible imaging and information systems. This equipment operation and quality assurance principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure

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117. A — The backup timer limits an excessively long exposure if the selected chamber or primary exposure-termination system fails. This equipment operation and quality assurance principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure

118. D — Convert 44.8 centimeters to 448 millimeters, then divide by 2,240 pixels. The pixel size is 0.2 mm. The incorrect values reflect decimal or conversion errors. Pixel pitch describes sampling geometry, but final sharpness also depends on detector performance, focal spot, patient motion, positioning geometry, processing, and display quality. This calculation principle supports a defensible choice while the alternatives misuse the

119. B — Limiting the artifact to one detector suggests a receptor-related issue requiring inspection, calibration testing, and documentation before further clinical use. This equipment operation and quality assurance principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid

120. C — Rectifiers permit electron flow in the desired direction through the x-ray tube and suppress the reverse half-cycle. This equipment operation and quality assurance principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure

121. A — Rotation distributes electron-bombardment heat over a larger track, allowing higher tube loading while protecting the target. This equipment operation and quality assurance principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

122. B — A failed uniformity test can produce nonuniform response and artifacts; established quality-control procedures require reporting, evaluation, and correction. This equipment operation and quality assurance principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat

123. C — The grayscale standard display function provides a standardized relationship between digital driving levels and displayed luminance. This equipment operation and quality assurance principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

124. D — The backup timer limits an excessively long exposure if the selected chamber or primary exposure-termination system fails. This equipment operation and quality assurance principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different

imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure

125. D — DICOM defines standards for formatting, storing, transmitting, and identifying medical images across compatible imaging and information systems. This equipment operation and quality assurance principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure

126. A — Limiting the artifact to one detector suggests a receptor-related issue requiring inspection, calibration testing, and documentation before further clinical use. This equipment operation and quality assurance principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid

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129. D — A horizontal-beam lateral is obtained without moving the cervical spine and can demonstrate alignment before additional projections are attempted. This head, spine, and pelvis procedures principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable

130. B — The AP open-mouth projection aligns the open mouth with C1-C2 so the dens and lateral masses can be evaluated. This head, spine, and pelvis procedures principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable

131. A — A diagnostic lateral cervical image should include C1 through C7 and the C7-T1 junction, with shoulders depressed when possible. This head, spine, and pelvis procedures principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable

132. C — Lumbar posterior obliques demonstrate the zygapophyseal joints closest to the receptor and the characteristic Scotty-dog appearance. This head, spine, and pelvis procedures principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

133. D — Unless contraindicated, internal rotation places the femoral necks more parallel to the receptor and reduces foreshortening. This head, spine, and pelvis procedures principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

134. C — Posterior oblique positioning opens the sacroiliac joint farthest from the receptor by rotating the pelvis appropriately. This head, spine, and pelvis procedures principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

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149. A — A tunnel projection directs the beam through the flexed knee to demonstrate the intercondylar fossa and adjacent condylar surfaces. This thorax and abdomen procedures principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat

150. B — In an upright patient, free pleural air rises and is more conspicuous near the apex, particularly on an erect expiration image when requested. This thorax and abdomen procedures principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context,

151. C — The left lateral decubitus position allows free air to rise adjacent to the liver, where it is less likely to be confused with gastric gas. This thorax and abdomen procedures principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem.

152. D — Rolling the shoulders forward rotates the scapulae laterally so they do not obscure the lungs on a properly positioned PA chest. This thorax and abdomen procedures principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid

153. D — Expiration raises the diaphragm and reduces abdominal motion, helping include the diaphragm and abdominal contents on the image. This thorax and abdomen procedures principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure

154. A — A left lateral position places the heart closer to the receptor, reducing cardiac magnification and improving evaluation of thoracic anatomy. This thorax and abdomen procedures principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different

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171. C — The beam centers to the knee joint, with angulation adjusted for patient habitus to open the joint space appropriately. This extremity procedures principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or

172. D — The scapular Y projection can demonstrate humeral-head alignment with the glenoid without requiring the abduction needed for an axillary view. This extremity procedures principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure

173. C — Ulnar deviation moves the scaphoid into a more extended position, reducing foreshortening and improving visualization. This extremity procedures principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic error.

174. A — Ninety-degree flexion and a true lateral hand position superimpose the humeral epicondyles and demonstrate the elbow joint. This extremity procedures principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic error.

175. B — Approximately slight internal rotation places the intermalleolar line parallel to the receptor and opens the ankle mortise. This extremity procedures principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic error.

176. D — External rotation places the epicondyles parallel to the receptor and demonstrates the greater tubercle in profile laterally. This extremity procedures principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The radiographer should apply the relationship consistently, verify the clinical context, and avoid preventable repeat exposure or diagnostic error.

177. C — Lateral rotation of the elbow projects the radial head, neck, and tuberosity with reduced superimposition by the ulna. This extremity procedures principle supports a defensible choice while the alternatives misuse the mechanism, omit a safety step, or address a different imaging problem. The

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