

PRACTICE EXAM 6: 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. Case 001 - While working in the emergency department, 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

2. Case 002 - While preparing a patient for imaging, 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

3. Case 003 - In a mobile radiography setting, 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

4. Case 004 - During a repeat-analysis conference, 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

5. Case 005 - While working in the emergency department, 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

6. Case 006 - While preparing a patient for imaging, 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

7. Case 007 - In a mobile radiography setting, 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

8. Case 008 - During a repeat-analysis conference, which documentation entry is most appropriate after contrast extravasation?

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

9. Case 009 - While working in the emergency department, before beginning an examination, which action best satisfies correct patient identification?

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

10. Case 010 - While preparing a patient for imaging, a competent adult withdraws consent immediately before imaging. What should the radiographer do first?

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

11. Case 011 - In a mobile radiography setting, 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. Use a qualified medical interpreter
- D. Skip the explanation to save time

12. Case 012 - A 70 kg patient is prescribed 1.5 mL/kg of contrast. What total volume should be prepared?

- A. 70 mL
- B. 90 mL
- C. 120 mL
- D. 105 mL

13. Case 013 - While working in the emergency department, a patient becomes pale, diaphoretic, and confused during an examination. What is the priority response?

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

14. Case 014 - While preparing a patient for imaging, 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

15. Case 015 - In a mobile radiography setting, 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

16. Case 016 - During a repeat-analysis conference, 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

17. Case 017 - While working in the emergency department, before beginning an examination, which action best satisfies correct patient identification?

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

18. Case 018 - While preparing a patient for imaging, 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

19. Case 019 - In a mobile radiography setting, 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

20. Case 020 - During a repeat-analysis conference, 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. Perform appropriate hand hygiene
- D. Wipe hands on a clean towel

21. Case 021 - While working in the emergency department, 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

22. Case 022 - While preparing a patient for imaging, 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

23. Case 023 - In a mobile radiography setting, 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

24. Case 024 - During a repeat-analysis conference, which documentation entry is most appropriate after contrast extravasation?

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

25. Case 025 - While working in the emergency department, 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

26. Case 026 - While preparing a patient for imaging, a competent adult withdraws consent immediately before imaging. What should the radiographer do first?

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

27. Case 027 - In a mobile radiography setting, 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. Use a qualified medical interpreter
- D. Skip the explanation to save time

28. Case 028 - During a repeat-analysis conference, 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

29. Case 029 - While working in the emergency department, 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

30. Case 030 - While preparing a patient for imaging, 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

31. Case 031 - In a mobile radiography setting, 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

32. Case 032 - During an outpatient examination, 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

33. Case 033 - During a routine competency assessment, increasing kilovoltage primarily changes which beam property?

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

34. Case 034 - During image-quality review, what is the primary purpose of the line-focus principle?

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

35. Case 035 - An exposure uses 300 mA for 0.04 second. What mAs is produced?

- A. 7.5 mAs

- B. 30 mAs
- C. 12 mAs
- D. 120 mAs

36. Case 036 - During an outpatient examination, 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

37. Case 037 - During a routine competency assessment, which SI unit expresses absorbed radiation dose?

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

38. Case 038 - During image-quality 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

39. Case 039 - While assisting an adult patient, 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

40. Case 040 - Radiation intensity is 16 units at 1 meter. What is the intensity at 2 meters?

- A. 2 units
- B. 4 units
- C. 8 units
- D. 32 units

41. Case 041 - During a routine competency assessment, 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

42. Case 042 - During image-quality review, which cells are generally most radiosensitive?

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

43. Case 043 - While assisting an adult patient, 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

44. Case 044 - During an outpatient examination, which SI unit expresses absorbed radiation dose?

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

45. Case 045 - During a routine competency assessment, why does increasing distance reduce radiation intensity?

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

46. Case 046 - During image-quality review, which interaction is the principal source of occupational scatter during diagnostic radiography?

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

47. Case 047 - While assisting an adult patient, 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

48. Case 048 - A technique uses 10 mAs at 100 cm SID. What mAs maintains receptor exposure at 150 cm SID?

- A. 22.5 mAs
- B. 15 mAs
- C. 20 mAs
- D. 25 mAs

49. Case 049 - During a routine competency assessment, 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

50. Case 050 - During image-quality review, 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

51. Case 051 - While assisting an adult patient, which SI unit expresses absorbed radiation dose?

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

D. Becquerel

52. Case 052 - During an outpatient examination, 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

53. Case 053 - In a mobile radiography setting, 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

54. Case 054 - During a repeat-analysis conference, 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

55. Case 055 - While working in the emergency department, 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

56. Case 056 - While preparing a patient for imaging, 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

57. Case 057 - In a mobile radiography setting, why is pulsed fluoroscopy useful for dose management?

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

58. Case 058 - During a repeat-analysis conference, 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

59. Case 059 - Scatter intensity is 9 units at 1 meter from a patient. What is the expected intensity at 3 meters?

- A. 3 unit
- B. 1 unit
- C. 6 unit

D. 27 unit

60. Case 060 - While preparing a patient for imaging, 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

61. Case 061 - In a mobile radiography setting, 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

62. Case 062 - During a repeat-analysis conference, 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

63. Case 063 - While working in the emergency department, 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

64. Case 064 - While preparing a patient for imaging, 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

65. Case 065 - In a mobile radiography setting, 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

66. Case 066 - A fluoroscopic pulse rate decreases from 15 pulses per second to 7.5 while other factors remain fixed. What relative pulse frequency remains?

- A. 50 percent
- B. 25 percent
- C. 75 percent
- D. 200 percent

67. Case 067 - While working in the emergency department, 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

68. Case 068 - While preparing a patient for imaging, 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

69. Case 069 - In a mobile radiography setting, 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

70. Case 070 - During a repeat-analysis conference, which practice best reduces repeat exposures?

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

71. Case 071 - While working in the emergency department, why is pulsed fluoroscopy useful for dose management?

- A. It removes the need for collimation

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

72. Case 072 - While preparing a patient for imaging, where should a personnel dosimeter normally be worn when using a lead apron?

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

73. Case 073 - In a mobile radiography setting, which fluoroscopic feature allows review without continuing exposure?

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

74. Case 074 - During a repeat-analysis conference, 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

75. Case 075 - An exposure time decreases from 0.08 second to 0.04 second at unchanged mA. What percentage of the original mAs remains?

- A. 50 percent
- B. 25 percent
- C. 75 percent
- D. 200 percent

76. Case 076 - While preparing a patient for imaging, 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

77. Case 077 - In a mobile radiography setting, which practice best reduces repeat exposures?

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

78. Case 078 - While assisting an adult patient, what is the expected effect of patient motion on a radiographic image?

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

79. Case 079 - During an outpatient examination, increasing object-to-image receptor distance produces which change?

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

80. Case 080 - During a routine competency assessment, 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

81. Case 081 - During image-quality 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

82. Case 082 - While assisting an adult patient, 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

83. Case 083 - A 35 cm field is represented by a 2,500-pixel matrix. What is the pixel size in millimeters?

- A. 0.07 mm
- B. 0.28 mm
- C. 0.14 mm
- D. 1.4 mm

84. Case 084 - During a routine competency assessment, what is the primary purpose of a radiographic grid?

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

85. Case 085 - During image-quality review, what is the expected effect of patient motion on a radiographic image?

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

86. Case 086 - While assisting an adult patient, increasing object-to-image receptor distance produces which change?

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

87. Case 087 - During an outpatient examination, 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

88. Case 088 - During a routine competency assessment, 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

89. Case 089 - During image-quality 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

90. Case 090 - While assisting an adult patient, 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

91. Case 091 - An object is 20 cm from the focal spot and the receptor is 100 cm from the focal spot. What is the magnification factor?

- A. 0.2 times
- B. 4 times
- C. 20 times
- D. 5 times

92. Case 092 - During a routine competency assessment, 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

93. Case 093 - During image-quality review, increasing object-to-image receptor distance produces which change?

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

94. Case 094 - While assisting an adult patient, 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

95. Case 095 - During an outpatient examination, which adjustment most directly reduces magnification?

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

96. Case 096 - During a routine competency assessment, 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

97. Case 097 - During image-quality review, 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

98. Case 098 - While assisting an adult patient, what is the primary purpose of a radiographic grid?

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

99. Case 099 - During an outpatient examination, what is the expected effect of patient motion on a radiographic image?

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

100. Case 100 - During a routine competency assessment, increasing object-to-image receptor distance produces which change?

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

101. Case 101 - During image-quality review, 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

102. Case 102 - A 30 cm field uses a 1,500-pixel matrix. What is the pixel size in millimeters?

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

103. Case 103 - During an outpatient examination, what does greater bit depth provide in a digital imaging system?

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

104. Case 104 - During an outpatient examination, which component converts alternating current to unidirectional current in an x-ray circuit?

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

105. Case 105 - During a routine competency assessment, 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

106. Case 106 - During image-quality review, 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

107. Case 107 - While assisting an adult patient, which standard supports consistent grayscale presentation across diagnostic monitors?

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

108. Case 108 - During an outpatient examination, 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

109. Case 109 - During a routine competency assessment, which system enables standardized exchange of medical images and related information?

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

110. Case 110 - A single-phase exposure uses 80 kVp, 200 mA, and 0.10 second. How many heat units are produced?

- A. 160 HU
- B. 1600 HU
- C. 800 HU
- D. 16000 HU

111. Case 111 - While assisting an adult patient, which component converts alternating current to unidirectional current in an x-ray circuit?

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

112. Case 112 - During an outpatient examination, 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

113. Case 113 - During a routine competency assessment, 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

114. Case 114 - During image-quality 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

115. Case 115 - While assisting an adult patient, 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

116. Case 116 - During an outpatient examination, which system enables standardized exchange of medical images and related information?

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

117. Case 117 - During a routine competency assessment, 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

118. Case 118 - A detector has 2,048 pixels across a 40.96 cm field. What is the pixel size in millimeters?

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

119. Case 119 - While assisting an adult patient, what is the function of the rotating anode?

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

120. Case 120 - During an outpatient examination, 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

121. Case 121 - During a routine competency assessment, which standard supports consistent grayscale presentation across diagnostic monitors?

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

122. Case 122 - During image-quality review, what is the role of the automatic exposure control backup timer?

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

123. Case 123 - While assisting an adult patient, which system enables standardized exchange of medical images and related information?

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

124. Case 124 - During an outpatient examination, 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. Perform detector inspection and quality control
- D. Increase window width permanently

125. Case 125 - During a routine competency assessment, which component converts alternating current to unidirectional current in an x-ray circuit?

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

126. Case 126 - During image-quality 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

127. Case 127 - While assisting an adult patient, 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
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128. Case 128 - During an outpatient examination, which standard supports consistent grayscale presentation across diagnostic monitors?

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

129. Case 129 - While working in the emergency department, 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

130. Case 130 - While preparing a patient for imaging, 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

131. Case 131 - In a mobile radiography setting, 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

132. Case 132 - During a repeat-analysis conference, 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

133. Case 133 - While working in the emergency department, 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

134. Case 134 - While preparing a patient for imaging, 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. Horizontal-beam lateral cervical image
- D. Upright oblique image first

135. Case 135 - In a mobile radiography setting, 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

136. Case 136 - During a repeat-analysis conference, 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

137. Case 137 - While working in the emergency department, 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

138. Case 138 - While preparing a patient for imaging, 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

139. Case 139 - In a mobile radiography setting, 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

140. Case 140 - During a repeat-analysis conference, 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

141. Case 141 - While working in the emergency department, 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

142. Case 142 - While preparing a patient for imaging, 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

143. Case 143 - In a mobile radiography setting, 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

144. Case 144 - During a repeat-analysis conference, an AP pelvis image shows foreshortened femoral necks. What positioning error is most likely?

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

145. Case 145 - While working in the emergency department, 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

146. Case 146 - While preparing a patient for imaging, 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

147. Case 147 - In a mobile radiography setting, 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

148. Case 148 - During a repeat-analysis conference, for a lateral cervical spine, what anatomy must be visible to assess the cervicothoracic junction?

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

149. Case 149 - In a mobile radiography setting, why is an upright chest image preferred when evaluating possible pleural air?

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

150. Case 150 - During a repeat-analysis conference, 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

151. Case 151 - While working in the emergency department, 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

152. Case 152 - While preparing a patient for imaging, 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

153. Case 153 - In a mobile radiography setting, a lateral chest image should be positioned with which side against the receptor for routine imaging?

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

154. Case 154 - During a repeat-analysis conference, which projection best shows the intercondylar fossa of the knee?

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

155. Case 155 - While working in the emergency department, 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

156. Case 156 - While preparing a patient for imaging, 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

157. Case 157 - In a mobile radiography setting, for a PA chest image, why are the shoulders rolled forward?

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

158. Case 158 - During a repeat-analysis conference, 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

159. Case 159 - While working in the emergency department, a lateral chest image should be positioned with which side against the receptor for routine imaging?

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

160. Case 160 - While preparing a patient for imaging, 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

161. Case 161 - In a mobile radiography setting, why is an upright chest image preferred when evaluating possible pleural air?

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

162. Case 162 - During a repeat-analysis conference, which position best demonstrates free intraperitoneal air when the patient cannot stand?

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

163. Case 163 - While working in the emergency department, for a PA chest image, why are the shoulders rolled forward?

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

164. Case 164 - While preparing a patient for imaging, which breathing instruction is typical for a routine upright abdomen image?

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

165. Case 165 - In a mobile radiography setting, 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

166. Case 166 - During a repeat-analysis conference, 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

167. Case 167 - While working in the emergency department, why is an upright chest image preferred when evaluating possible pleural air?

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

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

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

170. Case 170 - During a repeat-analysis conference, 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

171. Case 171 - While preparing a patient for imaging, 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

172. Case 172 - In a mobile radiography setting, for a lateral elbow, how should the joint be positioned when the patient can cooperate?

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

173. Case 173 - During a repeat-analysis conference, which ankle projection best demonstrates the mortise joint uniformly open?

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

174. Case 174 - While working in the emergency department, 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

175. Case 175 - While preparing a patient for imaging, 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

176. Case 176 - In a mobile radiography setting, 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

177. Case 177 - During a repeat-analysis conference, 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

178. Case 178 - While working in the emergency department, which wrist projection best demonstrates the scaphoid with reduced foreshortening?

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

179. Case 179 - While preparing a patient for imaging, 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. Internally rotated with thumb down
- D. Flexed 90 degrees with thumb up

180. Case 180 - In a mobile radiography setting, 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

181. Case 181 - During a repeat-analysis conference, what is the purpose of externally rotating the arm for an AP shoulder?

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

182. Case 182 - While working in the emergency department, 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. Lateral shoulder with abduction
- D. AP oblique elbow with lateral rotation

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- C. AP oblique elbow with lateral rotation
- D. Lateral shoulder with abduction

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- A. At the knee joint with habitus adjustment
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- C. At the femoral neck with rotation
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- A. PA wrist with radial deviation
- B. Lateral elbow in extension
- C. AP shoulder in external rotation
- D. PA wrist with ulnar deviation

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- 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

Practice Exam 6: Answer Key and Explanations

- 1. C** — Two independent identifiers reduce wrong-patient errors and must be matched with the order before exposure. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.
- 2. D** — A competent patient may withdraw consent. The radiographer should stop, clarify concerns, notify the responsible provider, and document appropriately. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.
- 3. A** — A qualified interpreter supports accurate informed communication, confidentiality, and patient autonomy; untrained relatives can introduce omissions or bias. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.
- 4. B** — Gloves do not replace hand hygiene because contamination may occur during removal or through unnoticed glove defects. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

5. D — Acute changes require stopping the procedure, assessing airway, breathing, circulation, vital signs, and activating emergency support as indicated. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

6. B — Sterile items remain in view and above waist level; reaching across, turning away, or lowering them risks contamination. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

7. A — A gait belt, locked equipment, clear instructions, and sufficient assistance reduce falls and injury to both patient and staff. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

8. C — Objective documentation should include the site, symptoms, estimated amount, interventions, instructions, and required notifications without blame or speculation. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

9. A — Two independent identifiers reduce wrong-patient errors and must be matched with the order before exposure. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

10. B — A competent patient may withdraw consent. The radiographer should stop, clarify concerns, notify the responsible provider, and document appropriately. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

11. C — A qualified interpreter supports accurate informed communication, confidentiality, and patient autonomy; untrained relatives can introduce omissions or bias. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

12. D — Multiplying the ordered volume per kilogram by patient weight gives 105 mL. Weight-based calculation must use consistent units before administration. The lower distractors reflect incomplete multiplication, while the higher choice overestimates the dose. The radiographer must also compare the result with the approved protocol and any maximum-volume limitation before injection.

13. B — Acute changes require stopping the procedure, assessing airway, breathing, circulation, vital signs, and activating emergency support as indicated. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

14. C — Sterile items remain in view and above waist level; reaching across, turning away, or lowering them risks contamination. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

15. D — A gait belt, locked equipment, clear instructions, and sufficient assistance reduce falls and injury to both patient and staff. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

16. A — Objective documentation should include the site, symptoms, estimated amount, interventions, instructions, and required notifications without blame or speculation. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

17. B — Two independent identifiers reduce wrong-patient errors and must be matched with the order before exposure. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

18. D — A competent patient may withdraw consent. The radiographer should stop, clarify concerns, notify the responsible provider, and document appropriately. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

19. A — A qualified interpreter supports accurate informed communication, confidentiality, and patient autonomy; untrained relatives can introduce omissions or bias. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

20. C — Gloves do not replace hand hygiene because contamination may occur during removal or through unnoticed glove defects. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

21. A — Acute changes require stopping the procedure, assessing airway, breathing, circulation, vital signs, and activating emergency support as indicated. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

22. C — Sterile items remain in view and above waist level; reaching across, turning away, or lowering them risks contamination. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

23. B — A gait belt, locked equipment, clear instructions, and sufficient assistance reduce falls and injury to both patient and staff. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

24. D — Objective documentation should include the site, symptoms, estimated amount, interventions, instructions, and required notifications without blame or speculation. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

25. D — Two independent identifiers reduce wrong-patient errors and must be matched with the order before exposure. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

26. A — A competent patient may withdraw consent. The radiographer should stop, clarify concerns, notify the responsible provider, and document appropriately. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

27. C — A qualified interpreter supports accurate informed communication, confidentiality, and patient autonomy; untrained relatives can introduce omissions or bias. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

28. B — Gloves do not replace hand hygiene because contamination may occur during removal or through unnoticed glove defects. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

29. A — Acute changes require stopping the procedure, assessing airway, breathing, circulation, vital signs, and activating emergency support as indicated. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

30. D — Sterile items remain in view and above waist level; reaching across, turning away, or lowering them risks contamination. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

31. C — A gait belt, locked equipment, clear instructions, and sufficient assistance reduce falls and injury to both patient and staff. The other choices do not address the controlling patient care principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

32. B — Compton interactions redirect photons and produce much of the scatter reaching personnel; their likelihood relates mainly to electron density. The other choices do not address the controlling radiation physics and radiobiology principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

33. D — Higher kilovoltage increases photon energy and beam penetrability while also influencing quantity, subject contrast, and scatter production. The other choices do not address the controlling radiation physics and radiobiology principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

34. B — Angling the target permits a larger actual focal area for heat loading while projecting a smaller effective focal spot for detail. The other choices do not address the controlling radiation physics and radiobiology principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

35. C — Milliampere multiplied by exposure time gives 12 mAs. Multiplication, rather than division, preserves the definition of mAs as tube-current-time product. The distractors arise from decimal placement or using only one factor. Correct calculation supports repeatable receptor exposure and helps prevent unnecessary patient dose caused by an avoidable technique error. The other choices do not address the controlling calculation principle and

36. A — For stochastic effects, increasing dose raises the probability of occurrence, while severity is not considered dose dependent and no threshold is assumed. The other choices do not address the controlling radiation physics and radiobiology principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible

37. C — The gray measures energy absorbed per unit mass. The sievert reflects biological weighting, while becquerel describes activity. The other choices do not address the controlling radiation physics and radiobiology principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

38. D — Divergent radiation spreads across an area proportional to distance squared, producing the inverse-square relationship for a point source. The other choices do not address the controlling radiation physics and radiobiology principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

39. A — Compton interactions redirect photons and produce much of the scatter reaching personnel; their likelihood relates mainly to electron density. The other choices do not address the controlling radiation physics and radiobiology principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

40. B — The inverse-square law makes intensity proportional to one divided by distance squared. Doubling distance reduces 16 units to one fourth, or 4 units. The alternatives represent simple division, an incomplete distance adjustment, or an increase. This relationship explains why maximizing distance is such an effective method of occupational radiation protection.

41. C — Angling the target permits a larger actual focal area for heat loading while projecting a smaller effective focal spot for detail. The other choices do not address the controlling radiation physics and radiobiology principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

42. A — Radiosensitivity generally increases with mitotic activity and decreases with cellular differentiation, explaining the vulnerability of marrow and germinal tissues. The other choices do not address the controlling radiation physics and radiobiology principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

43. B — For stochastic effects, increasing dose raises the probability of occurrence, while severity is not considered dose dependent and no threshold is assumed. The other choices do not address the controlling radiation physics and radiobiology principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible

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47. B — Higher kilovoltage increases photon energy and beam penetrability while also influencing quantity, subject contrast, and scatter production. The other choices do not address the controlling radiation physics and radiobiology principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

48. A — The exposure-maintenance formula squares the distance ratio: 10 multiplied by 1.5 squared equals 22.5 mAs. Using only the unsquared ratio produces 15 mAs, while rounding prematurely yields other choices. Distance changes alter beam intensity according to the inverse-square law, so compensation must preserve detector exposure without arbitrary increases. The other choices do not address the controlling calculation principle and could

49. B — Radiosensitivity generally increases with mitotic activity and decreases with cellular differentiation, explaining the vulnerability of marrow and germinal tissues. The other choices do not address the controlling radiation physics and radiobiology principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

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53. C — Accurate collimation reduces irradiated tissue and scatter, improving image quality while supporting dose optimization. The other choices do not address the controlling radiation protection principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

54. B — Distance sharply reduces scatter exposure; the operator should maximize distance, avoid the primary beam, and use shielding when available. The other choices do not address the controlling radiation protection principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

55. A — Digital processing can conceal excessive receptor exposure. A diagnostic image generally should not be repeated merely to change an indicator; technique should be corrected. The other choices do not address the controlling radiation protection principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible

56. D — Pre-exposure verification of patient, anatomy, centering, collimation, receptor, marker, and technique prevents avoidable errors and repeats. The other choices do not address the controlling radiation protection principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

57. A — Pulsed operation reduces beam-on time compared with continuous fluoroscopy when pulse rate and other factors are appropriately selected. The other choices do not address the controlling radiation protection principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

58. D — A collar-level dosimeter outside the apron monitors exposure to the head and neck and provides a consistent occupational record. The other choices do not address the controlling radiation protection principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

59. B — Tripling distance reduces intensity to one ninth under the inverse-square relationship. Nine units therefore become 1 unit. The distractors reflect simple division, subtraction, or multiplication instead of squaring the distance ratio. Although clinical scatter geometry is complex, this calculation correctly demonstrates why increasing operator distance substantially reduces occupational exposure. The other choices do not address the controlling calculation principle and

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66. A — Dividing the new pulse rate by the original rate gives 0.5, or 50 percent. The change can reduce fluoroscopic radiation output when other operating factors remain comparable, though systems may adjust technique automatically. The other options misstate the ratio or reverse it. Pulse rate should still be selected according to the clinical task.

67. C — Accurate collimation reduces irradiated tissue and scatter, improving image quality while supporting dose optimization. The other choices do not address the controlling radiation protection principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

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73. B — Last-image hold displays the most recent fluoroscopic image without additional irradiation, supporting review and positioning decisions. The other choices do not address the controlling radiation protection principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

74. C — Accurate collimation reduces irradiated tissue and scatter, improving image quality while supporting dose optimization. The other choices do not address the controlling radiation protection principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

75. A — At constant milliamperage, mAs changes directly with time. Halving exposure time from 0.08 to 0.04 second leaves 50 percent of the original mAs. The alternatives confuse quartering, a smaller reduction, or doubling. Shorter time may reduce motion, but adequate receptor exposure must be preserved through an appropriate technique adjustment. The other choices do not address the controlling calculation principle and

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78. B — Motion blurs recorded edges and reduces spatial resolution; immobilization, communication, and shorter exposure time can limit the effect. The other choices do not address the controlling image acquisition and evaluation principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

79. A — Greater object-to-receptor distance increases magnification and geometric blur because the divergent beam projects a larger penumbra. The other choices do not address the controlling image acquisition and evaluation principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

80. D — Quantum mottle reflects inadequate photon statistics and poor signal-to-noise ratio; processing cannot recreate signal that was never captured. The other choices do not address the controlling image acquisition and evaluation principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

81. B — Increasing source-to-receptor distance reduces beam divergence across the object and therefore reduces magnification, assuming other geometry remains constant. The other choices do not address the controlling image acquisition and evaluation principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

82. D — Bit depth determines the number of possible intensity values available to represent image data and therefore supports contrast resolution. The other choices do not address the controlling image acquisition and evaluation principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

83. C — Convert 35 centimeters to 350 millimeters, then divide by 2,500 pixels. The result is 0.14 mm per pixel. The distractors reflect conversion or division errors. For a fixed field of view, smaller pixels can support improved sampling and potential spatial resolution, although detector performance and system processing also influence visible detail.

84. A — A grid preferentially absorbs obliquely traveling scatter before it reaches the detector, improving image contrast while requiring appropriate exposure. The other choices do not address the controlling image acquisition and evaluation principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

85. D — Motion blurs recorded edges and reduces spatial resolution; immobilization, communication, and shorter exposure time can limit the effect. The other choices do not address the controlling image acquisition and evaluation principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

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90. A — Symmetry of the medial clavicles relative to the vertebral column is a standard indicator of rotation on a PA chest projection. The other choices do not address the controlling image acquisition and evaluation principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

91. D — Magnification factor equals source-to-image distance divided by source-to-object distance. Dividing 100 cm by 20 cm gives 5. The reciprocal and subtraction-based distractors do not represent projection geometry. Increasing object-to-receptor distance increases magnification, while increasing

source-to-image distance generally reduces it when object position is otherwise unchanged. The other choices do not address the controlling calculation principle and could create avoidable error.

92. C — Motion blurs recorded edges and reduces spatial resolution; immobilization, communication, and shorter exposure time can limit the effect. The other choices do not address the controlling image acquisition and evaluation principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

93. C — Greater object-to-receptor distance increases magnification and geometric blur because the divergent beam projects a larger penumbra. The other choices do not address the controlling image acquisition and evaluation principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

94. A — Quantum mottle reflects inadequate photon statistics and poor signal-to-noise ratio; processing cannot recreate signal that was never captured. The other choices do not address the controlling image acquisition and evaluation principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

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98. A — A grid preferentially absorbs obliquely traveling scatter before it reaches the detector, improving image contrast while requiring appropriate exposure. The other choices do not address the controlling image acquisition and evaluation principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

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100. C — Greater object-to-receptor distance increases magnification and geometric blur because the divergent beam projects a larger penumbra. The other choices do not address the controlling image acquisition and evaluation principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

101. D — Quantum mottle reflects inadequate photon statistics and poor signal-to-noise ratio; processing cannot recreate signal that was never captured. The other choices do not address the controlling image acquisition and evaluation principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

102. B — Convert the 30 cm field to 300 mm and divide by 1,500 pixels, producing a 0.2 mm pixel size. The alternatives reflect misplaced decimals or inverted reasoning. Pixel size describes sampling geometry; it does not alone guarantee displayed resolution because detector blur, focal spot, motion, and processing also affect the final image.

103. A — Bit depth determines the number of possible intensity values available to represent image data and therefore supports contrast resolution. The other choices do not address the controlling image acquisition and evaluation principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

104. C — Rectifiers permit electron flow in the desired direction through the x-ray tube and suppress the reverse half-cycle. The other choices do not address the controlling equipment operation and quality assurance principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

105. C — Rotation distributes electron-bombardment heat over a larger track, allowing higher tube loading while protecting the target. The other choices do not address the controlling equipment operation and quality assurance principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

106. B — A failed uniformity test can produce nonuniform response and artifacts; established quality-control procedures require reporting, evaluation, and correction. The other choices do not address the controlling equipment operation and quality assurance principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

107. A — The grayscale standard display function provides a standardized relationship between digital driving levels and displayed luminance. The other choices do not address the controlling equipment operation and quality assurance principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

108. D — The backup timer limits an excessively long exposure if the selected chamber or primary exposure-termination system fails. The other choices do not address the controlling equipment operation and quality assurance principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

109. D — DICOM defines standards for formatting, storing, transmitting, and identifying medical images across compatible imaging and information systems. The other choices do not address the controlling equipment operation and quality assurance principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

110. B — For a single-phase generator, heat units equal kVp multiplied by mA and time. Eighty times 200 times 0.10 equals 1,600 HU. The distractors omit a factor or misplace the decimal. Tracking tube heat helps prevent exceeding equipment ratings and allows appropriate cooling between exposures when workload is high. The other choices do not address the controlling calculation principle and could

111. C — Rectifiers permit electron flow in the desired direction through the x-ray tube and suppress the reverse half-cycle. The other choices do not address the controlling equipment operation and quality assurance principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

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117. A — Limiting the artifact to one detector suggests a receptor-related issue requiring inspection, calibration testing, and documentation before further clinical use. The other choices do not address the controlling equipment operation and quality assurance principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

118. D — Convert 40.96 cm to 409.6 mm, then divide by 2,048 pixels. The pixel size is 0.2 mm. The distractors reflect powers-of-ten mistakes. This calculation links field of view and matrix size to sampling pitch; actual image sharpness also depends on detector response, focal spot, motion, and geometric conditions. The other choices do not address the controlling calculation principle and could

119. B — Rotation distributes electron-bombardment heat over a larger track, allowing higher tube loading while protecting the target. The other choices do not address the controlling equipment operation and quality assurance principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

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122. B — The backup timer limits an excessively long exposure if the selected chamber or primary exposure-termination system fails. The other choices do not address the controlling equipment operation and quality assurance principle and could create avoidable error. This reasoning supports safe,

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129. A — The AP open-mouth projection aligns the open mouth with C1-C2 so the dens and lateral masses can be evaluated. The other choices do not address the controlling head, spine, and pelvis procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

130. D — A diagnostic lateral cervical image should include C1 through C7 and the C7-T1 junction, with shoulders depressed when possible. The other choices do not address the controlling head, spine, and pelvis procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

131. C — Lumbar posterior obliques demonstrate the zygapophyseal joints closest to the receptor and the characteristic Scotty-dog appearance. The other choices do not address the controlling head, spine, and pelvis procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

132. B — Unless contraindicated, internal rotation places the femoral necks more parallel to the receptor and reduces foreshortening. The other choices do not address the controlling head, spine, and pelvis procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

133. D — Posterior oblique positioning opens the sacroiliac joint farthest from the receptor by rotating the pelvis appropriately. The other choices do not address the controlling head, spine, and pelvis procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

134. C — A horizontal-beam lateral is obtained without moving the cervical spine and can demonstrate alignment before additional projections are attempted. The other choices do not address the controlling head, spine, and pelvis procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

135. B — The AP open-mouth projection aligns the open mouth with C1-C2 so the dens and lateral masses can be evaluated. The other choices do not address the controlling head, spine, and pelvis procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

136. A — A diagnostic lateral cervical image should include C1 through C7 and the C7-T1 junction, with shoulders depressed when possible. The other choices do not address the controlling head, spine, and pelvis procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

137. C — Lumbar posterior obliques demonstrate the zygapophyseal joints closest to the receptor and the characteristic Scotty-dog appearance. The other choices do not address the controlling head, spine, and pelvis procedures principle and could create avoidable error. This reasoning supports safe,

reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

138. D — Unless contraindicated, internal rotation places the femoral necks more parallel to the receptor and reduces foreshortening. The other choices do not address the controlling head, spine, and pelvis procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

139. B — Posterior oblique positioning opens the sacroiliac joint farthest from the receptor by rotating the pelvis appropriately. The other choices do not address the controlling head, spine, and pelvis procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

140. A — A horizontal-beam lateral is obtained without moving the cervical spine and can demonstrate alignment before additional projections are attempted. The other choices do not address the controlling head, spine, and pelvis procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

141. B — The AP open-mouth projection aligns the open mouth with C1-C2 so the dens and lateral masses can be evaluated. The other choices do not address the controlling head, spine, and pelvis procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

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149. A — In an upright patient, free pleural air rises and is more conspicuous near the apex, particularly on an erect expiration image when requested. The other choices do not address the controlling thorax and abdomen procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

150. 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. The other choices do not address the controlling thorax and abdomen procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

151. B — Rolling the shoulders forward rotates the scapulae laterally so they do not obscure the lungs on a properly positioned PA chest. The other choices do not address the controlling thorax and abdomen procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

152. D — Expiration raises the diaphragm and reduces abdominal motion, helping include the diaphragm and abdominal contents on the image. The other choices do not address the controlling thorax and abdomen procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

153. C — A left lateral position places the heart closer to the receptor, reducing cardiac magnification and improving evaluation of thoracic anatomy. The other choices do not address the controlling thorax and abdomen procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

154. D — A tunnel projection directs the beam through the flexed knee to demonstrate the intercondylar fossa and adjacent condylar surfaces. The other choices do not address the controlling thorax and abdomen procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

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171. C — Ulnar deviation moves the scaphoid into a more extended position, reducing foreshortening and improving visualization. The other choices do not address the controlling extremity procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

172. B — Ninety-degree flexion and a true lateral hand position superimpose the humeral epicondyles and demonstrate the elbow joint. The other choices do not address the controlling extremity procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

173. A — Approximately slight internal rotation places the intermalleolar line parallel to the receptor and opens the ankle mortise. The other choices do not address the controlling extremity procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

174. D — External rotation places the epicondyles parallel to the receptor and demonstrates the greater tubercle in profile laterally. The other choices do not address the controlling extremity procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

175. C — Lateral rotation of the elbow projects the radial head, neck, and tuberosity with reduced superimposition by the ulna. The other choices do not address the controlling extremity procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

176. C — The beam centers to the knee joint, with angulation adjusted for patient habitus to open the joint space appropriately. The other choices do not address the controlling extremity procedures principle and could create avoidable error. This reasoning supports safe, reproducible imaging and helps the radiographer choose the single best action rather than a superficially plausible alternative.

177. B — The scapular Y projection can demonstrate humeral-head alignment with the glenoid without requiring the abduction needed for an axillary view. The other choices do not address the controlling extremity procedures principle and could create avoidable error. This reasoning supports safe,

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