Math Worksheet
Chapters 8 & 9

Directions: Solve each problem. Show your work. Circle your answer.

1. If a transformer is supplied with 400 volts to the primary coil, has 100 turns of wire on the primary coil and 20000 turns of wire on the secondary coil, what will the voltage be in the secondary?

2. If a transformer has 120 turns of wire on the primary coil, 80 volts in the primary coil and 20 volts in the secondary coil, how many turns of wire must there be in the secondary coil?

3. If a transformer has 125 turns of wire on the primary coil, 25 Amps in the primary coil and 1500 turns on the secondary coil, what will the current be in the secondary coil?

4. If a transformer has 13 Amps in the primary coil, 120 volts in the primary coil and 20000 volts in the secondary, how many amps are in the secondary coil?
Directions: For the given information state if the technique is safe or unsafe and why.

5. Is an exposure of 80 kVp, 0.1 second and 200 mA within the limits of the single phase, 0.6 mm focal spot tube rating chart above?

6. Is an exposure of 100 kVp, 0.9 second and 150 mA within the limits of the single phase, 0.6 mm focal spot tube rating chart above?
7. Looking at the graphs above, which of the following conditions of exposure are safe and which are unsafe?
   a. 125 kVp, 100 mA, 1 second; 3400 rpm; 0.6 mm focal spot
   b. 100 kVp, 100 mA, 7 second; 3400 rpm; 0.6 mm focal spot
   c. 125 kVp, 200 mA, 0.6 second; 10000 rpm; 0.6 mm focal spot
   d. 115 kVp, 250 mA, 0.5 second; 10000 rpm; 0.6 mm focal spot

8. A certain technique uses the following settings 0.6 mm focal spot, 10000 rpm anode rotation and 120 kVp, 300 mAs. What is the shortest possible exposure time for this examination?

9. A certain technique uses the following settings 0.6 mm focal spot, 3400 rpm anode rotation and 100 kVp, 150 mAs. What is the shortest possible exposure time for this examination?

10. A certain technique uses the following settings 0.6 mm focal spot, 10000 rpm anode rotation and 100 kVp, 250 mAs. What is the shortest possible exposure time for this examination?
Directions: Solve the following problems. Show your work. Circle your answer.

11. How many heat units are generated by an exposure of 80 kVp, 200 mA and 0.2 second on a single phase unit?

12. How many heat units are generated by an exposure of 70 kVp, 300 mA and 0.15 second on a three-phase unit?

13. How many heat units are generated by two exposures of 65 kVp, 400 mA and 0.05 second on a three-phase unit?

Directions: Use the anode cooling chart to solve the following problems.

14. Calculate the length of time necessary for the anode to cool to 50000 HU after five exposures of 80 kVp, 500 mA and 0.5 second on a 1φ unit.

15. Calculate the length of time necessary for the anode to cool sufficiently from 350000 HU to accept a series of exposures totaling 150000 HU on a 1φ unit.