



Exam: AFSA Applied Sprinkler Technology 203: Hydraulic Calculations, Part 3

1. Using [Figure FE1](#), determine the area of coverage for Sprinkler 1:
 - A. 78 ft²
 - B. 83 ft²
 - C. 80 ft²
 - D. 92 ft²

2. Using [Figure FE1](#), determine the area of coverage for Sprinkler 2:
 - A. 80 ft²
 - B. 108 ft²
 - C. 72 ft²
 - D. 96 ft²

3. Using [Figure FE1](#), determine the area of coverage for Sprinkler 3:
 - A. 96 ft²
 - B. 64 ft²
 - C. 80 ft²
 - D. 60 ft²

4. Using [Figure FE1](#), determine the area of coverage for Sprinkler 4:
 - A. 64 ft²
 - B. 80 ft²
 - C. 96 ft²
 - D. 92 ft²

5. Using [Figure FE1](#), determine the area of coverage for Sprinkler 5:
 - A. 83 ft²
 - B. 90 ft²
 - C. 68 ft²
 - D. 96 ft²

6. Using [Figure FE1](#), determine the area of coverage for Sprinkler 6:
- A. 96 ft²
 - B. 108 ft²
 - C. 90 ft²
 - D. 110 ft²
7. Using [Figure FE1](#), determine the area of coverage for Sprinkler 7:
- A. 72 ft²
 - B. 78 ft²
 - C. 64 ft²
 - D. 92 ft²
8. Using [Figure FE1](#), determine the area of coverage for Sprinkler 8:
- A. 108 ft²
 - B. 96 ft²
 - C. 80 ft²
 - D. 72 ft²
9. Using [Figure FE1](#), determine the area of coverage for Sprinkler 9:
- A. 83 ft²
 - B. 96 ft²
 - C. 90 ft²
 - D. 92 ft²
10. Using [Figure FE1](#), determine the area of coverage for Sprinkler 10:
- A. 64 ft²
 - B. 78 ft²
 - C. 96 ft²
 - D. 108 ft²
11. Using [Figure FE1](#), determine the area of coverage for Sprinkler 11:
- A. 72 ft²
 - B. 90 ft²
 - C. 108 ft²
 - D. 64 ft²

12. Using [Figure FE1](#), determine the area of coverage for Sprinkler 12:
- A. 72 ft²
 - B. 80 ft²
 - C. 90 ft²
 - D. 108 ft²
13. Using [Figure FE1](#), determine the area of coverage for Sprinkler 13:
- A. 90 ft²
 - B. 80 ft²
 - C. 72 ft²
 - D. 96 ft²
14. Using [Figure FE1](#), determine the area of coverage for Sprinkler 14:
- A. 80 ft²
 - B. 72 ft²
 - C. 96 ft²
 - D. 92 ft²
15. Using [Figure FE1](#), determine the area of coverage for Sprinkler 15:
- A. 64 ft²
 - B. 78 ft²
 - C. 83 ft²
 - D. 92 ft²
16. Using [Figure FE1](#), determine the area of coverage for Sprinkler 16:
- A. 108 ft²
 - B. 96 ft²
 - C. 80 ft²
 - D. 92 ft²
17. Using [Figure FE1](#), determine the minimum flow for Sprinkler 1:
- A. 19.2 gpm
 - B. 21.6 gpm
 - C. 16.0 gpm
 - D. 12.8 gpm

18. Using [Figure FE1](#), determine the minimum flow for Sprinkler 2:
- A. 20.0 gpm
 - B. 18.4 gpm
 - C. 14.4 gpm
 - D. 19.2 gpm
19. Using [Figure FE1](#), determine the minimum flow for Sprinkler 3:
- A. 12.8 gpm
 - B. 21.6 gpm
 - C. 16.0 gpm
 - D. 11.8 gpm
20. Using [Figure FE1](#), determine the minimum flow for Sprinkler 4:
- A. 16.0 gpm
 - B. 14.4 gpm
 - C. 12.8 gpm
 - D. 19.2 gpm
21. Using [Figure FE1](#), determine the minimum flow for Sprinkler 5:
- A. 18.0 gpm
 - B. 16.0 gpm
 - C. 19.2 gpm
 - D. 21.6 gpm
22. Using [Figure FE1](#), determine the minimum flow for Sprinkler 6:
- A. 20.0 gpm
 - B. 21.6 gpm
 - C. 22.6 gpm
 - D. 21.0 gpm
23. Using [Figure FE1](#), determine the minimum flow for Sprinkler 7:
- A. 15.0 gpm
 - B. 14.4 gpm
 - C. 12.8 gpm
 - D. 16.0 gpm

24. Using [Figure FE1](#), determine the minimum flow for Sprinkler 8:
- A. 18.0 gpm
 - B. 18.2 gpm
 - C. 21.0 gpm
 - D. 21.6 gpm
25. Using [Figure FE1](#), determine the minimum flow for Sprinkler 9:
- A. 18.0 gpm
 - B. 19.2 gpm
 - C. 21.6 gpm
 - D. 12.8 gpm
26. Using [Figure FE1](#), determine the minimum flow for Sprinkler 10:
- A. 19.2 gpm
 - B. 20.0 gpm
 - C. 21.6 gpm
 - D. 22.4 gpm
27. Using [Figure FE1](#), determine the minimum flow for Sprinkler 11:
- A. 14.4 gpm
 - B. 16.0 gpm
 - C. 12.8 gpm
 - D. 13.0 gpm
28. Using [Figure FE1](#), determine the minimum flow for Sprinkler 12:
- A. 18.0 gpm
 - B. 23.0 gpm
 - C. 21.6 gpm
 - D. 19.2 gpm
29. Using [Figure FE1](#), determine the minimum flow for Sprinkler 13:
- A. 18.0 gpm
 - B. 19.2 gpm
 - C. 12.8 gpm
 - D. 16.0 gpm

30. Using [Figure FE1](#), determine the minimum flow for Sprinkler 14:
- A. 18.0 gpm
 - B. 19.2 gpm
 - C. 12.8 gpm
 - D. 16.0 gpm
31. Using [Figure FE1](#), determine the minimum flow for Sprinkler 15:
- A. 12.8 gpm
 - B. 14.4 gpm
 - C. 16.0 gpm
 - D. 10.8 gpm
32. Using [Figure FE1](#), determine the minimum flow for Sprinkler 16:
- A. 18.0 gpm
 - B. 19.2 gpm
 - C. 21.6 gpm
 - D. 16.0 gpm
33. Using [Figure FE1](#), what is the actual square footage of the hydraulic design (calculation) area?
- A. 1068 ft²
 - B. 1168 ft²
 - C. 1268 ft²
 - D. 1368 ft²
34. Using [Figure FE1](#), what is the minimum demand (including sprinkler and hose stream allowance) needed for the system?
- A. 423.6 gpm
 - B. 443.6 gpm
 - C. 463.6 gpm
 - D. 483.6 gpm
35. Using [Figure FE2](#) (water flow graph), what is the available pressure at a flow of 483.6 gpm?
- A. 39.3 psi
 - B. 41.3 psi
 - C. 43.3 psi
 - D. 45.0 psi

36. Using a blank calculation sheet, calculate the system illustrated on [FE3](#) using the pipe sizes shown. Download and print a [blank calculation](#) sheet here.

What is the system demand including the hose stream allowance (flow and pressure) at the base of the system riser?

- A. 549.6 gmp at 47.6 psi
- B. 601.8 gpm at 49.8 psi
- C. 584.7 gpm at 42.7 psi
- D. 591.6 gpm at 48.8 psi

37. Calculate the system illustrated on [FE3](#) using the pipe sizes shown. You may also use [FE2](#) as a reference.

What is the available water supply pressure at the system demand?

- A. 43.1 psi (at 591.6 gpm)
- B. 42.3 psi (at 590.7 gpm)
- C. 42.8 psi (at 590.6 gpm)
- D. 43.4 psi (at 592.0 gpm)

38. Calculate the system illustrated on [FE3](#) using the pipe sizes shown.

Is the system demand (flow and pressure) at the base of the system riser met by the available water supply?

- A. Yes
- B. No

39. Calculate the system illustrated on [FE3](#) using the pipe sizes shown.

Recalculate using 3 in. diameter main from reference point D. What is the system demand with this change?

- A. 589.2 gpm at 31.4 psi
- B. 594.6 gpm at 41.7 psi
- C. 591.6 gpm at 40.7 psi
- D. 601.2 gpm at 41.3 psi

40. Calculate the system illustrated on [FE3](#) using the pipe sizes shown. You may also use [FE2](#) as a reference.

Recalculate using 3 in. diameter main from reference point D. Is the system demand (flow and pressure) at the base of the system riser met by the available water supply?

- A. Yes
- B. No