Final Exam Option 2 Answers

Multiple Choice and Numerical Response Answers

1. C
2. C
3. B
4. A
5. B
6. B
7. 0.3
8. 17°
9. 16 m
10. C
11. B
12. C
13. A
14. C
15. 1.7 m
16. D
17. 320
18. D
19. 96 cm^3
20. B
21. A
22. D
23. 29.5 ft^3
24. B
25. A
26. D
27. 216 $in.^3$
28. D
29. D
30. D
31. C
32. A
33. C
34. 26.3 mm
35. 19.4°
36. D
37. D
38. C
39. B
40. C
41. D
42. C
43. C
44. C
45. C
46. A
47. C
48. D
49. B
50. 16 mm
51. A
52. C
53. 3 cm
54. B
55. D
56. C
57. 60
58. 3600
59. B
60. D

Written Response Answers

1. a) $\frac{7}{14.7} = \frac{10}{l}$

$l = 21$

The play structure is 21 ft long.

b) $\tan 65° = \frac{5}{x}$

$x = 2.331\ldots$

The length of x is approximately 2.3 ft or 28 in.

c) Use the Pythagorean relationship.

$5^2 + 2.3^2 = 5.5036\ldots$

The ramp is approximately 5.5 ft long. This is approximately equivalent to 66 in.

$(5.5)(12) = 66$ or 1.68 m

$\frac{(66)(2.54)}{100} = 1.6764$

Name: _____ Date: _____

d) Walls: $(3)(3)(4) = 36$;
Triangular area from roof peak to top of wall:
$(0.5)(3)(1)(2) = 3$;
Subtract area of 3 windows: $(3)(1)(1) = 3$;
Total: 48.
The total surface area to be stained is 48 ft^2.

e) 2 cans

2. a) The fountain would be 270 cm or 2.7 m tall.

b) Volume of mast:

$$\pi(0.12)(2.7) = 0.027\pi$$
$$= 0.084\,823\,001\ldots$$

Volume of hull:

$$\frac{1}{2}\left(\frac{4}{3}\pi r^3\right) = \frac{1}{2}\left[\frac{4}{3}\pi(1)^3\right]$$
$$= \frac{2}{3}\pi$$
$$= 0.212\,206\,59\ldots$$

Total volume:
$0.084\,823\,001\ldots + 0.212\,206\,59\ldots$
$= 0.297\,029\,591\ldots$
The fountain can hold approximately 0.3 m^3 of water.

c) Volume of sail A:
$0.5(0.75)(1.8)(0.15) = 0.101\,25$
Sail A is approximately 0.1 m^3.
Volume of sail B:
$0.5(0.8)(1.9)(0.15) = 0.114$
Sail B is approximately 0.11 m^3.

d) Surface area of the base:
$(1.2)(1) + 2(1.2)(0.5) + 2(1)(0.5) = 3.4$
The amount of stainless steel needed for the base is 3.4 m^2.

3. a) The caliper reading is incorrect:
$17.0 + 0.4 = 17.4$ mm.

b) The solution is incorrect.
$(36)(89) = 3204$; $\frac{3204}{9} = 356$
The area of the park is 356 yd^2. To convert from square feet to square yards, you need to divide by (3)(3) or 9 (*not* by 3 as in the given solution: $\frac{3204}{3} = 1068$).

c) The solution is correct. 200 mi in 3 h is 66.666… or approximately 67 mi in 1 h. Since 1 mi is approximately 1.61 km, $(67)(1.61) = 107.87$ or approximately 108 mi/h.

d) The solution is incorrect.

$$\frac{60}{\tan 49^\circ} = x \qquad \frac{60}{\tan 47^\circ} = x$$
$$52 = x \qquad 56 = x$$
$$52 + 56 = 108$$

e) The equation $-4x - y - 5 = 0$ is incorrectly graphed. Rewrite the equation to $y = -4x - 5$. Redraw the line so it has a y-intercept of $(0, -5)$ and passes through the point $(1, -9)$. The lines intersect at $\left(-\frac{3}{5}, -\frac{13}{5}\right)$.