Final Exam Option 2 Answers

Multiple Choice and Numerical Response Answers

1. B
2. C
3. 2
4. A
5. C
6. B
7. B
8. B
9. A
10. A
11. D
12. D
13. B
14. A
15. D
16. D
17. 36
18. B
19. B
20. A
21. A
22. 39
23. 150°
24. 180°
25. D
26. D
27. B
28. 1.4
29. A
30. C
31. D
32. C
33. A
34. 3142
35. B
36. D
37. A
38. D
39. D
40. C
41. 4231
42. B
43. B
44. A
45. C
46. C
47. B
48. C
49. B
50. D
51. A
52. 12.9 m
53. D
54. D
55. C
56. D
57. A
58. 18
59. D
60. D

Written Response Answers

1. a) Students may choose to use decimals for some fractions.

$$\begin{aligned} SA &= \left(\frac{1}{2}h\right)\left(\frac{2}{3}h\right) + \left(\frac{2}{3}h\right)\left(\frac{105}{100}h\right) \\ &\quad + \left(\frac{3}{10}h\right)\left(\frac{2}{3}h\right) \\ &= \left(\frac{1}{3}h^2\right) + \left(\frac{21}{30}h^2\right) + \left(\frac{1}{5}h^2\right) \\ &= \frac{10 + 21 + 6}{30}h^2 \\ &= \frac{37}{30}h^2 \end{aligned}$$

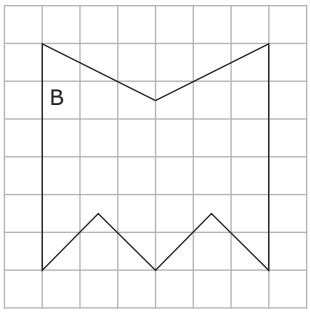
The area of the podium is $\left(\frac{37}{30}h^2\right)$ m^2.

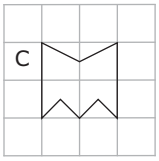
b) $$\begin{aligned} SA &= \frac{37}{30}(1.2)^2 \\ &= \frac{53.28}{30} \\ &= 1.776 \\ &\approx 1.78 \end{aligned}$$

The surface area to be painted is approximately 1.78 m^2.

c) $$\begin{aligned} P &= \frac{1.78}{0.8} \\ &= 2.225 \\ &\approx 2.23 \end{aligned}$$

Since it is not possible to buy part of a can of paint, 3 cans of paint will be needed.

2. a) 

b) 

c) Accept any version of the logo with reasonable justification. Students may argue for any one of the three sizes. However, logos are not usually the full size of a postcard. Depending on the amount of text on the postcard as well as other graphics, the smaller version may be preferable. Example: I recommend the 0.5 reduction of the logo. I plan to include a certain amount of text to promote the tourist tour and do not want to make the postcard appear crowded with too much content.

d)
$$\frac{6}{15} = \frac{t}{1.8}$$
$$(2.7)\frac{6}{15} = (2.7)\frac{t}{1.8}$$
$$(1.8)6 = (1.5)t$$
$$0.8 = (1.5)t$$
$$\frac{10.8}{1.5} = \frac{1.5}{1.5}t$$
$$7.2 = t$$

The totem pole is 7.2 m high.

3. a) The circulation for June is approximately 525 000 or 526 000 magazines.

b) No. The graph represents discrete data. Therefore, it is unreasonable to interpolate or extrapolate values on the graph since there are no values between the points or beyond the points, respectively.

c) $c = 5m + 500$, where c is the total circulation after m months.

d)
$$\frac{500+505+510+515+520+525+530+535+540+545+550+555}{12}$$
$$= 527.5 \times 1000$$
$$= 527\,500$$

The average circulation was 527 500 magazines for the 12-month period.

e) Example: I predict the circulation will start to decline after the Olympics as people become less interested in the Canadian athletes associated with this event.

f) 17% = 0.17; 0.17 x 322 = 54.74. Based on the survey, approximately 55 people bought the magazine. Students may say that since it is not reasonable to talk about fractions of people, 54 people bought the magazine.

4. a) $(3x^2 - x - 3) - (-x^2 - 2x + 6)$

b) $3x^2 - x - 3 + x^2 + 2x - 6)$
$= 4x^2 + x - 9$

c) Example: $x^2 + x + 7$

d) Answers will vary depending on the answer to part c). Note that a student who gives an incorrect polynomial in part c) but represents it correctly in part d), will receive full credit for part d).
Example: $x^2 + x + 7$

e) $(2x + 3)(-2x)$

f) $\frac{-4x^2 + 4x}{-2x} = 2x - 2$