Math 1201 Indepth Review for Midterm January 2015

Multiple Choice

Identify the choice that best completes the statement or answers the question.

____ 1. Convert 24 yd. to feet.
a. 288 ft. b. 72 ft. c. 2 ft. d. 8 ft.

____ 2. Convert 7 yd. to inches.
a. 21 in. b. 252 in. c. 43 in. d. 84 in.

____ 3. Convert 100 in. to yards, feet, and inches.
a. 4 yd. 2 ft. 2 in.
b. 2 yd. 2 ft. 4 in.
c. 1 yd. 1 ft. 4 in.
d. 4 yd. 0 ft. 4 in.

____ 4. Nancy has 7 yd. of material. She wants to make curtains that are 18 in. wide. How many curtains can Nancy make?
a. 92 b. 14 c. 4 d. 1

____ 5. Which referent could you use for 1 m?
a. The width of a computer keyboard
b. The length of a dinner fork
c. The length of your stride
d. The width of a classroom in your school

____ 6 A). Which referent could you use for 1 cm?
a. The depth of a kitchen sink
b. The length of a public swimming pool
c. The width of your shortest finger
d. The length of a walking stick

6B) Convert 180 cm to the nearest inch 6C) 176 cm to ft., inches.

____ 7. Which referent could you use for 1 km?
a. The distance equal to $2\frac{1}{2}$ laps on an oval running track
b. The length of an iPod
c. The length of a snowboard
d. The length of your arm span

____ 8. Which referent could you use for 1 mm?
a. The width of the head of an ant
b. The diameter of a beach ball
c. The distance between British Columbia and Manitoba
d. The length of a sheet of loose-leaf paper

____ 9. Which referent could you use for 1 yd.?
a. The width of your shortest finger
b. The length of a screwdriver
c. The height of the kitchen counter above the floor
d. The length of a football field

____ 10. Which referent could you use for 1 in.?
a. The distance from where you are now to the nearest restaurant
b. The diameter of a bicycle wheel
c. The length of your calculator
d. The width of your largest toe

____ 11. Which referent could you use for 1 mi.?
a. The length of a salmon
b. The height of a grizzly bear standing on its hind legs
c. The distance equal to 4 laps on an oval running track
d. The thickness of a sheet of loose-leaf paper

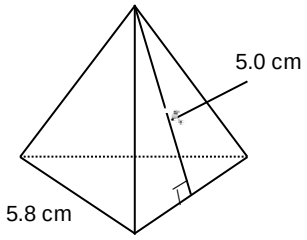
____ 12. Which SI unit is most appropriate for measuring the width of your desk?
a. Kilometres b. Centimetres c. Metres d. Millimetres

____ 13. Which SI unit is most appropriate for measuring the distance between your school and the nearest airport?
a. Centimetres b. Metres c. Millimetres d. Kilometres

____ 14. Which imperial unit is most appropriate for measuring the length of a hockey rink?
a. Miles b. Feet c. Yards d. Inches

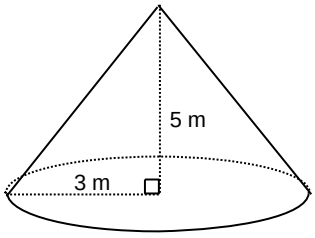
____ 15. Which imperial unit is most appropriate for measuring the width of a snowboard?
a. Miles b. Inches c. Feet d. Yards

____ 16. Determine the surface area of this regular tetrahedron to the nearest square centimetre.



a. 29 cm^2 b. 116 cm^2 c. 58 cm^2 d. 44 cm^2

____ 17. Determine the surface area of this right cone to the nearest square metre.



a. 74 m^2 b. 55 m^2 c. 75 m^2 d. 83 m^2

____ 18. The lateral area of a cone is 198.6 cm^2. The diameter of the cone is 10.2 cm. Determine the height of the cone to the nearest tenth of a centimetre.
a. 8.8 cm b. 11.3 cm c. 8.0 cm d. 12.4 cm

____ 19. A right pyramid has a square base with side length 12 m and a height of 7 m. Calculate the surface area of the pyramid to the nearest square metre.

a. 312 m^2 b. 443 m^2 c. 664 m^2 d. 365 m^2

____ 20. The surface area of a right cone is 400.2 m^2. The radius of the cone is 6.0 m. Determine the height of the cone to the nearest metre.

a. 14 m b. 16 m c. 15 m d. 13 m

____ 21. The radius of a volleyball is approximately 11 cm. Determine the surface area of a volleyball to the nearest square centimetre.

a. 6082 cm^2 b. 1521 cm^2 c. 380 cm^2 d. 5575 cm^2

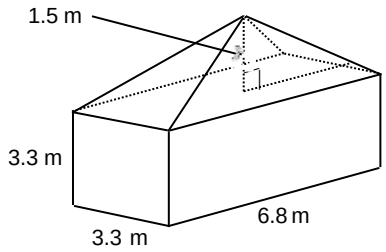
____ 22. The surface area of a tennis ball is approximately 23 square inches. What is the diameter of the tennis ball to the nearest inch?

a. 3 in. b. 1 in. c. 4 in. d. 6 in.

____ 23. A sphere has a surface area of 6.4 m^2. What is the diameter of the sphere to the nearest tenth of a metre?

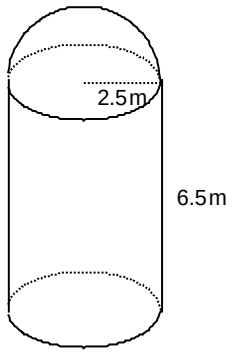
a. 1.4 m b. 2.0 m c. 2.3 m d. 0.7 m

____ 24. Determine the volume of this composite object, which is a right square prism and a right rectangular pyramid, to the nearest tenth of a cubic metre.



a. 85.3 m^3 b. 107.7 m^3 c. 90.7 m^3 d. 514.8 m^3

____ 25. Determine the surface area of this composite object, which is a right cylinder and a hemisphere, to the nearest tenth of a square metre.



a. 200.3 m^2 b. 180.6 m^2 c. 141.4 m^2 d. 161.0 m^2

____ 26. Write the prime factorization of 630.
a. $2 \cdot 5 \cdot 7 \cdot 9$ b. $2 \cdot 5 \cdot 63$ c. $2 \cdot 3^2 \cdot 5 \cdot 7$ d. $2 \cdot 3 \cdot 5 \cdot 7$

____ 27. Determine the greatest common factor of 56 and 88.
a. 77 b. 616 c. 7 d. 8

____ 28. Determine the greatest common factor of 280 and 360.
a. 9 b. 63 c. 2520 d. 40

____ 29. Determine the least common multiple of 10 and 22.
a. 2 b. 55 c. 220 d. 110

____ 30. Determine the least common multiple of 78 and 102.
a. 1326 b. 6 c. 2652 d. 7956

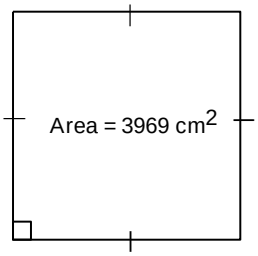
____ 31. Determine the square root of 250 000.
a. 100 b. 63 c. 500 d. 200

____ 32. Determine the cube root of 42 875.
a. 1225 b. 4763.9 c. 207.1 d. 35

____ 33. A cube has volume 15 625 cm^3. What is the surface area of the cube?
a. 132 893.3 cm^2 b. 3750 cm^2 c. 25 cm^2 d. 10 416.7 cm^2

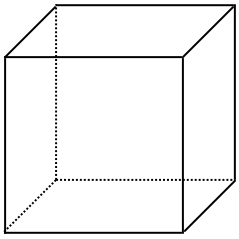
____ 34. Determine the perfect cube whole number closest to 19 479.
a. 19 600 b. 19 683 c. 19 476 d. 17 576

____ 35. Determine the side length of this square.



a. 63 cm b. 15.83 cm c. 992.25 cm d. 441 cm

____ 36. Determine the edge length of this cube.



a. 301.87 cm b. 45 cm c. 6.71 cm d. 3375 cm

_____65. Identify the index of $\sqrt[3]{2^7}$.

a. 2^7 b. 3 c. 7 d. 2

____ 66. Identify the radicand of $\sqrt[6]{4^8}$.

a. 4 b. 4^8 c. 6 d. 8

____ 67. Evaluate $\sqrt[4]{16}$.

a. 2 b. 2.6 c. 16 d. 1.41

____ 68. Evaluate $\sqrt[3]{-64}$.

a. –4 b. impossible c. –12.8 d. 4

____ 69. Evaluate $\sqrt[4]{\frac{256}{625}}$.

a. $\frac{4}{5}$ b. $\frac{4}{25}$ c. $\frac{16}{25}$ d. $\frac{16}{5}$

____ 70. Which of these numbers is rational?

$\sqrt{\frac{4}{169}}$, $\sqrt{48}$, $\sqrt[3]{-16}$, $\sqrt{8.1}$

a. $\sqrt{48}$ b. $\sqrt{8.1}$ c. $\sqrt[3]{-16}$ d. $\sqrt{\frac{4}{169}}$

____ 71. Which of these numbers is irrational?

$\sqrt{48}$, $\sqrt[3]{216}$, $\sqrt{\frac{49}{16}}$, -68

a. -68 b. $\sqrt{48}$ c. $\sqrt[3]{216}$ d. $\sqrt{\frac{49}{16}}$

____ 72. Order these numbers from greatest to least: $\sqrt[3]{99}$, $\sqrt{170}$, $\sqrt[3]{3050}$, $\sqrt{18}$, $\sqrt[3]{51}$

a. $\sqrt{170}$, $\sqrt[3]{99}$, $\sqrt[3]{3050}$, $\sqrt{18}$, $\sqrt[3]{51}$ c. $\sqrt[3]{3050}$, $\sqrt{170}$, $\sqrt[3]{99}$, $\sqrt{18}$, $\sqrt[3]{51}$

b. $\sqrt[3]{3050}$, $\sqrt{18}$, $\sqrt[3]{51}$, $\sqrt{170}$, $\sqrt[3]{99}$ d. $\sqrt[3]{3050}$, $\sqrt{170}$, $\sqrt{18}$, $\sqrt[3]{51}$, $\sqrt[3]{99}$

____ 73. Order these numbers from least to greatest: $\sqrt[3]{75}$, $\sqrt{14}$, $\sqrt[3]{100}$, $\sqrt{17}$, $\sqrt[3]{30}$

a. $\sqrt[3]{75}$, $\sqrt[3]{100}$, $\sqrt{14}$, $\sqrt[3]{30}$, $\sqrt{17}$ c. $\sqrt[3]{100}$, $\sqrt[3]{30}$, $\sqrt{14}$, $\sqrt{17}$, $\sqrt[3]{75}$

b. $\sqrt[3]{30}$, $\sqrt{14}$, $\sqrt{17}$, $\sqrt[3]{75}$, $\sqrt[3]{100}$ d. $\sqrt{17}$, $\sqrt[3]{75}$, $\sqrt[3]{100}$, $\sqrt{14}$, $\sqrt[3]{30}$

____ 74. Which of these numbers is an integer, but not a whole number?

–9, 0, 1, $\sqrt{5}$

a. 0 b. –9 c. $\sqrt{5}$ d. 1

____ 75. Which of these numbers is a natural number?

9, 0, –1, $1.\overline{8}$

a. 9 b. 0 c. $1.\overline{8}$ d. –1

____ 76. To which set(s) of numbers does $-\sqrt{25}$ belong?

I	Natural
II	Integer
III	Rational
IV	Irrational

a. II and III only b. III only c. I, II and III only d. IV only

____ 77. Write $\sqrt{108}$ in simplest form.
a. $3\sqrt{12}$ b. $6\sqrt{3}$ c. $36\sqrt{3}$ d. $3\sqrt{6}$

____ 78. Write $\sqrt[3]{80}$ in simplest form.
a. $10\sqrt[3]{2}$ b. $2\sqrt[3]{10}$ c. $8\sqrt[3]{10}$ d. $4\sqrt[3]{5}$

____ 79. Write $\sqrt[4]{405}$ in simplest form.
a. $3\sqrt[4]{5}$ b. $81\sqrt[4]{5}$ c. $9\sqrt[4]{5}$ d. $5\sqrt[4]{3}$

____ 80. Write $6\sqrt{5}$ as an entire radical.
a. $\sqrt{30}$ b. $\sqrt{150}$ c. $\sqrt{180}$ d. $\sqrt{900}$

____ 81. Write $3\sqrt[3]{4}$ as an entire radical.
a. $\sqrt[3]{108}$ b. $\sqrt[3]{144}$ c. $\sqrt[3]{36}$ d. $\sqrt[3]{192}$

____ 82. Evaluate $64^{\frac{1}{3}}$ without using a calculator.
a. 8 b. 4 c. –4 d. $21\frac{1}{3}$

____ 83. Evaluate $(-27)^{\frac{1}{3}}$ without using a calculator.
a. –3 b. 3 c. –9 d. does not exist

____ 84. Write $42^{\frac{5}{4}}$ as a radical.
a. $\sqrt[5]{42^4}$ b. $\left(\sqrt[4]{42}\right)^5$ c. $\sqrt[125]{42}$ d. $\left(\sqrt[5]{42}\right)^4$

____ 85. Write $\sqrt{\left(\frac{3}{4}\right)^9}$ as a power.
a. $\left(\frac{3}{4}\right)^{-\frac{9}{2}}$ b. $\left(\frac{3}{4}\right)^{\frac{9}{2}}$ c. $\left(\frac{4}{3}\right)^{-\frac{2}{9}}$ d. $\left(\frac{3}{4}\right)^{\frac{2}{9}}$

____ 86. A cube has volume 1200 cubic inches. Write the edge length of the cube as a power.
a. $\sqrt[3]{1200}$ in. b. $1200^{\frac{1}{3}}$ in. c. 1200^3 in. d. 1200^{-3} in.

____ 87. Evaluate $4^{2.5}$.

a. 18
b. 32
c. 1.741 101...
d. 40

____ 88. Evaluate $\left(\frac{125}{8}\right)^{\frac{4}{3}}$.

a. $\frac{625}{4}$
b. 7.858 958...
c. $\frac{625}{16}$
d. $\frac{625}{8}$

____ 89. Evaluate 3^{-2} without using a calculator.

a. $\sqrt{3}$
b. $\frac{1}{6}$
c. $\frac{1}{9}$
d. 9

____ 90. Evaluate $\left(\frac{2}{3}\right)^{-3}$.

a. $-\frac{27}{8}$
b. $-\frac{8}{27}$
c. $\frac{27}{8}$
d. $-\frac{1}{6}$

____ 91. Evaluate $64^{-\frac{4}{3}}$ without using a calculator.

a. $\frac{1}{256}$
b. $\frac{3}{256}$
c. $-\frac{1}{256}$
d. –256

____ 92. Which power with a negative exponent is equivalent to $\frac{125}{512}$?

a. $\left(\frac{8}{5}\right)^{-3}$
b. $\left(\frac{5}{8}\right)^{-2}$
c. $\left(\frac{8}{5}\right)^{-2}$
d. $\left(\frac{5}{8}\right)^{-3}$

____ 93. Simplify $\frac{\left(3.5^{-6}\right)\left(3.5^{5}\right)}{3.5^{-1}}$ by writing as a single power.

a. 3.5^{0}
b. 3.5^{-29}
c. 3.5^{0}
d. 3.5^{-2}

____ 94. Simplify $\frac{12p^3q^{-7}}{15pq^6}$. Write using powers with positive exponents.

a. $\frac{4p^3}{5q^{13}}$
b. $\frac{p^2}{3q^{13}}$
c. $\frac{4p^2}{5q}$
d. $\frac{4p^2}{5q^{13}}$

____ 95. Simplify $\left(64a^{12}b^{15}\right)^{\frac{2}{3}}$.

a. $16a^8b^{10}$
b. $16a^{18}b^{10}$
c. $64a^8b^{10}$
d. $16a^8b^{25}$

____ 96. Simplify $\left(\frac{36x^4y^3}{4x^8y^{-1}}\right)^{\frac{1}{2}}$.

a. $3x^2y^2$ b. $\frac{3y^2}{x^2}$ c. $\frac{3y}{x^2}$ d. $\frac{3y^2}{x^6}$

____ 97. Simplify $\frac{\left(m^3n^{-3}\right)^{-1}}{\left(m^{-2}n\right)^4}$.

a. $\frac{m^5}{n^7}$ b. $\frac{m^5}{n}$ c. $\frac{m^{11}}{n}$ d. $\frac{m^{11}}{n^7}$

____ 98. Simplify $\left(\frac{w^{-15}y^{12}}{-64x^3}\right)^{-\frac{1}{3}}$.

a. $-\frac{w^5x}{4y^4}$ b. $-\frac{4y^4}{w^5x}$ c. $-\frac{y^4}{4w^5x}$ d. $-\frac{4w^5x}{y^4}$

Unit III

____ 37. Factor the binomial $44a + 99a^2$.

a. $a(44 + 99a)$
b. $11(4a + 9a^2)$
c. $11a(4 + 9a)$
d. $22a(2 + 9a)$

____ 38. Factor the binomial $15y^2 - 48y$.

a. $3(5y^2 - 16y)$
b. $3y(5y - 16y)$
c. $y(15y - 48)$
d. $3y(5y - 16)$

____ 39. Factor the trinomial $-24c^3d - 40c^2d^2 - 32cd^3$.

a. $-8cd(3c^2 - 5cd - 4d^2)$
b. $8cd(3c^2 + 5cd + 4d^2)$
c. $8cd(-3c^2 + 5cd + 4d^2)$
d. $-8cd(3c^2 + 5cd + 4d^2)$

____ 40. Factor the binomial $-10m^2 - 40m^4$.

a. $-10m^2(1 + 4m^2)$
b. $-10m^2(4m^2)$
c. $-10(m^2 + 4m^4)$
d. $-5m^2(2 + 8m^2)$

____ 41. Simplify the expression $y^2 + 8y - 6 - 9y^2 - 24y - 26$, then factor.

a. $-8(y^2 - 2y - 4)$
b. $-8(y^2 + 2y + 4)$
c. $-4(2y^2 + 4y + 8)$
d. $-4(2y^2 + 4y + 1)$

____ 42. Identify the greatest common factor of the terms in the trinomial $6s^3t^4 + 12s^4t^2 - 15s^2t^3$.

a. $6s^2t^2$
b. $3s^2t^2$
c. $3s^2t^3$
d. $3s^3t^2$

____ 43. Which of the following trinomials can be represented by a rectangle? Use algebra tiles to check.

a. $y^2 + 3y + 12$
b. $y^2 + 12y + 5$
c. $y^2 + 8y + 15$
d. $y^2 + 14y + 3$

____ 44. Expand and simplify: $(p + 3)(p - 7)$

a. $p^2 - 4p - 21$
b. $p^2 - 10p - 21$
c. $p^2 + 10p - 21$
d. $p^2 + 4p - 21$

____ 45. Expand and simplify: $(4 - r)(7 - r)$

a. $28 - 11r + r^2$
b. $28 - 3r + r^2$
c. $28 + 3r + r^2$
d. $28 + 11r + r^2$

____ 46. Factor: $t^2 + 9t - 36$

a. $(t - 2)(t + 18)$
b. $(t + 2)(t - 18)$
c. $(t + 12)(t - 3)$
d. $(t - 12)(t + 3)$

____ 47. Factor: $v^2 - 13v + 36$

a. $(v + 3)(v + 12)$
b. $(v - 3)(v - 12)$
c. $(v - 4)(v - 9)$
d. $(v + 4)(v + 9)$

____ 48. Factor: $-24 - 2x + x^2$

a. $(6 + x)(-4 + x)$
b. $(3 + x)(-8 + x)$
c. $(-3 + x)(8 + x)$
d. $(-6 + x)(4 + x)$

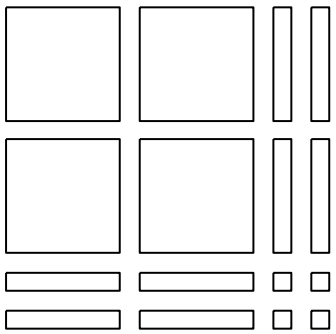
____ 49. Factor: $-3b^2 + 15b + 18$

a. $-3(b - 2)(b + 3)$
b. $-3(b + 2)(b - 3)$
c. $-3(b - 1)(b + 6)$
d. $-3(b + 1)(b - 6)$

____ 50. Factor: $c^2 - 4c - 117$

a. $(c - 9)(c + 13)$
b. $(c - 3)(c + 39)$
c. $(c + 9)(c - 13)$
d. $(c + 3)(c - 39)$

____ 51. Which multiplication sentence does this set of algebra tiles represent?



a. $(2x - 2)(2x + 2)$
b. $(2x^2 + 2)(2x^2 + 2)$
c. $(2x^2 + 2x)(2x^2 + 2x)$
d. $(2x + 2)(2x + 2)$

____ 52. Expand and simplify: $(6p+3)(5p-6)$

a. $30p^2+21p-18$
c. $30p^2+51p-18$
b. $30p^2-21p-18$
d. $30p^2-51p-18$

____ 53. Factor: $25x^2+58x+16$

a. $(25x+4)(x+4)$
c. $(5x+4)(5x+4)$
b. $(25x+8)(x+2)$
d. $(5x+8)(5x+2)$

____ 54. Factor: $7n^2+104n-15$

a. $(7n-1)(n+15)$
c. $(7n+15)(n-1)$
b. $(7n+1)(n-15)$
d. $(7n-15)(n+1)$

____ 55. Expand and simplify: $(8h+3)(7h^2-4h+1)$

a. $56h^3-53h^2-20h+3$
c. $56h^3-11h^2-4h+3$
b. $56h^3+11h^2-12h+3$
d. $56h^3-32h^2+8h+3$

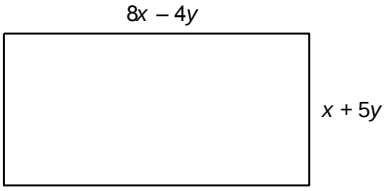
____ 56. Expand and simplify: $(5m-3n)^2$

a. $25m^2-9n^2$
c. $25m^2-30mn+9n^2$
b. $25m^2-15mn+9n^2$
d. $25m^2+9n^2$

____ 57. Expand and simplify: $(4s+9t)(5s-4t-3)$

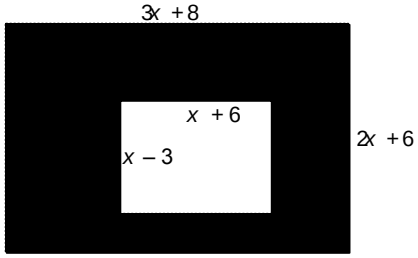
a. $20s^2+29st-12s-36t^2-27t$
c. $20s^2+29st+12s-36t^2+27t$
b. $20s^2+29st-12s+36t^2-27t$
d. $20s^2+61st-12s-36t^2-27t$

____ 58. Which polynomial, written in simplified form, represents the area of this rectangle?



a. $8x^2-36xy-20y^2$
c. $16x^2+72xy-40y^2$
b. $8x^2+22xy-20y^2$
d. $8x^2+36xy-20y^2$

____ 59. Each shape is a rectangle. Write a polynomial, in simplified form, to represent the area of the shaded region.



a. $5x^2+31x+66$
c. $5x^2+31x+30$
b. $5x^2+37x+30$
d. $5x^2+37x+66$

____ 60. Factor: $121a^2+110a+25$

a. $(11a + 5)(11a - 5)$
b. $(121a + 5)(a + 5)$
c. $(11a - 5)^2$
d. $(11a + 5)^2$

____ 61. Factor: $16p^2 - 81q^2$
a. $(4p - 9q)^2$
b. $(4p + 9q)^2$
c. $(16p - 9q)(p - 9q)$
d. $(4p + 9q)(4p - 9q)$

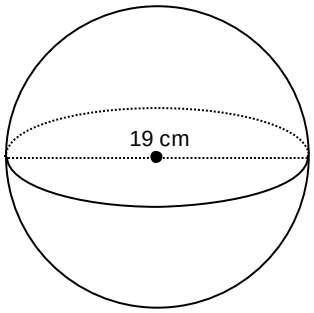
____ 62. Find an integer to replace □ so that this trinomial is a perfect square.
$\square x^2 + 42xy + 9y^2$
a. 7
b. 14
c. 49
d. 196

____ 63. Find an integer to replace □ so that this trinomial is a perfect square.
$64v^2 - \square vw + 81w^2$
a. 144
b. 648
c. 72
d. 18

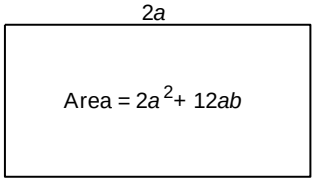
____ 64. Factor: $162 - 2w^4$
a. $(9 - w^2)(18 - w^2)$
b. $2(9 + w^2)(3 + w)(3 - w)$
c. $2(9 - w^2)^2$
d. $2(9 + w^2)^2$

Short and Long Answer

99. Determine the surface area of this sphere to the nearest square centimetre. Determine its volume to the nearest cubic centimetre.



100. Write an expression for the width of this rectangle.



101. Find and correct the errors in this factorization.
$w^2 - 2w - 80 = (w - 8)(w + 10)$

102. Factor: $22n^2 + n - 5$

103. Factor: $14z^2 - 49z + 35$

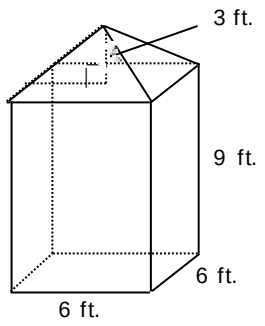
104. Find and correct the errors in this solution.
$(11a + b)(2a - 13b + 4)$
$= 13a^2 - 143ab + 44a - 2ab - 13b^2 + 4b$
$= 13a^2 - 145ab - 13b^2 - 44a + 4b$

105. Write $\sqrt{1694}$ in simplest form.

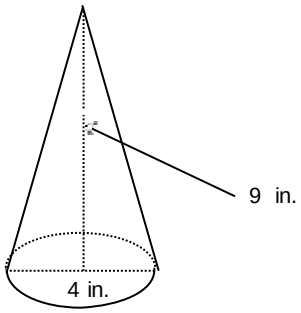
106. Simplify $\frac{-3a^{-3}b^{-7}c^{-6}}{12a^{-6}b^{-3}c^{-3}}$. Write using powers with positive exponents.

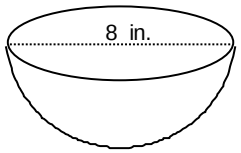
107. Explain how to convert a measurement of 20 000 ft. to miles, yards, and feet.

108. Determine the surface area of this composite object, which is a right square prism and a right square pyramid, to the nearest square foot. Explain your answer.

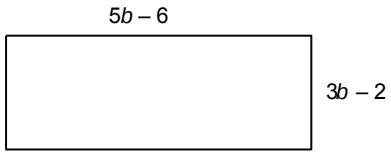


109. The base of this cone is to be glued to the circular face of the hemisphere. Calculate the surface area of the composite object formed, to the nearest square inch.





110. Find the area of the rectangle.



111. Factor $5x^2 + 17x + 6$. Explain your steps.

112. Factor. Explain your steps.
$196x^2 - 16y^2$

113. A square has an area of 1134 m^2. Determine the perimeter of the square. Write the answer as a radical in simplest form.

114. Identify any errors in each simplification. Write a correct solution.

a) $\left(x^{-6}y^6\right)\left(x^{-\frac{1}{6}}y^5\right) = x^{-6} \cdot x^{-\frac{1}{6}} \cdot y^6 \cdot y^5$

$= x^1 \cdot y^{30}$

$= xy^{30}$

b) $\left(\frac{2m^{\frac{1}{4}}}{n^4}\right)^{-4} = -\frac{8m^{-1}}{n^0}$

$= -8m^{-1}$

$= \frac{1}{8m}$

hh

Answer Section

MULTIPLE CHOICE

1. ANS: B PTS: 1 DIF: Easy REF: 1.1 Imperial Measures of Length
   LOC: 10.M2 TOP: Measurement KEY: Procedural Knowledge
2. ANS: B PTS: 1 DIF: Easy REF: 1.1 Imperial Measures of Length
   LOC: 10.M2 TOP: Measurement KEY: Procedural Knowledge
3. ANS: B PTS: 1 DIF: Easy REF: 1.1 Imperial Measures of Length
   LOC: 10.M2 TOP: Measurement KEY: Procedural Knowledge
4. ANS: B PTS: 1 DIF: Moderate REF: 1.1 Imperial Measures of Length
   LOC: 10.M2 TOP: Measurement KEY: Procedural Knowledge
5. ANS: C PTS: 1 DIF: Easy REF: 1.2 Measuring Length and Distance
   LOC: 10.M1 TOP: Measurement KEY: Conceptual Understanding
6. ANS: C PTS: 1 DIF: Easy REF: 1.2 Measuring Length and Distance
   LOC: 10.M1 TOP: Measurement KEY: Conceptual Understanding
7. ANS: A PTS: 1 DIF: Easy REF: 1.2 Measuring Length and Distance
   LOC: 10.M1 TOP: Measurement KEY: Conceptual Understanding
8. ANS: A PTS: 1 DIF: Easy REF: 1.2 Measuring Length and Distance
   LOC: 10.M1 TOP: Measurement KEY: Conceptual Understanding
9. ANS: C PTS: 1 DIF: Easy REF: 1.2 Measuring Length and Distance
   LOC: 10.M1 TOP: Measurement KEY: Conceptual Understanding
10. ANS: D PTS: 1 DIF: Easy REF: 1.2 Measuring Length and Distance
    LOC: 10.M1 TOP: Measurement KEY: Conceptual Understanding
11. ANS: C PTS: 1 DIF: Easy REF: 1.2 Measuring Length and Distance
    LOC: 10.M1 TOP: Measurement KEY: Conceptual Understanding
12. ANS: B PTS: 1 DIF: Easy REF: 1.2 Measuring Length and Distance
    LOC: 10.M1 TOP: Measurement KEY: Conceptual Understanding
13. ANS: D PTS: 1 DIF: Easy REF: 1.2 Measuring Length and Distance
    LOC: 10.M1 TOP: Measurement KEY: Conceptual Understanding
14. ANS: C PTS: 1 DIF: Easy REF: 1.2 Measuring Length and Distance
    LOC: 10.M1 TOP: Measurement KEY: Conceptual Understanding
15. ANS: B PTS: 1 DIF: Easy REF: 1.2 Measuring Length and Distance
    LOC: 10.M1 TOP: Measurement KEY: Conceptual Understanding
16. ANS: C PTS: 1 DIF: Easy
    REF: 1.4 Surface Areas of Right Pyramids and Right Cones LOC: 10.M3
    TOP: Measurement KEY: Procedural Knowledge
17. ANS: D PTS: 1 DIF: Moderate
    REF: 1.4 Surface Areas of Right Pyramids and Right Cones LOC: 10.M3
    TOP: Measurement KEY: Procedural Knowledge
18. ANS: B PTS: 1 DIF: Moderate
    REF: 1.4 Surface Areas of Right Pyramids and Right Cones LOC: 10.M3
    TOP: Measurement KEY: Procedural Knowledge
19. ANS: D PTS: 1 DIF: Moderate
    REF: 1.4 Surface Areas of Right Pyramids and Right Cones LOC: 10.M3
    TOP: Measurement KEY: Procedural Knowledge

20. ANS: A PTS: 1 DIF: Difficult
REF: 1.4 Surface Areas of Right Pyramids and Right Cones LOC: 10.M3
TOP: Measurement KEY: Procedural Knowledge
21. ANS: B PTS: 1 DIF: Easy
REF: 1.6 Surface Area and Volume of a Sphere LOC: 10.M3
TOP: Measurement KEY: Procedural Knowledge
22. ANS: A PTS: 1 DIF: Moderate
REF: 1.6 Surface Area and Volume of a Sphere LOC: 10.M3
TOP: Measurement KEY: Procedural Knowledge
23. ANS: A PTS: 1 DIF: Moderate
REF: 1.6 Surface Area and Volume of a Sphere LOC: 10.M3
TOP: Measurement KEY: Procedural Knowledge
24. ANS: A PTS: 1 DIF: Easy
REF: 1.7 Solving Problems Involving Objects LOC: 10.M3
TOP: Measurement KEY: Procedural Knowledge
25. ANS: D PTS: 1 DIF: Easy
REF: 1.7 Solving Problems Involving Objects LOC: 10.M3
TOP: Measurement KEY: Procedural Knowledge
26. ANS: C PTS: 1 DIF: Easy
REF: 3.1 Factors and Multiples of Whole Numbers LOC: 10.AN1
TOP: Algebra and Number KEY: Procedural Knowledge
27. ANS: D PTS: 1 DIF: Easy
REF: 3.1 Factors and Multiples of Whole Numbers LOC: 10.AN1
TOP: Algebra and Number KEY: Procedural Knowledge
28. ANS: D PTS: 1 DIF: Easy
REF: 3.1 Factors and Multiples of Whole Numbers LOC: 10.AN1
TOP: Algebra and Number KEY: Procedural Knowledge
29. ANS: D PTS: 1 DIF: Easy
REF: 3.1 Factors and Multiples of Whole Numbers LOC: 10.AN1
TOP: Algebra and Number KEY: Procedural Knowledge
30. ANS: A PTS: 1 DIF: Easy
REF: 3.1 Factors and Multiples of Whole Numbers LOC: 10.AN1
TOP: Algebra and Number KEY: Procedural Knowledge
31. ANS: C PTS: 1 DIF: Easy
REF: 3.2 Perfect Squares, Perfect Cubes, and Their Roots LOC: 10.AN1
TOP: Algebra and Number KEY: Procedural Knowledge
32. ANS: D PTS: 1 DIF: Easy
REF: 3.2 Perfect Squares, Perfect Cubes, and Their Roots LOC: 10.AN1
TOP: Algebra and Number KEY: Procedural Knowledge
33. ANS: B PTS: 1 DIF: Moderate
REF: 3.2 Perfect Squares, Perfect Cubes, and Their Roots LOC: 10.AN1
TOP: Algebra and Number KEY: Procedural Knowledge
34. ANS: B PTS: 1 DIF: Easy
REF: 3.2 Perfect Squares, Perfect Cubes, and Their Roots LOC: 10.AN1
TOP: Algebra and Number KEY: Procedural Knowledge
35. ANS: A PTS: 1 DIF: Easy
REF: 3.2 Perfect Squares, Perfect Cubes, and Their Roots LOC: 10.AN1
TOP: Algebra and Number KEY: Procedural Knowledge
36. ANS: B PTS: 1 DIF: Easy

REF: 3.2 Perfect Squares, Perfect Cubes, and Their Roots LOC: 10.AN1
TOP: Algebra and Number KEY: Procedural Knowledge

37. ANS: C PTS: 1 DIF: Easy
REF: 3.3 Common Factors of a Polynomial LOC: 10.AN5
TOP: Algebra and Number KEY: Procedural Knowledge

38. ANS: D PTS: 1 DIF: Easy
REF: 3.3 Common Factors of a Polynomial LOC: 10.AN5
TOP: Algebra and Number KEY: Procedural Knowledge

39. ANS: D PTS: 1 DIF: Moderate
REF: 3.3 Common Factors of a Polynomial LOC: 10.AN5
TOP: Algebra and Number KEY: Procedural Knowledge

40. ANS: A PTS: 1 DIF: Easy
REF: 3.3 Common Factors of a Polynomial LOC: 10.AN5
TOP: Algebra and Number KEY: Procedural Knowledge

41. ANS: B PTS: 1 DIF: Moderate
REF: 3.3 Common Factors of a Polynomial LOC: 10.AN5
TOP: Algebra and Number KEY: Procedural Knowledge

42. ANS: B PTS: 1 DIF: Easy
REF: 3.3 Common Factors of a Polynomial LOC: 10.AN5
TOP: Algebra and Number KEY: Procedural Knowledge

43. ANS: C PTS: 1 DIF: Easy
REF: 3.4 Modelling Trinomials as Binomial Products LOC: 10.AN5
TOP: Algebra and Number KEY: Procedural Knowledge

44. ANS: A PTS: 1 DIF: Easy
REF: 3.5 Polynomials of the Form x^2 + bx + c LOC: 10.AN4
TOP: Algebra and Number KEY: Procedural Knowledge

45. ANS: A PTS: 1 DIF: Easy
REF: 3.5 Polynomials of the Form x^2 + bx + c LOC: 10.AN4
TOP: Algebra and Number KEY: Procedural Knowledge

46. ANS: C PTS: 1 DIF: Easy
REF: 3.5 Polynomials of the Form x^2 + bx + c LOC: 10.AN5
TOP: Algebra and Number KEY: Procedural Knowledge

47. ANS: C PTS: 1 DIF: Easy
REF: 3.5 Polynomials of the Form x^2 + bx + c LOC: 10.AN5
TOP: Algebra and Number KEY: Procedural Knowledge

48. ANS: D PTS: 1 DIF: Moderate
REF: 3.5 Polynomials of the Form x^2 + bx + c LOC: 10.AN5
TOP: Algebra and Number KEY: Procedural Knowledge

49. ANS: D PTS: 1 DIF: Moderate
REF: 3.5 Polynomials of the Form x^2 + bx + c LOC: 10.AN5
TOP: Algebra and Number KEY: Procedural Knowledge

50. ANS: C PTS: 1 DIF: Easy
REF: 3.5 Polynomials of the Form x^2 + bx + c LOC: 10.AN5
TOP: Algebra and Number KEY: Procedural Knowledge

51. ANS: D PTS: 1 DIF: Easy
REF: 3.6 Polynomials of the Form ax^2 + bx + c LOC: 10.AN5
TOP: Algebra and Number KEY: Procedural Knowledge

52. ANS: B PTS: 1 DIF: Easy
REF: 3.6 Polynomials of the Form ax^2 + bx + c LOC: 10.AN4

TOP: Algebra and Number KEY: Procedural Knowledge

53. ANS: B PTS: 1 DIF: Easy
REF: 3.6 Polynomials of the Form ax^2 + bx + c LOC: 10.AN5
TOP: Algebra and Number KEY: Procedural Knowledge

54. ANS: A PTS: 1 DIF: Easy
REF: 3.6 Polynomials of the Form ax^2 + bx + c LOC: 10.AN5
TOP: Algebra and Number KEY: Procedural Knowledge

55. ANS: C PTS: 1 DIF: Easy REF: 3.7 Multiplying Polynomials
LOC: 10.AN4 TOP: Algebra and Number KEY: Procedural Knowledge

56. ANS: C PTS: 1 DIF: Easy REF: 3.7 Multiplying Polynomials
LOC: 10.AN4 TOP: Algebra and Number KEY: Procedural Knowledge

57. ANS: A PTS: 1 DIF: Easy REF: 3.7 Multiplying Polynomials
LOC: 10.AN4 TOP: Algebra and Number KEY: Procedural Knowledge

58. ANS: D PTS: 1 DIF: Moderate REF: 3.7 Multiplying Polynomials
LOC: 10.AN4 TOP: Algebra and Number KEY: Procedural Knowledge

59. ANS: A PTS: 1 DIF: Moderate REF: 3.7 Multiplying Polynomials
LOC: 10.AN4 TOP: Algebra and Number KEY: Procedural Knowledge

60. ANS: D PTS: 1 DIF: Easy REF: 3.8 Factoring Special Polynomials
LOC: 10.AN5 TOP: Algebra and Number KEY: Procedural Knowledge

61. ANS: D PTS: 1 DIF: Easy REF: 3.8 Factoring Special Polynomials
LOC: 10.AN5 TOP: Algebra and Number KEY: Procedural Knowledge

62. ANS: C PTS: 1 DIF: Easy REF: 3.8 Factoring Special Polynomials
LOC: 10.AN5 TOP: Algebra and Number KEY: Procedural Knowledge

63. ANS: A PTS: 1 DIF: Easy REF: 3.8 Factoring Special Polynomials
LOC: 10.AN5 TOP: Algebra and Number KEY: Procedural Knowledge

64. ANS: B PTS: 1 DIF: Moderate REF: 3.8 Factoring Special Polynomials
LOC: 10.AN5 TOP: Algebra and Number KEY: Procedural Knowledge

65. ANS: B PTS: 1 DIF: Easy REF: 4.1 Estimating Roots
LOC: 10.AN2 TOP: Algebra and Number KEY: Procedural Knowledge

66. ANS: B PTS: 1 DIF: Easy REF: 4.1 Estimating Roots
LOC: 10.AN2 TOP: Algebra and Number KEY: Procedural Knowledge

67. ANS: A PTS: 1 DIF: Easy REF: 4.1 Estimating Roots
LOC: 10.AN2 TOP: Algebra and Number KEY: Conceptual Understanding

68. ANS: A PTS: 1 DIF: Easy REF: 4.1 Estimating Roots
LOC: 10.AN2 TOP: Algebra and Number KEY: Conceptual Understanding

69. ANS: A PTS: 1 DIF: Easy REF: 4.1 Estimating Roots
LOC: 10.AN2 TOP: Algebra and Number KEY: Conceptual Understanding

70. ANS: D PTS: 1 DIF: Easy REF: 4.2 Irrational Numbers
LOC: 10.AN2 TOP: Algebra and Number KEY: Procedural Knowledge

71. ANS: B PTS: 1 DIF: Easy REF: 4.2 Irrational Numbers
LOC: 10.AN2 TOP: Algebra and Number KEY: Procedural Knowledge

72. ANS: C PTS: 1 DIF: Moderate REF: 4.2 Irrational Numbers
LOC: 10.AN2 TOP: Algebra and Number KEY: Conceptual Understanding

73. ANS: B PTS: 1 DIF: Moderate REF: 4.2 Irrational Numbers
LOC: 10.AN2 TOP: Algebra and Number KEY: Conceptual Understanding

74. ANS: B PTS: 1 DIF: Easy REF: 4.2 Irrational Numbers
LOC: 10.AN2 TOP: Algebra and Number KEY: Procedural Knowledge

75. ANS: A PTS: 1 DIF: Easy REF: 4.2 Irrational Numbers
LOC: 10.AN2 TOP: Algebra and Number KEY: Procedural Knowledge

76. ANS: A PTS: 1 DIF: Easy REF: 4.2 Irrational Numbers
LOC: 10.AN2 TOP: Algebra and Number KEY: Conceptual Understanding
77. ANS: B PTS: 1 DIF: Easy REF: 4.3 Mixed and Entire Radicals
LOC: 10.AN2 TOP: Algebra and Number KEY: Conceptual Understanding
78. ANS: B PTS: 1 DIF: Easy REF: 4.3 Mixed and Entire Radicals
LOC: 10.AN2 TOP: Algebra and Number KEY: Conceptual Understanding
79. ANS: A PTS: 1 DIF: Easy REF: 4.3 Mixed and Entire Radicals
LOC: 10.AN2 TOP: Algebra and Number KEY: Conceptual Understanding
80. ANS: C PTS: 1 DIF: Easy REF: 4.3 Mixed and Entire Radicals
LOC: 10.AN2 TOP: Algebra and Number KEY: Conceptual Understanding
81. ANS: A PTS: 1 DIF: Easy REF: 4.3 Mixed and Entire Radicals
LOC: 10.AN2 TOP: Algebra and Number KEY: Conceptual Understanding
82. ANS: B PTS: 1 DIF: Easy
REF: 4.4 Fractional Exponents and Radicals LOC: 10.AN3
TOP: Algebra and Number KEY: Conceptual Understanding
83. ANS: A PTS: 1 DIF: Easy
REF: 4.4 Fractional Exponents and Radicals LOC: 10.AN3
TOP: Algebra and Number KEY: Conceptual Understanding
84. ANS: B PTS: 1 DIF: Easy
REF: 4.4 Fractional Exponents and Radicals LOC: 10.AN3
TOP: Algebra and Number KEY: Conceptual Understanding
85. ANS: B PTS: 1 DIF: Easy
REF: 4.4 Fractional Exponents and Radicals LOC: 10.AN3
TOP: Algebra and Number KEY: Conceptual Understanding
86. ANS: B PTS: 1 DIF: Easy
REF: 4.4 Fractional Exponents and Radicals LOC: 10.AN3
TOP: Algebra and Number KEY: Conceptual Understanding
87. ANS: B PTS: 1 DIF: Moderate
REF: 4.4 Fractional Exponents and Radicals LOC: 10.AN3
TOP: Algebra and Number KEY: Conceptual Understanding
88. ANS: C PTS: 1 DIF: Moderate
REF: 4.4 Fractional Exponents and Radicals LOC: 10.AN3
TOP: Algebra and Number KEY: Conceptual Understanding
89. ANS: C PTS: 1 DIF: Easy
REF: 4.5 Negative Exponents and Reciprocals LOC: 10.AN3
TOP: Algebra and Number KEY: Conceptual Understanding
90. ANS: C PTS: 1 DIF: Moderate
REF: 4.5 Negative Exponents and Reciprocals LOC: 10.AN3
TOP: Algebra and Number KEY: Conceptual Understanding
91. ANS: A PTS: 1 DIF: Easy
REF: 4.5 Negative Exponents and Reciprocals LOC: 10.AN3
TOP: Algebra and Number KEY: Conceptual Understanding
92. ANS: A PTS: 1 DIF: Easy
REF: 4.5 Negative Exponents and Reciprocals LOC: 10.AN3
TOP: Algebra and Number KEY: Conceptual Understanding
93. ANS: A PTS: 1 DIF: Easy REF: 4.6 Applying the Exponent Laws
LOC: 10.AN3 TOP: Algebra and Number KEY: Conceptual Understanding
94. ANS: D PTS: 1 DIF: Easy REF: 4.6 Applying the Exponent Laws
LOC: 10.AN3 TOP: Algebra and Number KEY: Conceptual Understanding

95. ANS: A PTS: 1 DIF: Easy REF: 4.6 Applying the Exponent Laws
LOC: 10.AN3 TOP: Algebra and Number KEY: Conceptual Understanding
96. ANS: B PTS: 1 DIF: Moderate REF: 4.6 Applying the Exponent Laws
LOC: 10.AN3 TOP: Algebra and Number KEY: Conceptual Understanding
97. ANS: B PTS: 1 DIF: Moderate REF: 4.6 Applying the Exponent Laws
LOC: 10.AN3 TOP: Algebra and Number KEY: Conceptual Understanding
98. ANS: D PTS: 1 DIF: Moderate REF: 4.6 Applying the Exponent Laws
LOC: 10.AN3 TOP: Algebra and Number KEY: Conceptual Understanding

SHORT ANSWER

99. ANS:
$SA = 1134 \text{ cm}^2$
$V = 3591 \text{ cm}^3$

PTS: 1 DIF: Moderate REF: 1.6 Surface Area and Volume of a Sphere
LOC: 10.M3 TOP: Measurement KEY: Procedural Knowledge

100. ANS:
$a + 6b$

PTS: 1 DIF: Moderate REF: 3.3 Common Factors of a Polynomial
LOC: 10.AN5 TOP: Algebra and Number KEY: Procedural Knowledge

101. ANS:
$w^2 - 2w - 80 = (w + 8)(w - 10)$

PTS: 1 DIF: Moderate REF: 3.5 Polynomials of the Form x^2 + bx + c
LOC: 10.AN5 TOP: Algebra and Number KEY: Procedural Knowledge

102. ANS:
$(11n - 5)(2n + 1)$

PTS: 1 DIF: Easy REF: 3.6 Polynomials of the Form ax^2 + bx + c
LOC: 10.AN5 TOP: Algebra and Number KEY: Procedural Knowledge

103. ANS:
$7(2z - 5)(z - 1)$

PTS: 1 DIF: Moderate REF: 3.6 Polynomials of the Form ax^2 + bx + c
LOC: 10.AN5 TOP: Algebra and Number KEY: Procedural Knowledge

104. ANS:
$(11a + b)(2a - 13b + 4)$
$= 22a^2 - 143ab + 44a + 2ab - 13b^2 + 4b$
$= 22a^2 - 141ab + 44a - 13b^2 + 4b$

PTS: 1 DIF: Moderate REF: 3.7 Multiplying Polynomials
LOC: 10.AN4 TOP: Algebra and Number KEY: Procedural Knowledge

105. ANS:
$11\sqrt{14}$

PTS: 1 DIF: Easy REF: 4.3 Mixed and Entire Radicals

LOC: 10.AN2 TOP: Algebra and Number KEY: Conceptual Understanding

106. ANS:

$$-\frac{a^3}{4b^4c^3}$$

PTS: 1 DIF: Easy REF: 4.6 Applying the Exponent Laws
LOC: 10.AN3 TOP: Algebra and Number KEY: Conceptual Understanding

PROBLEM

107. ANS:
Since 5280 ft. = 1 mi., to convert feet to miles, divide by 5280.

20 000 ft. = $\frac{20\,000}{5280}$ mi.

20 000 ft. = $3\frac{4160}{5280}$ mi.

20 000 ft. = 3 mi. 4160 ft.

Since 3 ft. = 1 yd., to convert feet to yards, divide by 3.

4160 ft. = $\frac{4160}{3}$ yd.

4160 ft. = $1386\frac{2}{3}$ yd.

4160 ft. = 1386 yd. 2 ft.

So, 20 000 ft. = 3 mi. 1386 yd. 2 ft.

PTS: 1 DIF: Moderate REF: 1.1 Imperial Measures of Length
LOC: 10.M2 TOP: Measurement
KEY: Communication | Problem-Solving Skills

108. ANS:
The surface area of the composite object is: area of the 4 rectangular faces of the prism + area of square base of the prism + area of 4 triangular faces of the pyramid

The area of the 4 rectangular faces of the prism, in square feet, is:

$A = 4(6)(9)$

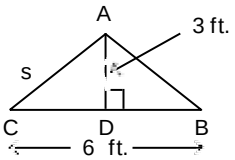
$A = 216$

The area of the square base of the prism, in square feet, is:

$A = (6)(6)$

$A = 36$

To determine the surface area of the triangular faces, calculate the slant height, *s*.
Sketch a triangle to represent a triangular face.



Use the Pythagorean Theorem in right ΔADB.

$s^2 = AD^2 + BD^2$

$s^2 = 3^2 + 3^2$

$s^2 = 9 + 9$

$s^2 = 18$

$s = \sqrt{18}$

The area of the 4 triangular faces of the pyramid, in square feet, is:

$A = 4(\frac{1}{2})(6)(\sqrt{18})$

$A = 50.9116...$

The surface area of the composite object, in square feet, is:

$216 + 36 + 50.9116... = 302.9116...$

The surface area of the composite object is approximately 303 square feet.

PTS: 1 DIF: Difficult REF: 1.7 Solving Problems Involving Objects
LOC: 10.M3 TOP: Measurement
KEY: Communication | Problem-Solving Skills

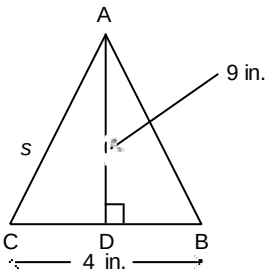
109. ANS:

Surface area of the composite object = lateral area of cone + surface area of hemisphere – area of base of cone

Use the formula to determine the lateral area of the cone.

Let *s* represent the slant height.

Use the Pythagorean Theorem in right ΔADB.



$s^2 = AD^2 + BD^2$

$s^2 = 9^2 + 2^2$

$s^2 = 81 + 4$

$s^2 = 85$

$s = \sqrt{85}$

The lateral area of the cone, in square inches, is:

$SA = \pi rs$

$SA = \pi(2)(\sqrt{85})$

$SA = 57.9281...$

Use the formula to find the surface area of the hemisphere.
The radius, *r*, is:

$r = \frac{1}{2}(8 \text{ in.})$

$r = 4 \text{ in.}$

$SA = \frac{1}{2}(4\pi r^2) + \pi r^2$

$SA = 3\pi r^2$

$SA = 3\pi(4)^2$

$SA = 150.7964\ldots$

The area of the base of the cone, in square inches, is:

$SA = \pi r^2$

$SA = \pi(2)^2$

$SA = 12.5663\ldots$

The surface area of the composite object is:
$57.9281\ldots + 150.7964\ldots - 12.5663\ldots = 196.1581\ldots$
The surface area of the composite object is approximately 196 square inches.

PTS: 1 DIF: Difficult REF: 1.7 Solving Problems Involving Objects
LOC: 10.M3 TOP: Measurement KEY: Problem-Solving Skills

110. ANS:
Use the formula for the area, *A*, of a rectangle.

$A = l \times w$

$A = (5b - 6)(3b - 2)$

Use the distributive property.

$A = 5b(3b - 2) + (-6)(3b - 2)$

$A = 15b^2 - 10b - 18b + 12$

$A = 15b^2 - 28b + 12$

The area of the rectangle is $15b^2 - 28b + 12$ square units.

PTS: 1 DIF: Moderate REF: 3.6 Polynomials of the Form ax^2 + bx + c
LOC: 10.AN5 TOP: Algebra and Number KEY: Problem-Solving Skills

111. ANS:
Sample answer:

$5x^2 + 17x + 6$

To factor this trinomial, find factors of the form $(ax + b)(cx + d)$.

The coefficient of x^2 is 5, so the coefficients of the 1st terms in the binomial are factors of 5, which are 1 and 5.

So, the binomial has the form $(x + b)(5x + d)$.

The constant term in the trinomial is 6, so the 2nd terms in the binomial are factors of 6, which are 6 and 1, or 2 and 3.

So, the binomials could be:
$(x + 6)(5x + 1)$ or $(x + 2)(5x + 3)$ or
$(x + 1)(5x + 6)$ or $(x + 3)(5x + 2)$

Check which of the 4 binomial products above has its *x*-term equal to $17x$.

$(x + 6)(5x + 1) = 5x^2 + 31x + 6$
$(x + 2)(5x + 3) = 5x^2 + 13x + 6$
$(x + 1)(5x + 6) = 5x^2 + 11x + 6$
$(x + 3)(5x + 2) = 5x^2 + 17x + 6$

This is the correct trinomial.
So, $5x^2 + 17x + 6 = (x + 3)(5x + 2)$

PTS: 1 DIF: Moderate REF: 3.6 Polynomials of the Form ax^2 + bx + c
LOC: 10.AN5 TOP: Algebra and Number
KEY: Communication | Problem-Solving Skills

112. ANS:
$196x^2 - 16y^2$

As written, each term of the binomial is not a perfect square. But the terms have a common factor 4. Remove this common factor.

$196x^2 - 16y^2$
$= 4(49x^2 - 4y^2)$

Write each term in the binomial as a perfect square.

$4(49x^2 - 4y^2) = 4\left[(7x)^2 - (2y)^2 \right]$ Write these terms in binomial factors.
$= 4(7x - 2y)(7x + 2y)$

PTS: 1 DIF: Moderate REF: 3.8 Factoring Special Polynomials
LOC: 10.AN5 TOP: Algebra and Number
KEY: Communication | Problem-Solving Skills

113. ANS:
The formula for the area, *A*, of a square is $A = s^2$, where *s* is the side length of the square.

$1134 = s^2$

$\sqrt{1134} = s$

As a mixed radical in simplest form:

$s = \sqrt{81 \cdot 14}$

$s = 9\sqrt{14}$

The formula for the perimeter, *P*, of a square is $P = 4s$.

$P = 4\left(9\sqrt{14}\right)$

$P = 36\sqrt{14}$

The perimeter of the square is $36\sqrt{14}$ m.

PTS: 1 DIF: Moderate REF: 4.3 Mixed and Entire Radicals
LOC: 10.AN2 TOP: Algebra and Number KEY: Problem-Solving Skills

114. ANS:

a) There is an error in the second line. When multiplying powers with the same base, the exponents should have been added, not multiplied.
A correct solution:

$$\left(x^{-6}y^{6}\right)\left(x^{-\frac{1}{6}}y^{5}\right) = x^{-6} \cdot x^{-\frac{1}{6}} \cdot y^{6} \cdot y^{5}$$

$$= x^{-\frac{37}{6}}y^{11}$$

$$= \frac{y^{11}}{x^{\frac{37}{6}}}$$

b) There are two errors in the first line. The coefficient 2 was incorrectly multiplied by the exponent –4. And, the exponent of the variable *n* was added to –4 instead of being multiplied by –4.
A correct solution:

$$\left(\frac{2m^{\frac{1}{4}}}{n^{4}}\right)^{-4} = \frac{2^{-4}m^{-1}}{n^{-16}}$$

$$= \frac{n^{16}}{2^{4}m^{1}}$$

$$= \frac{n^{16}}{16m}$$

PTS: 1 DIF: Moderate REF: 4.6 Applying the Exponent Laws
LOC: 10.AN3 TOP: Algebra and Number
KEY: Problem-Solving Skills | Communication