Semester 2 - REVIEW
Geometry

NAME _____

1. The measures of two sides of a triangle are 9 and 14. Use an inequality to express the range of the measure of the third side, m.

2. Two sides of a triangle have sides 15 and 23. The length of the third side must be greater than _____ and less than ____.

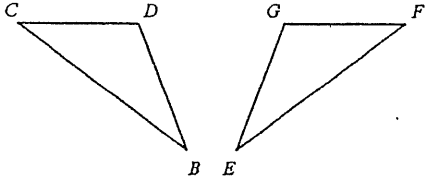
3. Can a triangle be formed from the given lengths? 18 ft, 80 ft, 82 ft

4. $\Delta BCD \cong \Delta EFG$

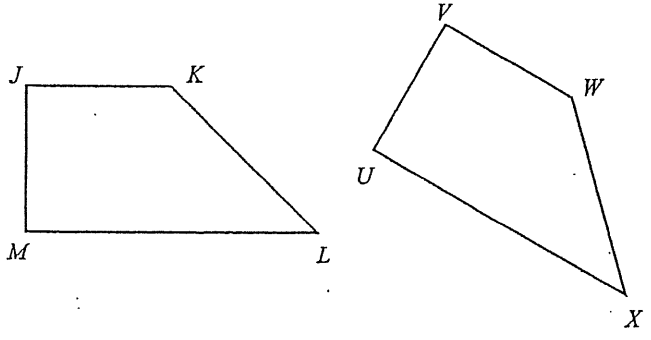
Given: $m\angle CDB = (7x+21)°$; $\overline{FG} = 4y-7$; $m\angle EGF = 126°$; $\overline{CD} = 12$

a. Find the value of x.

b. Find the value of y.



5. If $MJKL$ is congruent to $UVWX$, then --



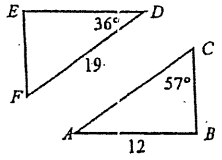
[A] $\overline{ML}$ is congruent to $\overline{VW}$

[B] $\overline{JK}$ is congruent to $\overline{VW}$

[C] $\overline{KL}$ is congruent to $\overline{UV}$

[D] $\overline{MJ}$ is congruent to $\overline{UX}$

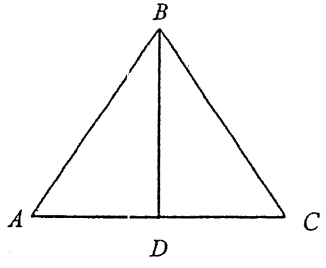
6. Use the figure below in which $\Delta ABC \cong \Delta DEF$. Find the given length or angle measure.



AC

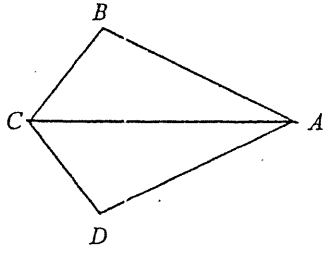
7. Given: $\overline{BD}$ bisects $\overline{AC}$, $\overline{AB} \cong \overline{BC}$

Prove: $\angle C \cong \angle A$

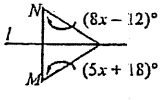


8. Given: $\angle BAC \cong \angle DAC$, $\angle DCA \cong \angle BCA$

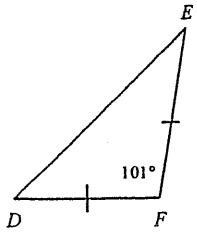
Prove: $\overline{BC} \cong \overline{CD}$



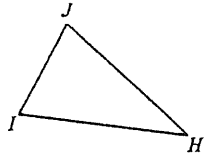
9. Line l is the perpendicular bisector of $\overline{MN}$. Find $m\angle M$.



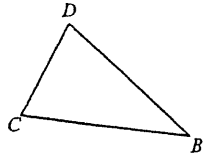
10. Use information in the figure below to find $m\angle D$.



11. Given $m\angle HIJ \cong m\angle HJI$; $\overline{HI} = 3n+3$; $\overline{HJ} = 8n-4$; $\overline{IJ} = 7$ find HJ.

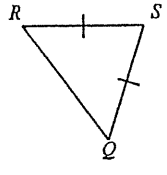


12. Given $m\angle BCD = m\angle BDC$; $\overline{BC} = 5n+6$; $\overline{BD} = 6n-4$; $\overline{CD} = 8$ find BD.

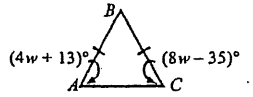


[A] $BD = 10$ [B] $BD = \frac{32}{11}$ [C] $BD = 56$ [D] $BD = 52$

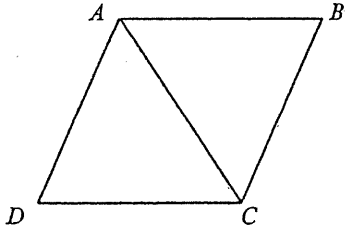
13. Given $m\angle QRS = (80-4x)°$; $m\angle RQS = (4x)°$; find $\angle QSR$.



14. Find the value of w and $m\angle B$.



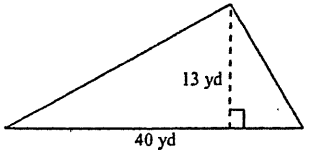
15. Given: $ABCD$ is a rhombus.
Prove: $\Delta BCA \cong \Delta DAC$



16. In rhombus $ABCD$, $AB = 7$ and $AC = 12$. Find BD to the nearest tenth. [A] 4.9 [B] 19.5 [C] 18.3 [D] 7.2

Find the area.

17.



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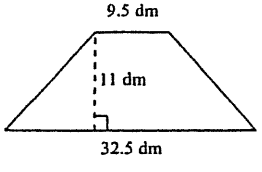


19. In rhombus $ABCD$, $AB = 10$ and $AC = 16$. Find the area of the rhombus to the nearest tenth.

[A] 126.5 [B] 124.9 [C] 100.7 [D] 96.0

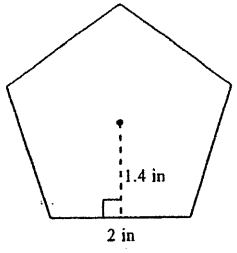
Find the area of the polygon.

20. a right triangle with base 6 in. and hypotenuse 10 in.

21. an isosceles triangle with base 48 cm and perimeter 98 cm

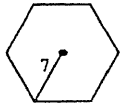
22. Find the area of a regular hexagon with side 8.

23. Find the area of the regular polygon.

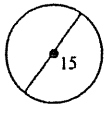


Find the area of the regular polygon or circle.

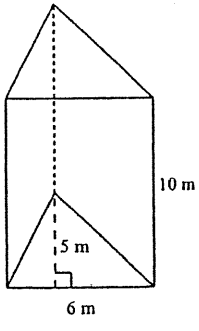
24.



25.



26. Find the volume of the triangular prism.



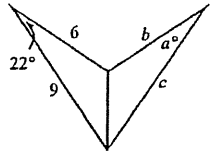
27. Find the volume of a cube 4 inches on each side.

28. Find the surface area of a cylindrical water tank that is 14 meters tall and has a diameter of 12 meters. Use 3.14 for π.

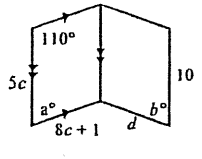
29. Find the volume and surface area of the prism or cylinder. Round answers to the nearest tenth. a cylinder with diameter 6 and height 5

The diagram shows a polygon and its image after a reflection. Find the value of each variable.

30.



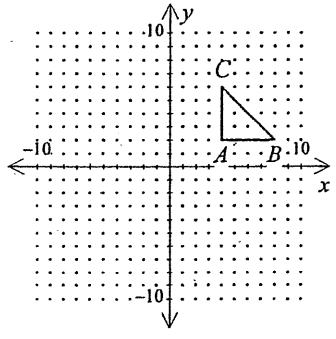
31.



32. What is the reflection image of (3, –9) over the y-axis?

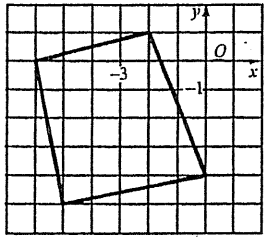
33. What is the translation image of $(5,\ 4)$ after the translation $(x,\ y) \rightarrow (x+1,\ y+4)$?

34. Find the image of ΔABC after the glide reflection $(a,\ b) \rightarrow (a+3,\ b+2)$ over the line $x = 1$.

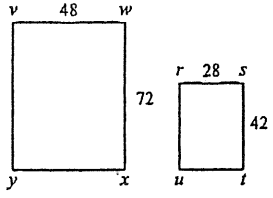


35. Graph $\overline{AB}$ with $A(1, -3)$ and $B(-4, -4)$. Then graph its dilation with a scale factor of 2.5.

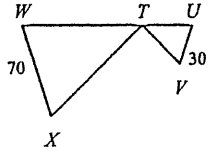
36. Draw the image of the given figure after a dilation with center O and the given scale factor. scale factor: $\frac{1}{2}$



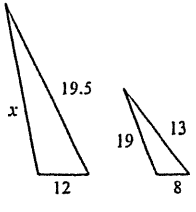
37. Rectangle $rstu$ is a reduction of rectangle $vwxy$. What is the scale factor?



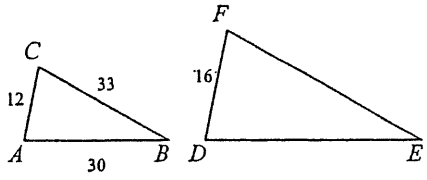
38. Triangle TWX is an enlargement of triangle TUV. What is the scale factor?



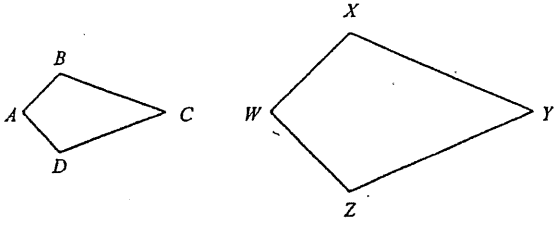
39. The triangles below are similar. Find the length of x.



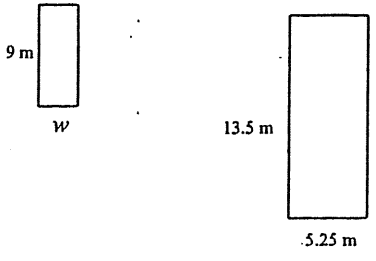
40. Find the perimeter of ΔDEF if $\Delta ABC \sim \Delta DEF$.



41. The measures of the corresponding sides of the polygons are proportional. If $AD = 2$, $DC = 2$, and $WZ = 7$, find YZ.



42. The two rectangles are similar. Find the width of the smaller rectangle?



[A] 70 m [B] 18.75 m [C] 1.5 m [D] 3.5 m

Solve the proportion.

43. $\frac{5}{8} = \frac{x}{60}$

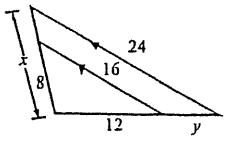
44. $\frac{4.2}{7.5} = \frac{9.8}{y}$

45. $7 : t = t : 63$

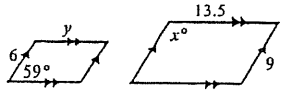
46. Solve the proportion. $\frac{5}{8} = \frac{x}{50}$

The polygons in each pair are similar. Find the value of each variable.

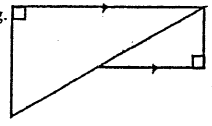
47.



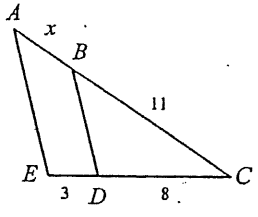
48.



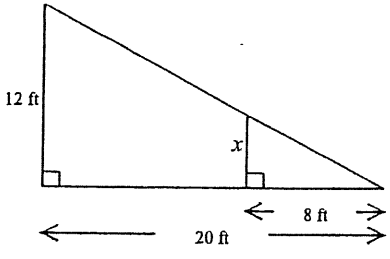
49. Tell whether each pair of triangles is similar. Explain your reasoning.



50. Given $\overline{AE} \parallel \overline{BD}$. Solve for x.



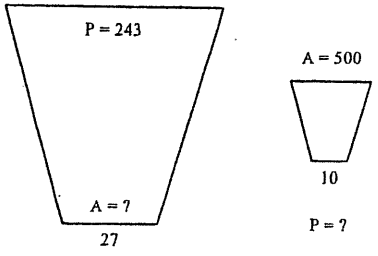
51. Use similar triangles to find x.



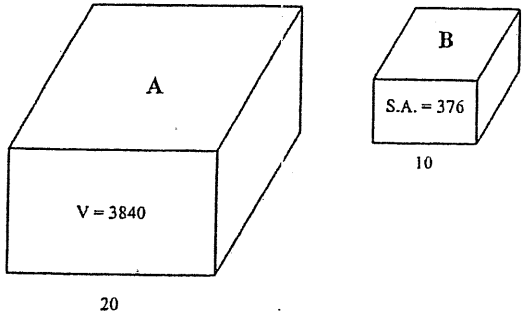
[A] 30 ft [B] 4.8 ft [C] 13.33 ft [D] 1 ft

52. The lengths of two similar rectangles are 2 cm and 5 cm. What is the ratio of the corresponding side lengths? of the areas?

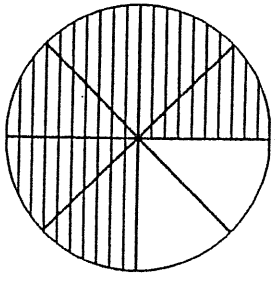
53. The pair of figures are similar. Find the missing values.



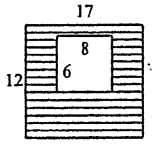
54. Find the surface area of A and the volume of B using the similar prisms below.



55. Find the probability that a randomly thrown dart will hit the shaded region.

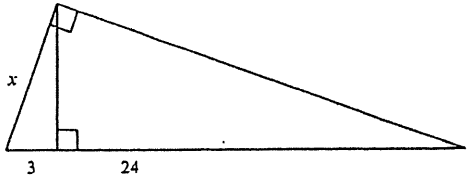


56. If a point is selected at random, what is the probability that it will lie within the shaded rectangular region rather than the unshaded rectangular region?

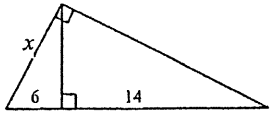


57. Find the probability of hitting the shaded area of the target with a bean tossed at random that hits the target.

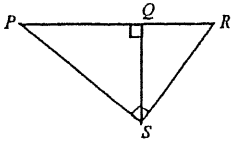
58. Find the value of x.



59. Find the value of x. [A] $2\sqrt{70}$ [B] $2\sqrt{5}$ [C] $2\sqrt{30}$ [D] $2\sqrt{21}$



60. Use the diagram below.



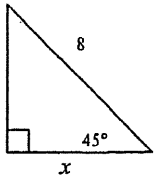
If $QR = 16$ and $PQ = 25$, then $QS =$ ___, $PS =$ ___, and $RS =$ ___.

61. Find the geometric mean of 48 and 3.

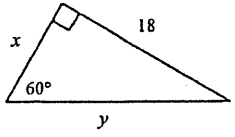
62. Find the geometric mean of the given numbers. 2 and 32

63. The length of the hypotenuse of a 30-60-90 triangle is 27 m. Find the length of the side opposite the 30° angle.

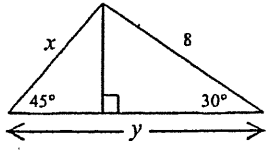
64. Solve for x.



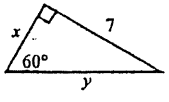
65. Find the value of x and y.

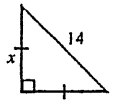


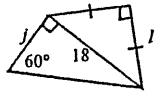
66. Find the value of x and y.



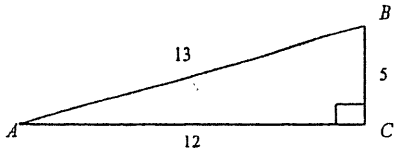
Find the exact value of each variable.

67. 

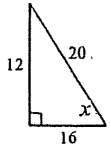
68. 

69. 

0. Find $\tan B$ for the right triangle below:

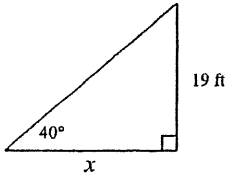


1. Use the diagram to find $\tan x$ as a fraction in simplest form. [A] $\frac{4}{5}$ [B] $\frac{3}{4}$ [C] $\frac{3}{5}$ [D] $1\frac{1}{3}$



2. Find the measure of an acute angle that satisfies the given equation. Round your answers to the nearest tenth of a degree. $\tan Y = \frac{40}{9}$

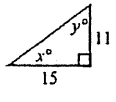
3. A tree 19 feet tall casts a shadow which forms an angle of $40°$ with the ground. How long is the shadow to the nearest hundredth?



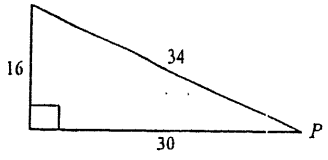
d the value of each variable. Round your answers to the nearest tenth.

4.

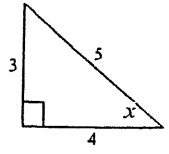
5.



76. Find $\sin P$.



77. Use the diagram to find $\sin x$ as a fraction in simplest form.



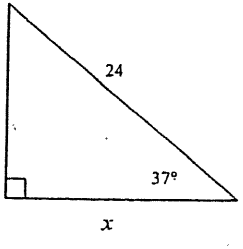
[A] $\frac{3}{5}$ [B] $\frac{4}{5}$ [C] $1\frac{1}{3}$ [D] $\frac{3}{4}$

78. Find the measure of an acute angle that satisfies the given equation. Round your answers to the nearest tenth of a degree. $\cos Z = \frac{12}{13}$

79. Find the angle whose cosine is 0.7314.

80. Find the angle whose sin is 0.5878.

81. Find x, to the nearest hundredth.



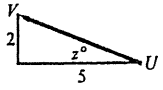
82. Find the ordered pair that represents the vector from $G(8, 13)$ to $H(-11, 4)$.

In component form, $\overrightarrow{AB} = (-2, 1)$, $\overrightarrow{CD} = (4, 3)$, and $\overrightarrow{EF} = (2, -4)$. Use the components to find each vector sum.

83. $\overrightarrow{EF} + \overrightarrow{CD}$

84. $2\overrightarrow{AB} + \overrightarrow{EF}$

85. Express the vector in component form and find the value of the variable.

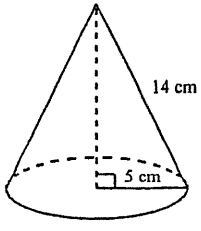


Find the area of the polygon.

86. an isosceles triangle with vertex angle $50°$ and leg length 6 ft

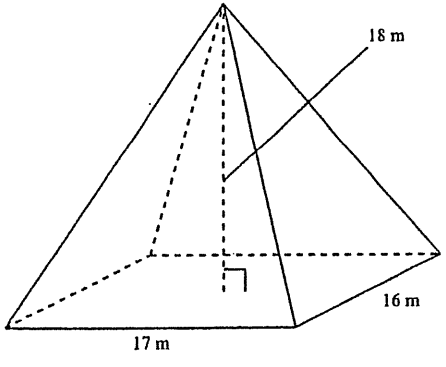
87. a regular hexagon with side length 10 m

88. Find the surface area of a cone if the radius is 5 cm and the slant height is 14 cm.



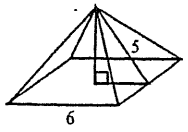
89. Calculate the surface area of a square pyramid if the side length of the base is 4 cm and the slant height is 7 cm.

90. Calculate the volume of the pyramid.

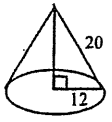


Find the volume and surface area of the right cone or regular pyramid.

91.



92.



93. Find the volume of a sphere with radius 2.1 m. Express the answer in terms of π.

94. Find the surface area of a sphere that has a diameter of 4 cm. Express your answer in terms of π.

95. The surface area of a sphere is 36π $in.^2$. What is its radius?

96. The volume of a sphere is $\frac{500\pi}{3}$ ft^3. What is its radius?

Geometry - Semester 2 Review Key

[1] $5 < m < 23$

[2] 8 and 38

[3] Yes

[4] a) $x = 15$ b) $y = \frac{19}{4}$

[5] B

[6] 19

[7] Proofs may vary. For Example:

Statements	Reasons
1. $\overline{BD}$ bisects $\overline{AC}$ $\overline{AB} \cong \overline{BC}$	1. Given
2. $\overline{AD} \cong \overline{DC}$	2.Def. of Bisector
3. $\overline{BD} \cong \overline{BD}$	3. Reflexive
4. $\Delta ADB \cong \Delta CDB$	4. SSS
5. $\angle C \cong \angle A$	5. Def. $\cong \Delta$'s

[8] Proofs may vary. For Example:

Statements	Reasons
1. $\angle BAC \cong \angle DAC$ $\angle DCA \cong \angle BCA$	1. Given
2. $\overline{AC} \cong \overline{AC}$	2. Reflexive
3. $\Delta ABC \cong \Delta ADC$	3. ASA
4. $\overline{BC} \cong \overline{CD}$	4. Def. $\cong \Delta$'s

[9] 68°

[10] 39.5°

[11] $HJ = \frac{36}{5}$

[12] C

[13] $\angle QSR = 100°$

[14] $w = 12; m\angle B = 58°$

[15] Several Proofs are possible.
See your teacher for direction.

[16] D

[17] $260\,yd^2$

[18] $231\,dm^2$

[19] D

[20] $24\,in^2$

[21] $168\,cm^2$

[22] $96\sqrt{3}$

[23] $7\,in^2$

[24] about 127.3

[25] about 176.7

[26] $150m^3$

[27] $64in^3$

[28] $753.6m^2$

[29] 141.4; 150.8

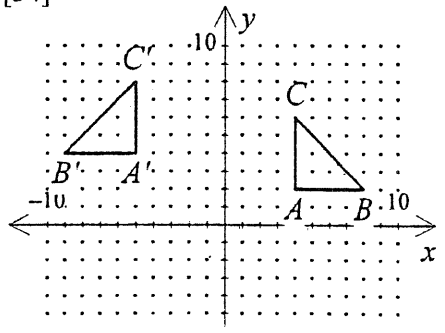
[30] a = 22; b = 6; c = 9

[31] a and b = 70; c = 2; d = 17

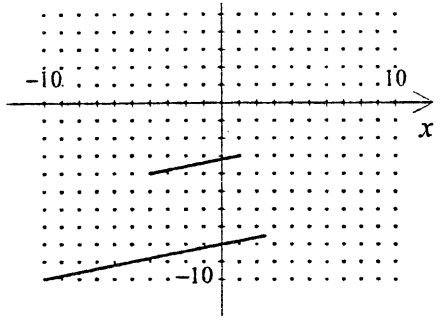
[32] (-3, -9)

[33] (6, 8)

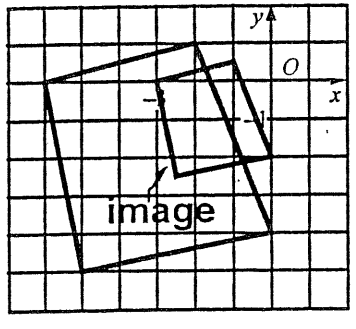
[34]



[35]



[36]



[37] $\frac{7}{12}$

[38] $\frac{7}{3}$

[39] 28.5

[40] 100

[41] 7

[42] D

[43] x = 37.5

[44] y = 17.5

[45] t = ± 21

[46] x = 31.25

[47] x = 12; y = 6

[48] x = 121; y = 9

[49] Yes; AA Similarity Postulate

[50] $4\frac{1}{8}$

[51] B

[52] 2 : 5; 4 : 25

[53] A = 3645; P = 90

[54] S.A. = 1504, V = 480

[55] $\frac{3}{4}$

[56] $\frac{13}{17}$

[57] $\frac{3}{8}$

[58] 9

[59] C

[60] 20; $5\sqrt{41}$; $4\sqrt{41}$

[61] 12

[62] 8

[63] 13.5

[64] $4\sqrt{2}$

[65] $x = 6\sqrt{3}$; $y = 12\sqrt{3}$

[66] $x = 4\sqrt{2}$

$y = 4 + 4\sqrt{3}$ or $4(1 + \sqrt{3})$

[67] $x = \frac{7\sqrt{3}}{3}$; $y = \frac{14\sqrt{3}}{3}$

[68] $x = 7\sqrt{2}$

[69] $j = 6\sqrt{3}$; $l = 9\sqrt{2}$

[70] $\frac{12}{5}$

[71] B

[72] $m < Y \approx 77.3°$

[73] 22.54 ft

[74] $x \approx 18.2$

[75] $x \approx 36.3; y \approx 53.7$

[76] $\frac{8}{17}$

[77] A

[78] $m < Z \approx 22.6°$

[79] 43°

[80] 36°

[81] 19.17

[82] $\overline{GH} = (-19, -9)$

[83] (6, -1)

[84] (-2, -2)

[85] (-5, 2); $z \approx 21.8$

[86] about 13.8 ft^2

[87] $150\sqrt{3}\, m^2$

[88] 298.3 cm^2

[89] 72 cm^2

[90] 1632 m^3

[91] V= 48, S.A.= 96

[92] V= 768π ; S.A.= 384π

93. 12.348π m^3

94. 16π cm^2

95. 3 in.

96. 5 ft