

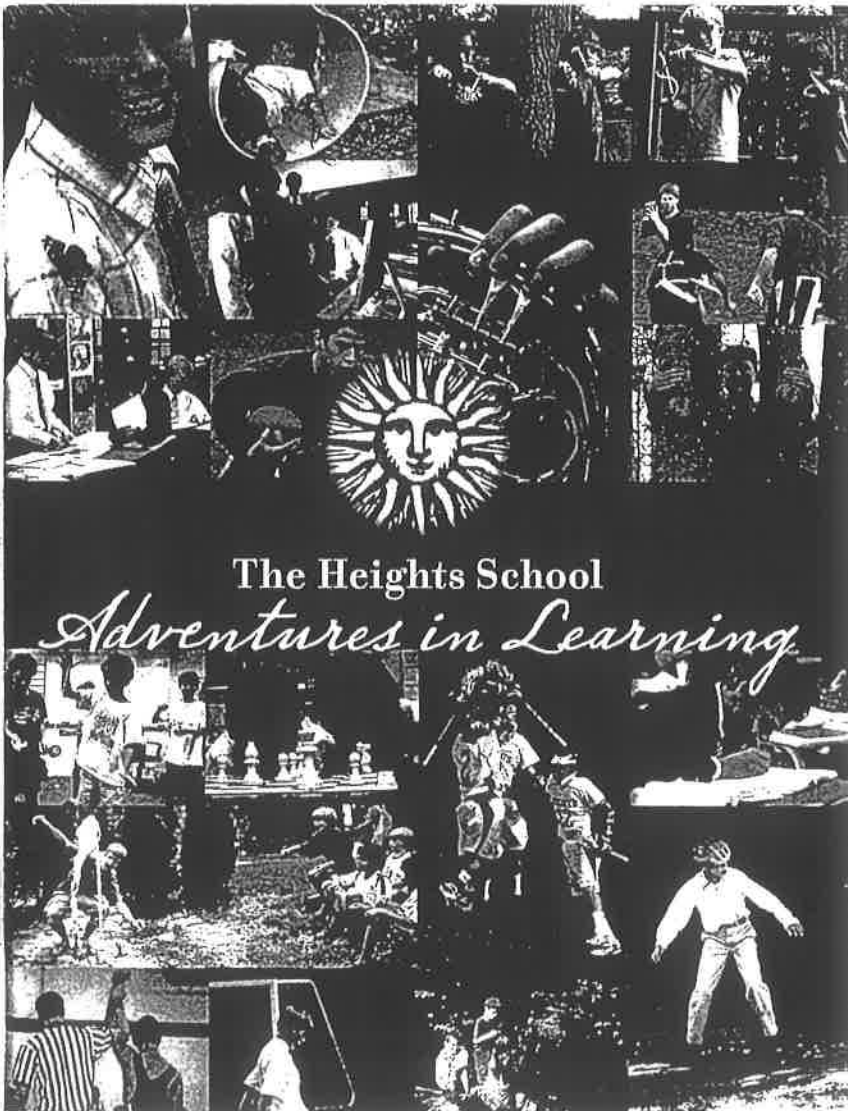
Mr. Steve Coyne's Pre-Geometry Summer Assignment

(due on the first day of Class in September)

- 1) See last page of packet for formula list and figures.
- 2) Show all work! Attach extra sheets if necessary. (No calculators allowed)
- 3) Leave answers in terms of " π " and simplified where appropriate.
- 4) When finished, copy all answers to answer sheets near back of packet.
- 5) This assignment counts as 1st significant grade of 1st Quarter (worth 2 quizzes).
- 6) There will also be an in-class quiz on 1st Friday we return on the material from the packet.
- 7) All problems come from lessons & concepts contained in the 3rd ed. Saxon Alg. I text.

... otherwise,

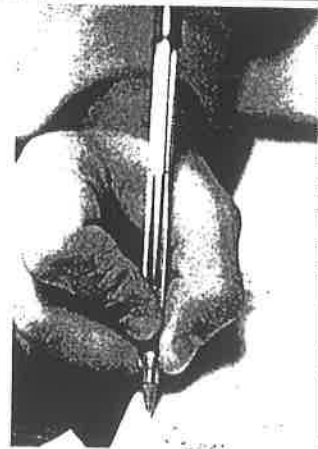
* Take the Summer Geometry Course with Mr. Hernandez for credit and a grade. Then you can skip to Pre-Calculus in September. See details below →



ACADEMIC PROGRAM

Math

Whether you'd like to "get to the next level" or strengthen weaknesses in your mathematical foundation, this flexible program can help. The program, designed by a math teacher with over 20 years experience, uses the Saxon text book series for middle school courses and our honors level text books for upper school courses. A variety of courses are offered as seen below. For a full course, sign up for the 6 weeks. Sign up for 1, 2 or more week long sessions if you only want or need to work on a few areas in any one course.

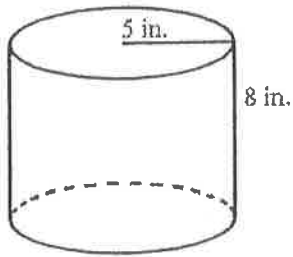


COURSES	
MATH 76	Elementary school arithmetic and geometry, introduction to integers and exponents, builds fundamentals
MATH 87	Final course in arithmetic, reviews arithmetic and geometry and prepares for pre-algebra
PRE-ALGEBRA	Review of pre-algebra, prepares for algebra
ALGEBRA I	Review of algebra and basic geometry concepts, prepares for algebra II
ALGEBRA II	Review of algebra I, prepares for pre-calculus — emphasis on trigonometry, logarithms, and analytical geometry
GEOMETRY	Review of planar Euclidean geometry — constructions and proofs
PRE-CALCULUS	Prepares for calculus — emphasis on function theory

DATES June 20 - July 24, 2016
 HOURS 8:30 - 10:30 am Math 76, Math 87, Pre-Algebra, Algebra I
 * 10:30 am - 12:00 pm Algebra II, Geometry, Pre-Calculus

AGES Young men, entering grades 6 - 12
 FEES \$955 per 6-week session, \$185 per 1-week session
 STAFF Michael Hernandez, present upper school math teacher at The Heights, directs the program. Various teachers and upper-level students help as tutors.
 CONTACT Michael Hernandez at The Heights School. mhernandez@heights.edu

1. Find the volume of the right circular cylinder.



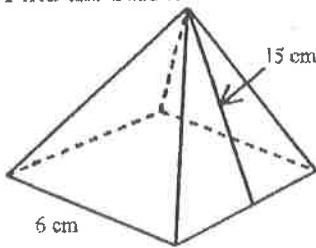
[A] $40\pi \text{ in.}^3$

[B] $40\pi \text{ in.}^2$

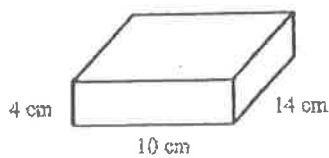
[C] $200\pi \text{ in.}^2$

[D] $200\pi \text{ in.}^3$

2. Find the surface area of a square pyramid if the length of the base is 6 cm and the slant height is 15 cm.



3. Find the surface area:



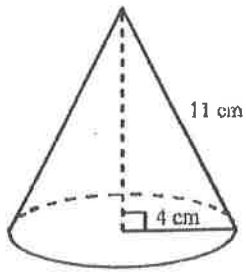
[A] 224 cm^2

[B] 336 cm^2

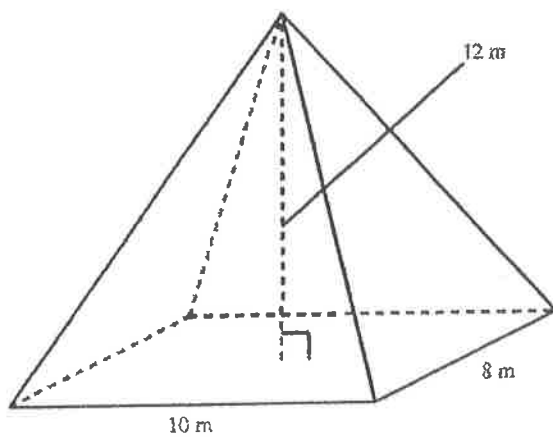
[C] 472 cm^2

[D] 560 cm^2

4. Find the surface area of a cone if the radius is 4 cm and the slant height is 11 cm.



5. Find the volume of the pyramid.



6. Solve for w : $5u - w = u + 5w$

[A] $w = \frac{3u}{2}$

[B] $w = \frac{-4u + w}{5}$

[C] $w = \frac{2u}{3}$

[D] $w = \frac{w + 3u}{5}$

7. Solve the system by substitution:

$$6x + y = -50$$

$$-2x + 7y = 2$$

8. Solve the system by substitution:

$$3x - y = -4$$

$$x - y = 0$$

9. Determine which of the following ordered pairs is a solution to the system of equations.

$$8x + 3y = 82$$

$$-2x - 5y = -46$$

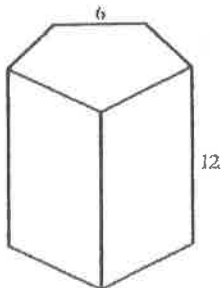
[A] (7, 8)

[B] (10, 5)

[C] (4, 4)

[D] (8, 6)

10. Find the lateral surface area of this right prism whose bases are regular pentagons. Dimensions are in yards.



Solve the system by the elimination method:

11. $4x - 3y = -24$

$x + 3y = 9$

12. $2x + 4y = 6$

$4x + y = -2$

13. Heather found that if the product of 6 and a number is increased by 29, the result is 75 more than the product of 4 and the number. What is the number?

[A] 10

[B] 4

[C] 23

[D] 61

14. The ratio of Republicans to Democrats was 16 to 11. If there were 5400 in all, how many were Democrats?

[A] 2200

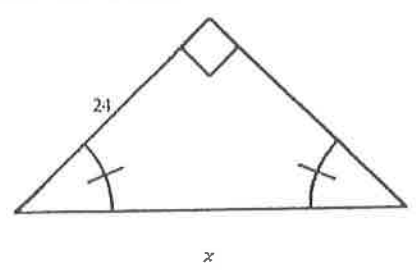
[B] 27

[C] 200

[D] 3200

15. If $4x + 2 + 2x = -4$, what is the value of $3x - 4$?

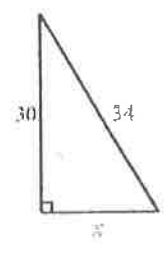
16. Use the Pythagorean Theorem to find x .



17. Use the Pythagorean Theorem to find x .



18. Find the length of x .



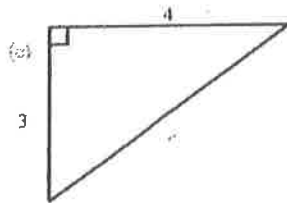
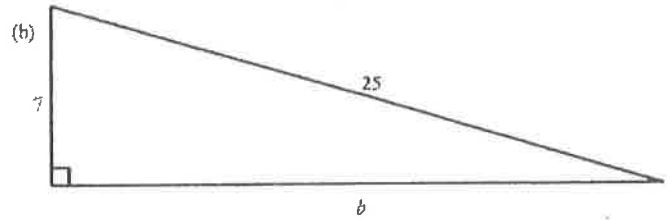
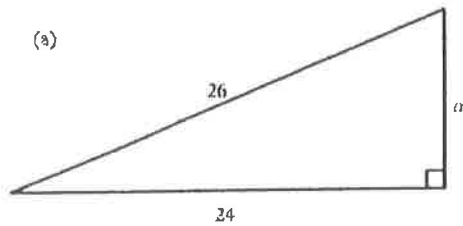
[A] 16

[B] 32

[C] 64

[D] 4

19. Recall the appropriate Pythagorean triple to find the unknown length in each of the following triangles:



20. Find the distance between $(1, 6)$ and $(-2, 4)$.

21. Find the distance between the points $(2, 0)$ and $(-2, -6)$.

[A] $2\sqrt{13}$

[B] 6

[C] 36

[D] 52

22. Find the slope of the line passing through the points $(4, 3)$ and $(-3, 6)$.

23. Find the slope of the line going through the points $(-6, 7)$ and $(-8, 1)$.

[A] $\frac{1}{3}$

[B] $\frac{9}{13}$

[C] 3

[D] $\frac{13}{9}$

24. Write the slope-intercept form of the equation of the line that passes through the points $(-2, 3)$ and $(0, 7)$.

25. Find the slope-intercept form of the equation of the line that passes through the points $(-2, 2)$ and $(0, -8)$.

[A] $y = 5x - 8$

[B] $y = -5x + 8$

[C] $y = -5x - 8$

[D] $y = 5x + 8$

26. Find the equation of the line that passes through the point $(-1, 1)$ and is parallel to the line $y = -2x + 7$.

27. Find the equation of the line that passes through the point $(2, 1)$ and is parallel to the line $y = 3x + 9$.

[A] $y = 3x - 1$

[B] $y = 3x + 1$

[C] $y = 3x - 5$

[D] $y = 3x + 5$

28. Find the equation of the line, in slope-intercept form, that passes through the point $(-3, -5)$ and has slope -5 .
29. The number of gears a machine can make varies directly as the time it operates. If it can make 1416 gears in 4 hours, how many gears can it make in 6 hours?
30. The amount of a person's paycheck is directly proportional to the number of hours worked. For working 15 hours, the pay is \$77.25. Find the pay for 40 hours of work.
[A] none of these [B] \$206.00 [C] \$211.15 [D] \$216.00
31. The time required to drive a certain distance varies inversely as the speed. If it takes 4 hours to drive the distance at 30 miles per hour, how long will it take to drive the same distance at 20 miles per hour?
32. The price per person of renting a bus varies inversely with the number of people renting the bus. It costs \$18 per person if 33 people rent the bus. How much will it cost per person if 24 people rent the bus?
[A] \$13.09 [B] \$24.75 [C] \$44.00 [D] \$27.84

33. On planet X, an object falls 22 feet in 5 seconds. Knowing the distance it falls varies directly with the square of the time of fall, how long does it take an object to fall 88 feet? Round your answer to three decimal places.

34. Oranges vary inversely as purples cubed. When there are 256 oranges, there are 2 purples. How many oranges are present when there are 8 purples?

35. On planet X, an object falls 10 feet in 1 second. Knowing the distance it falls varies directly with the square of the time of the fall, how long does it take an object to fall 61 feet? Round your answer to three decimal places.

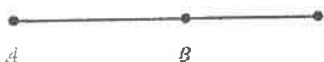
[A] 19.290 sec

[B] 2.470 sec

[C] 0.405 sec

[D] 7.810 sec

36. The length of \overline{AC} is $6\frac{3}{8}$ meters. The length of \overline{BC} is $2\frac{3}{4}$ meters. Find AB .



37. The length of \overline{AB} is $2\frac{1}{4}$ meters. The length of \overline{BC} is $1\frac{1}{2}$ meters. The length of \overline{CD} is $3\frac{5}{6}$ meters. Find AD .



-
38. (a) What is the degree measure of a right angle?
(b) Define *acute angle*.

39. (a) Define *obtuse angle*.
(b) What is the degree measure of a right angle?

40. What angle is formed by two right angles?

41. What angle is formed by lines that are perpendicular?

42. The measure of angle A is 66° . Classify angle A .

[A] straight

[B] obtuse

[C] acute

[D] right

43. The measure of angle B is 101° . Classify angle B .

[A] right

[B] straight

[C] obtuse

[D] acute

44. What name is given to polygons whose angles all have the same measure?

45. What name is given to polygons whose sides all have the same length and whose angles all have the same measure?

46. What name is given to polygons whose sides all have the same length?

47. What is the name of a polygon with 7 sides?

[A] pentagon

[B] heptagon

[C] decagon

[D] octagon

48. What is the name of a polygon with 8 sides?

[A] heptagon

[B] pentagon

[C] octagon

[D] decagon

49. (a) Define *equilateral triangle*.

(b) Define *obtuse triangle*.

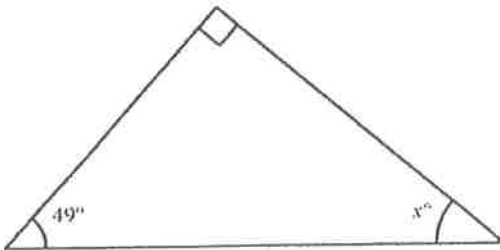
50. (a) Define *isosceles triangle*.

(b) Define *equiangular triangle*.

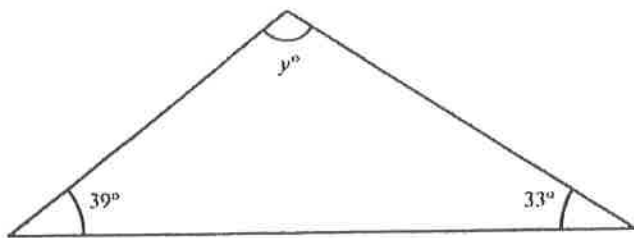
51. (a) Define *scalene triangle*.

(b) Define *acute triangle*.

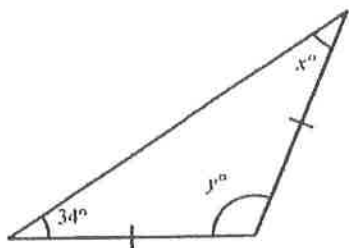
52. Find x .



53. Find y .



54. Find x and y .



55. If two angles of a triangle have equal measures, then what is true about the sides opposite those angles?

56. If two sides of a triangle have equal lengths, then what is true about the angles opposite those sides?

57. What is the sum of the measures of the angles in a right triangle?

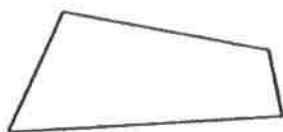
58. (a) Define *square*. (b) Define *rectangle*.

59. (a) Define *parallelogram*. (b) Define *rhombus*.

60. (a) Define *trapezoid*. (b) Define *parallelogram*.

61. What is the name of the quadrilateral that has four right angles?

62. Which **BEST** describes the figure correctly?



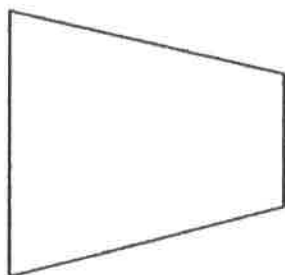
[A] quadrilateral

[B] parallelogram

[C] trapezoid

[D] polygon

63. Which **BEST** describes the figure correctly?



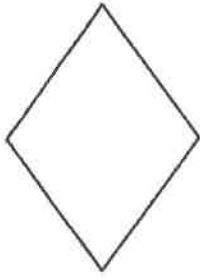
[A] parallelogram

[B] polygon

[C] trapezoid

[D] quadrilateral

64. Which **BEST** describes the figure correctly?



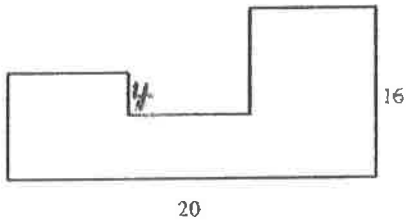
[A] trapezoid

[B] quadrilateral

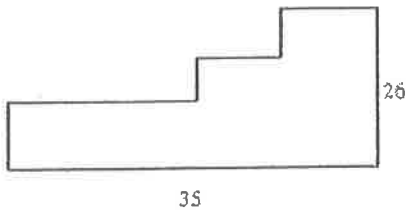
[C] parallelogram

[D] rhombus

65. Find the perimeter of the figure. All angles are right angles. Dimensions are in inches.

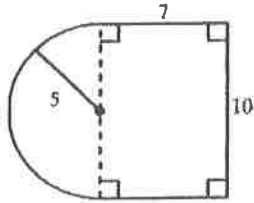


66. Find the perimeter of the figure. All angles are right angles. Dimensions are in inches.

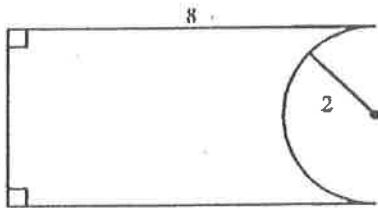


67. The circumference of a circle is 8π inches. What is the radius of the circle?

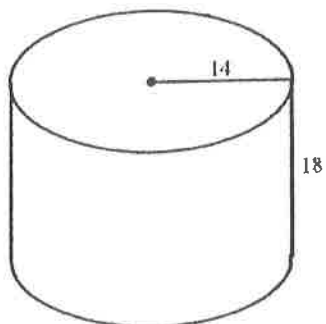
68. Find the perimeter of the figure. Dimensions are in meters.



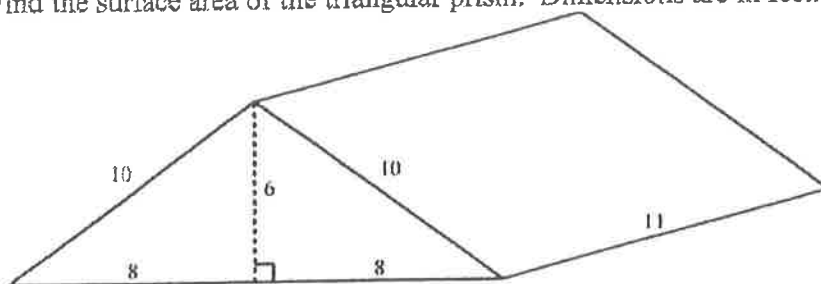
69. Find the perimeter of the figure. Dimensions are in meters.



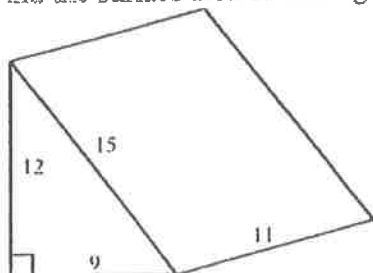
70. Find the surface area of this right circular cylinder. Dimensions are in feet.



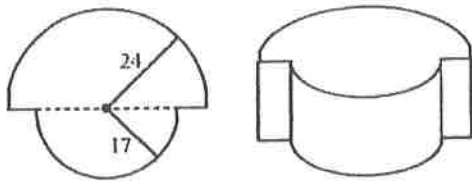
71. Find the surface area of the triangular prism. Dimensions are in feet.



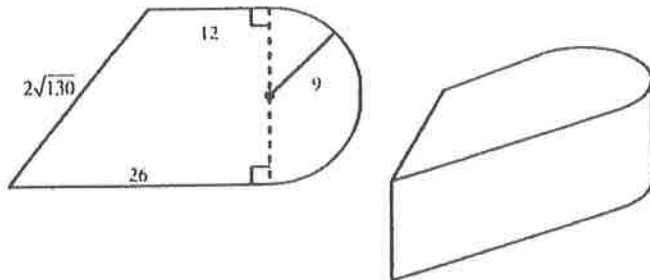
72. Find the surface area of this right triangular prism. Dimensions are in feet.



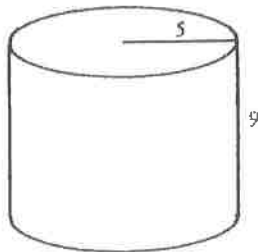
73. A base of a right solid whose height is 18 millimeters is shown. Find the surface area of the solid. Dimensions are in millimeters.



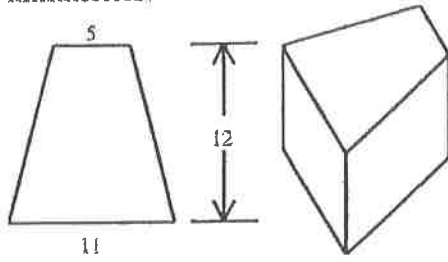
74. A base of a right solid whose height is 13 centimeters is shown. Find the surface area of the solid. Dimensions are in centimeters.



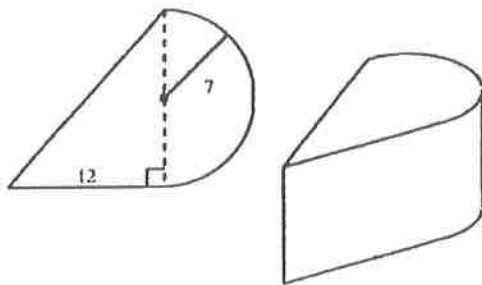
75. Find the volume of the right circular cylinder. Dimensions are in centimeters.



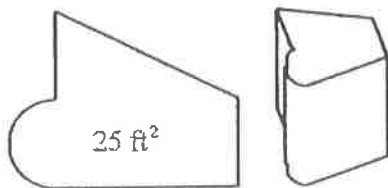
76. A base of a right solid whose height is 9 millimeters is shown. Find the volume of the solid. Dimensions are in millimeters.



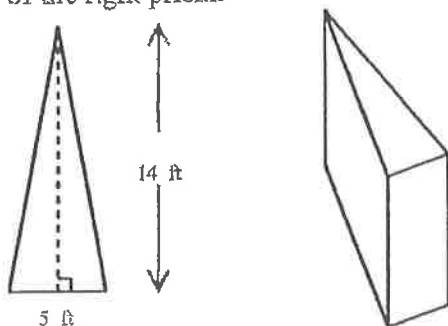
77. A base of a right solid whose height is 11 centimeters is shown. Find the volume of the solid. Dimensions are in centimeters.



78. A base of a right solid has an area of 25 ft^2 . The height of the solid is 6 ft. Find the volume of the solid.



79. A base of the right prism is the isosceles triangle shown. The height of the right prism is 12 ft. Find the volume of the right prism.



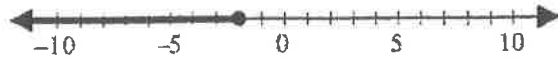
Solve:

80. $-[-(-9x)] + 2(5x + 7) = 6(4x - 8) + 16$

81. $-(x - 1) - 3(x - 5) = 32$

82. The ratio of fairies to dwarfs was 2 to 9. If there were 30 fairies, how many dwarfs were there?

83. Write both an inequality and a negated inequality that describe this graph.



84. Which inequality describes the graph?



[A] $x \neq 6$

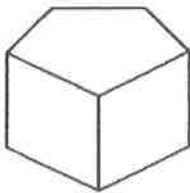
[B] $x \leq 6$

[C] $x > 6$

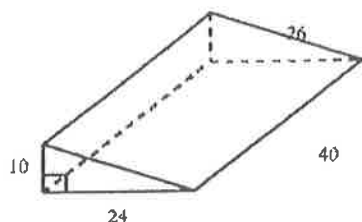
[D] $x \geq 6$

85. The ratio of spiders to flies was 11 to 18. If there were 3654 in all, how many were flies?

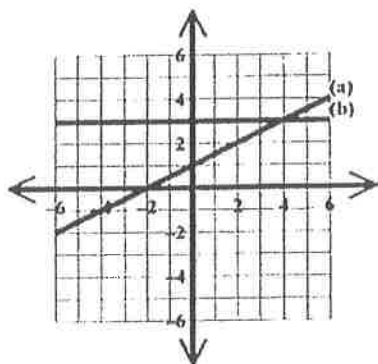
86. The area of a base of a right pentagonal prism is 291 cm^2 and the length of a lateral edge is 14 cm. Find the volume of the right pentagonal prism.



87. Find the volume and the total surface area of the right triangular prism. Dimensions are in meters.



88. Find the equations of lines (a) and (b).



89. Use the slope-intercept method to graph the following equation: $y = \frac{3}{4}x + 1$

90. Graph the following equation on a rectangular coordinate system: $-4x + y - 1 = 0$

[1] _____

[2] _____

[3] _____

[4] _____

[5] _____

[6] _____

[7] _____

[8] _____

[9] _____

[10] _____

[11] _____

[12] _____

[13] _____

[14] _____

[15] _____

[16] _____

[17] _____

[18] _____

[19] _____

[20] _____

[21] _____

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[25] _____

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[78] _____

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[80] _____

[81] _____

[82] _____

[83] _____

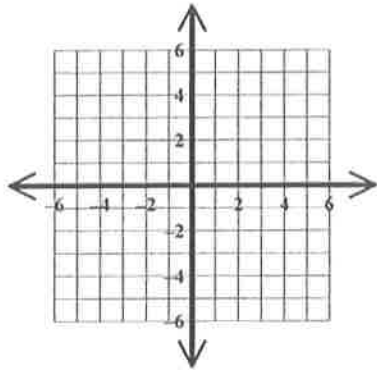
[84] _____

[85] _____

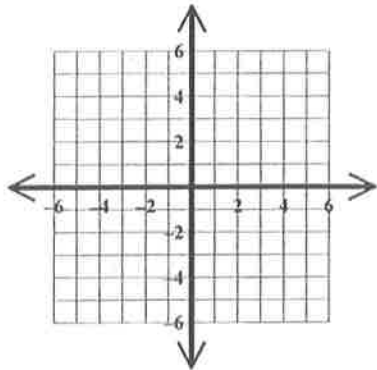
[86] _____

[87] _____

[88] _____



[89] _____



[90] _____

area A
perimeter P
length l

width w
surface area S
altitude (height) h

base b
circumference C
radius r

volume V
area of base B
slant height s

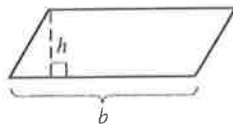
Rectangle

$$A = lw \quad P = 2l + 2w$$

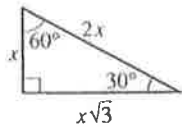


Parallelogram

$$A = bh$$



30°-60° Right Triangle



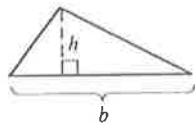
Right Circular Cylinder

$$V = \pi r^2 h \quad S = 2\pi r^2 + 2\pi rh$$



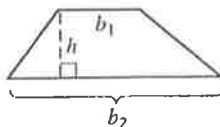
Triangle

$$A = \frac{1}{2}bh$$



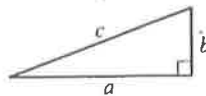
Trapezoid

$$A = \frac{1}{2}h(b_1 + b_2)$$



Right Triangle

$$a^2 + b^2 = c^2$$



Sphere

$$S = 4\pi r^2 \quad V = \frac{4}{3}\pi r^3$$



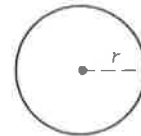
Square

$$A = s^2 \quad P = 4s$$

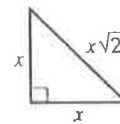


Circle

$$A = \pi r^2 \quad C = 2\pi r$$

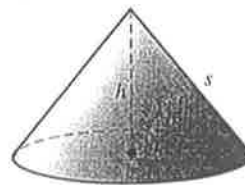


Isosceles Right Triangle



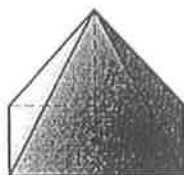
Right Circular Cone

$$V = \frac{1}{3}\pi r^2 h \quad S = \pi r^2 + \pi rs$$



Pyramid

$$V = \frac{1}{3}Bh$$



Prism

$$V = Bh$$

