Important Circle Formulas

Circumference: C= π d
Area: A = π r^2

1. The numbers 1 – 400, inclusive, are put into a hat. What is the probability that the first number chosen at random is a multiple of 4 or 17? Express your answer as a common fraction.

   1. _____

2. If x is 150% of y, what percent of $3x$ is $4y$? Express your answer to the nearest whole percent.

   2. _____

3. What is the number of inches in the height of an equilateral triangle whose perimeter is 30 inches? Express your answer in simplest radical form.

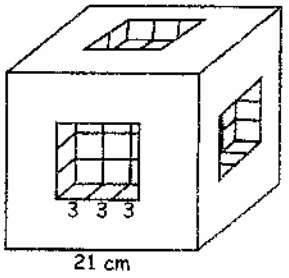
   3. _____inches

4. What is the number of units in the perimeter of a triangle bound by the x-axis, the y-axis and the line $y = -\frac{3}{4}x + 3$?

   4. _____units

5. A solid cube measures 21 cm on an edge. Nine cubes of edge 3 cm are removed from the center of each face of the original cube. What is the number of square centimeters in the surface area of the new object?

5. _____ cm^2



6. Simplify: $(2x + 3)^2$

6. _____

7. How many three-digit numbers contain the digit 3 at least once?

7. _____

8. What is the x-intercept of the line perpendicular to the line defined by $3x – 2y = 6$ and whose y-intercept is 2?

8. _____

9. What numbers have to be substituted for the symbols in order to work out the equations below? Each symbol represents a different number. Look for the positive whole numbers.

○	+	Δ	=	*
+		+		+
Δ	+	□	=	○
*	+	○	=	13

9. ○ = _____

Δ = _____

* = _____

□ = _____

10. Each of the whole numbers from 1 to 30 is written on a card. If you draw one of the cards at random, what is the probability that you will select a prime number?

10. _____

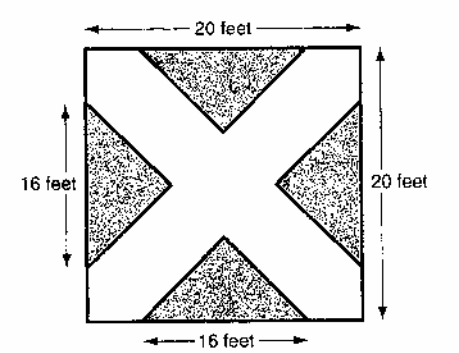
11. The Acme Tinplate Corporation has been asked to manufacture one million cans for a new product about to go to market. Each can is to be cylindrical, with a radius of 3 inches and a height of 6 inches. How many square inches of tinplate are used in making the cans? Express your answer in terms of π.

11. _____ square inches

12. Two kayakers start from opposite points 13.5 miles apart. One is going 4mph faster than the other. After 45 minutes, they meet. What is the speed of the slower one?

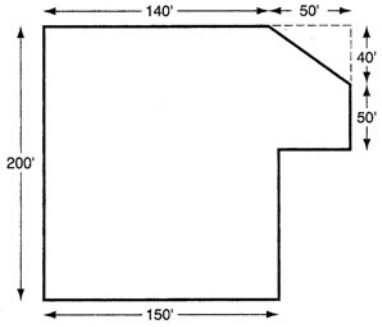
12. _____

13. A garden is laid out in the shape as shown in the drawing here. Only the shaded isosceles, right triangles are to be used for planting vegetables. The unshaded portion is to be filled in with stones to make paths. What is the total area of the paths? 13. _____square feet



14. A multiple-choice test contains 40 items. A correct response earns 5 points, but 2 points are deducted for every incorrect response. Nothing is given nor deducted if the question is unanswered. Michelle scored 96. How might she have done this? 14. _____

15. The diagram shows the ground plan of a business mall. If the excavation for its foundation is to be 18 feet in depth, how many cubic yards of soil must be removed? 15. _____cubic yards



16. The coach of the tennis team was having problems selecting his team. He had to choose four players, two men and two women, from the six who had tried out. Personal feelings were making it difficult for him.

1. Paul said, "I'll play only if Sarah plays."
2. Sarah said, "I won't play if Eric is on the team."
3. Eric said, "I won't play if David or Linda is chosen."
4. David said, "I'll play only if Amy plays."
5. Amy had no likes nor dislikes.

16. _____

Who will the coach select?

17. The different toppings available at Conway's Ice Cream Parlor are given below. A customer walks up and says, "I'd like a scoop of chocolate ice cream with any 2 different wet toppings and any 3 different dry toppings. Surprise me!" How many different combinations of toppings are possible for the customer's order?

17. _____

Wet Toppings	**Dry Toppings**
Caramel	M&M's
Fudge	Heath Bar
Chocolate Syrup	Butterfinger
Butterscotch	Peanuts
	Sprinkles
	Gummi Bears
	Oreos
	Nestle Crunch
	Pecans

18. The cost to produce 100 radios is \$2000 and to produce 500 radios is \$4000. If the cost is a linear function of the number of radios produced, how many must be sold at \$25 each to break even?

18. _____

19. Find three ordered pairs of integers (x, y) that satisfy the equation:

$$x^2 + 4x + y^2 = 9.$$

19.
(_____ , _____)
(_____ , _____)
(_____ , _____)

20. Find two integers whose sum is 27 and whose product is 180.

20. _____