1. The average age of five children is 6 years old. Each child is a different age and there is a difference of two years in the ages of any two consecutive children. In years, how old is the oldest child?

1. _____ years old

2. For what value of n is $3^3 - 5 = 4^2 + n$?

2. _____

3. A recipe calls for $\frac{1}{4}$ teaspoon of salt for each quart of water. How many quarts of water will be used for two teaspoons of salt?
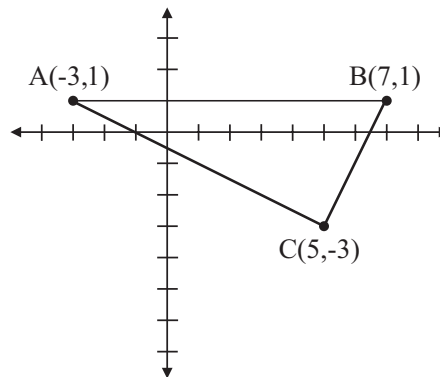
3. _____ quarts

4. For what value of n is $3\frac{3}{4} - n = n + \frac{1}{2}$? Express your answer as a common fraction.

4. _____

5. What is the area, in square units, of triangle ABC?

A(-3,1)   B(7,1)

C(5,-3)

5. _____ sq units

6. Jamie rolled a standard six-sided die that has each face painted either red, green or blue. In 100 rolls, the die landed with a red face up 50 times, with a blue face up 17 times, and with a green face up 33 times. Based on this data, how many faces of the die would you expect to be green?

6. _____ faces

7. Calculate the following sum: 12,345 + 23,456 + 34,567. Now add together the five digits of that sum. What is the result?

7. _____
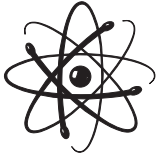
8. John participated in a science contest. He received 3 points for each correct answer but lost 2 points for each incorrect answer. After answering 50 questions, John's score was 95 points. How many questions did John answer *incorrectly*?
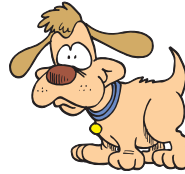
8. _____ questions

9. How many times is the digit 3 written when writing the prime numbers less than 50?

9. _____ times

10. Define the operation § as follows: $a \, \S \, b = 3a + 5b$. What is the value of 7 § 2?

10. _____

11. The ratio of Zimba's current weight to his weight 3 years ago is 5 to 4. In pounds, what did Zimba weigh 3 years ago if he has gained 3.5 pounds since then?
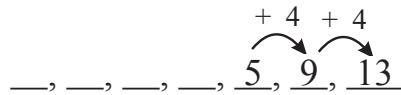
11. _____ pounds

12. Two numbers are said to be "relatively prime" if their greatest common factor is 1. How many integers greater than 10 and less than 30 are relatively prime with 28?

12. _____ integers

13. The fifth, sixth and seventh terms of an arithmetic sequence are 5, 9 and 13, respectively. What is the sum of the first four terms of the sequence?

$$\underbrace{\quad}, \underline{}, \underline{}, \underline{}, \underline{5}, \underline{9}, \underline{13}$$
+ 4   + 4

13. _____

14. A regular deck of playing cards has four suits (Hearts, Diamonds, Clubs and Spades) with 13 cards of each suit. If one card is randomly selected from a regular deck, what is the probability that the card is a Heart? Express your answer as a common fraction.
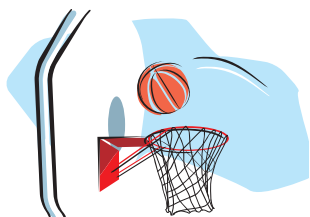
14. _____
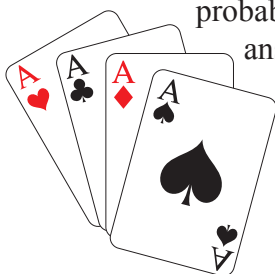
15. When the first 50 counting numbers are arranged in columns, as shown, what is the sum of all of the counting numbers in column E?

A	B	C	D	E
1	2	3	4	5
10	9	8	7	6
11	12	13	14	15
20	19	18	17	16
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.

15. _____

16. Shea made 11 of her first 17 free-throw attempts. What is the minimum number of her next 20 free-throw attempts that she must make for her overall success rate to be at least 80%? Express your answer to the nearest whole number.
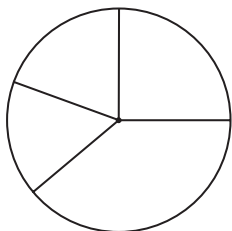
16. _____ attempts

17. What is the sum of the positive multiples of 13 that are less than 300?

17. _____

18. A circular dartboard is divided into regions with various central angles, as shown. The probability of a dart randomly landing in a particular region is $\frac{1}{6}$. What is the corresponding measure, in degrees, of the central angle of this section of the dartboard?

18. _____ degrees

19. What is the smallest whole number that has a remainder of 1 when divided by 4, a remainder of 1 when divided by 3, and a remainder of 2 when divided by 5?

19. _____

20. A palindrome is a number that reads the same forwards and backwards. The sum of a particular set of three consecutive positive integers is a three-digit palindrome. If the sum is less than 220, what is the greatest possible value for the largest of the three integers in the set?

20. _____

21. Pentagon ABCDE has a vertical line of symmetry. What is the *y*-coordinate of vertex C so that the area of the pentagon is 40 square units?
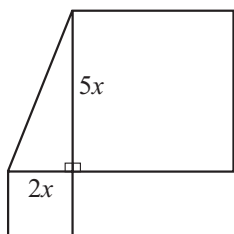
21. _____

C

B(0,4) •   • D(4,4)

A(0,0)   E(4,0)
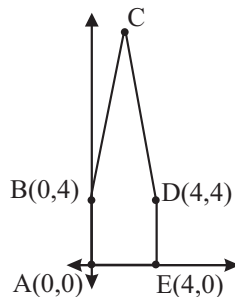
22. A bag contains 15 coins. Each coin is a penny, nickel, dime or quarter. The total value of these coins is $2.16. There is at least one coin of each denomination, and the number of pennies, nickels, dimes and quarters are all distinct. If there are 5 dimes, how many nickels are in the bag?

22. _____ nickels

23. The figure shown consists of a right triangle and two squares. If the figure's total area equals 850 square inches, what is the value of *x* in inches?

23. _____ inches

5*x*

2*x*

24. For positive integer values of N, let $\boxed{N}$ be defined as:

$\boxed{N} = 2 + 4 + 6 + ... + N$, if N is even and
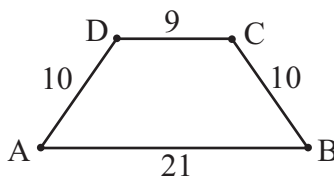
$\boxed{N} = 1 + 3 + 5 + ... + N$, if N is odd.

What is the value of $\boxed{2009} - \boxed{2008}$?

24. _____

25. What is the units digit of the quotient when 10! is divided by 5^2?

25. _____

26. The isosceles trapezoid shown has side lengths as labeled. How long is segment AC?

26. _____ units

D   9   C

10   10

A   21   B

27. The perimeter of a particular square and the circumference of a particular circle are equal. What is the ratio of the area of the square to the area of the circle? Express your answer as a common fraction in terms of π.

27. _____

28. For a set of five positive integers, none greater than 100, the mean is 1.5 times the mode. If 31, 58, 98, x and x are the five integers, what is the value of x?

28. _____

29. Square ABCD has side lengths of 13 units. Point E lies in the interior of the square such that AE = 5 units and BE = 12 units. What is the distance from E to side AD? Express your answer as a mixed number.

29. _____ units

30. Given any positive even integer, x, the positive difference between the smallest odd number greater than $7x − 2$ and the largest odd number less than $3x + 5$ can be written in the form $ax + b$. What is $a + b$?

30. _____