1) How many triangles are there in the figure at the right?

2) In 8 minutes it will be halfway between 4 and 4:20 p.m. What time is it now?

3) Player: 
   
<table>
<thead>
<tr>
<th>Tom</th>
<th>Stan</th>
<th>Gary</th>
<th>Ann</th>
<th>Marie</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>60</td>
<td>55</td>
<td>55</td>
<td>50</td>
</tr>
<tr>
<td>5</td>
<td>15</td>
<td>10</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

Which 2 players ended in a tie?

4) If 1 chicken can lay 3 eggs in 4 days, how many eggs can 3 chickens lay in 8 days?

5) Miss Green, Mrs. White, Mr. Black and Mr. Brown are all teachers. The men have one more student in their class than their room number. The women each have 2 less students than their room number. Miss Green is in Room 24, Mrs. White in Room 20 and Mr. Brown is in Room 17. If the 4 teachers have a total of 82 students, in what room is Mr. Black?

6) October has 31 days. The 15th of the month is on a Wednesday. Which of the following days of the week will appear 5 times that month?
   a) Friday   b) Saturday   c) Sunday   d) Monday   e) Tuesday

7) $\bigcirc + \square = 4$; $\square + \Delta = 8$. If $\bigcirc = 3$, then $\Delta =$ ___.

8) Mike, Lauren, Brendan and Cara collected empty soda cans to return for deposit. They received 5 cents for each can and received a total of $\$3$. Mike collected 18 cans, Lauren 9 cans and Brendan 20 cans. How many cans did Cara collect?

9) Allysa has 50¢ in pennies, nickels and dimes. She has at least one of each coin. What is the difference between the largest number of coins that she could have and the smallest number of coins that she could have?
10) Connie has 3 times as many nickels as dimes. If she has 40¢ in dimes, how much money does she have altogether?

11) After you connect A to E, B to E and D to E, how many different triangles are formed?

12) The four dominoes [diagram] are to be arranged into a square with an empty space in the center. One of the dominoes, [diagram], is placed as shown. All the 4 sides add up to the same number. Fill in the empty spaces with the other 3 dominoes.

13) How many rectangles are there in the figure at the right?

14) There are 11 children in Room A and 7 children in Room B. If _____ children move from Room A to Room B, there will be twice as many children in Room B as in Room A.

15) Marie only has 3¢ and 5¢ stamps. If she needs 10¢ postage, she can use two 5¢ stamps. If she needs 11¢ postage, she can use two 3¢ stamps and one 5¢ stamp. What postage between 5¢ and 20¢ can she not make?

16) On a baseball team, Moran, Parker and Jones each played one of the three positions of pitcher, catcher and second baseman, though not necessarily in that order. The second baseman, playing his first season with the team, had the lowest salary. Moran, who along with Parker had played two seasons with this team, earned more than the pitcher. Who was the pitcher?

17) In the subtraction problem at the right, find the digit represented by Δ.

\[
\begin{array}{c}
\phantom{-}13Δ \\
- \phantom{13}4Δ \\
= ΔΔ
\end{array}
\]
18) Brendan has 6 dimes and 6 nickels. Cheryl has 3 quarters and 3 pennies. Brendan has _____ more money than Cheryl.

19) A group of 52 students went to the zoo. Some students took the bus and the rest traveled by car. If 37 students took the bus and 3 students rode in each car, then how many cars were needed?

20) Drew and Stan were playing tic-tac-toe. Drew won 3 games and Stan won 4 more games than Drew. If there were 7 ties, how many games of tic-tac-toe did they play?

21) In the addition problem at the right, find the sum of the digits represented by A and B. (Different letters represent different digits. Each time the same letter appears it represents the same digit.)

22) Some numbers on a digital clock read the same backwards as they do forwards. For example: 5:05, 12:21, 11:11. How many numbers are there that do that on a digital clock from 1 P.M. to 2 P.M.? (These numbers are called palindromes.)

23) A machine takes any number fed into it, adds 9 and then subtracts 1. Joey fed the number 10 into the machine. When the answer came out, he fed that number back into the machine. What final number came out of the machine?

24) If B is halfway between A and C, how many inches is it from B to D?

25) Ken wants to swim 20 yards out into the ocean. He swims out 5 yards in 4 seconds but then in one second a wave pushes him back 2 yards. If this cycle continues, how long will it take Ken to get 20 yards out for the first time, even if only for an instant?

26) Place the 5 digits 1-5 in the circles in the answer column so that the sum of the 3 numbers in each direction is the same and totals 10. Use each digit just once.
27) A frog can jump 2 feet. How many jumps are needed for the frog to cover a distance of at least 13 feet?

28) In the addition problem at the right, what number should "A" be so that the four numbers add to 100?

\[ \begin{align*}
33 & + 50 \\
& + 11 \\
& + \text{A} \\
& 100
\end{align*} \]

29) Ken likes to celebrate his birthday for a whole week. On the first day he eats 1 cookie. On the second day he eats 2 cookies. This continues until on the seventh day he eats 7 cookies. How many cookies did Ken eat that week?

30) A parking meter gives 30 minutes of parking for a quarter and 10 minutes for a dime. Mrs. Walsh feels she will need an hour and 15 minutes on the meter. What is the least amount of money she should put in the meter?

31) There are 5 numbered lockers outside Adam's classroom. He opened all 5 lockers. Then Mary closed lockers 2 and 4. Bonnie changed locker 3. (That means if it was open, she closed it or if it was closed, she opened it.) Carol changed locker 4 and Dan changed locker 5. Which numbered lockers are still open?

32) \( a \Delta b \) means \( (a + b) - (a - b) \). For example, \( 6 \Delta 4 = (6 + 4) - (6 - 4) = 10 - 2 = 8 \). How much larger is \( 10 \Delta 8 \) than \( 8 \Delta 6 \)?

33) When Rita calls Theresa on the phone the call usually lasts 12 minutes. Last night they talked on the phone for one minute more than twice the time they usually spend on the phone. Last night's phone call lasted _____ minutes.

34) Karen purchases 2 pens for 80¢ each, 3 erasers that cost 15¢ each and a notebook for $2.12. How much money did Karen spend?

35) It was Steven's birthday. He bought 26 cupcakes. He gave one cupcake to each member of his class, one to his teacher, one to his Principal and one each to the two secretaries in the office. He also had a cupcake. All the cupcakes were gone. Counting Steven, how many students are in the class?
Questions

36) Some 2nd and 3rd grade students made a total of 32 drawings for a school exhibit. Five 3rd grade students made 4 drawings each. The six remaining 2nd grade students made the rest of the drawings. If each of the 2nd grade students made the same number of drawings, how many drawings did each 2nd grade student make?

37) In the addition problem at the right, find the number represented by the letter “A”.
\[
\begin{array}{c}
45 \\
+ 3A \\
\hline
82
\end{array}
\]

38) Amy’s brother is now 10 years old. Two years ago she was as old as he is now. How old will Amy be in 3 years?

39) Melissa added up all the single-digit odd numbers and all the single-digit even numbers. What was her sum?

40) Mrs. Spano was giving an oral test to her class. She said, “Start with the number 42, subtract 10 and then add on 7.” Gus heard her correctly and wrote down the correct answer. Lori thought Mrs. Spano said, “Add 10 and then subtract 7.” Gus’s answer is _____ less than Lori’s answer.

41) A bug is at Point A. The bug can only travel up or to the right. How many different ways can the bug get from Point A to Point B?

a) 3   b) 4   c) 5   d) 6

Hint: Here are two ways the bug could get from Point A to Point B.

42) Sara eats lunch at 12 noon and dinner at 6 p.m. When it is _____ it is twice as much time until dinner as it has been since lunch.

a) 1 P.M.   b) 2 P.M.   c) 3 P.M.   d) 4 P.M.
43) How many triangles are there in the figure at the right?

44) Melinda has a clock that chimes. At a quarter past the hour it chimes once. At half-past the hour it chimes twice. At three-quarters past the hour it chimes three times and at each new hour it chimes that number of times. How many chimes will Melinda hear from five minutes to three until five minutes after 4?

45) There are 9 coins on a table totaling $1.20, consisting of nickels, dimes and quarters. Al, Ben and Casey each pick up 3 coins. Al has 3 times as much money as Casey. Al has as much money as Ben and Casey together. What 3 coins did Al pick up?

46) Each of 3 girls is on exactly one team. One is on the field hockey team, another is on the swimming team and the third is on the track team. Ann is not on the swimming team. The girl on the track team lives near Ann. The girl on the swimming team and Betty are in the same class. What team is Carol on?

47) Mr. Morrison, the second grade teacher, gives a gold star for every 20 pages a student reads in a book. During one week Tyshawn read 65 pages. How many more pages does he have to read in order to get one more gold star?

48) Lara has 15 pennies, 3 nickels and 3 dimes. How many different ways can she make 23 cents?

49) Mr. Rodriguez bought three items at the store. The first item cost $49. The second item cost $9 more than the first item. The third item cost $15 less than the second item. How much did Mr. Rodriguez pay for all three items?

50) A pet store has only dogs and cats. There are a total of 64 legs for all the dogs and cats. If there are 9 dogs, how many cats are there?
51) The numbers in Column A are 8, 9, 6. Each number in Column B was determined by adding the two numbers in Column A and then subtracting the number that is in that row. 9 + 6 - 8 = 7. 8 + 6 - 9 = 5. Fill in the numbers in Column C if they are determined in the same way from the numbers in Column B.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

52) Melissa’s brother is 7 years old. Three years ago she was as old as he is now. How old will Melissa be in 4 years?

53) Two pencils cost $3. A pencil and pen cost $9. How much does a pen cost?

54) In how many different ways can the word “APPLE” be spelled if you can only move up (↑) or to the right (→) as you go from letter to letter? (You cannot jump over any letter.)

55) How many triangles are there in the figure at the right?

56) Mrs. Winters was able to cut a board of wood into exactly twelve 2-foot pieces. How many 3-foot pieces could she have cut from the same board?

57) Fifty-one (51) pounds of sugar have to be put into bags. Some are 4-pound bags and some are 5-pound bags. The least number of full bags necessary to hold all 51 pounds of sugar is _____.

58) Each face of a cube is a square. How many square faces does a cube have?
59) David spent $16. This is twice as much as Amy and Karen spent together. Amy spent $5. How much did Karen spend?

59) __________

60) There are 9 equal stacks of books. One class takes 4 stacks and another class takes 5 stacks. The class that took 4 stacks has 28 books altogether. How many books does the other class have altogether?

60) __________

61) In the addition problem at the right, find the sum of the three digits x + y + z. (Different letters represent different digits. Each time the same letter appears it represents the same digit.)

61) __________

62) \( \begin{array}{c}
\frac{a}{d} \\
\frac{b}{c}
\end{array} \) means \((a + b) - (c + d)\). Express \( \begin{array}{c}
9 \\
2 \\
3
\end{array} \) in simplest form.

62) __________

63) If \( K - L = M \), then \( K - M = \) ________.
   a) \( L + M \)  b) \( K - L \)  c) \( K + M \)  d) \( K \)  e) \( L \)

63) __________

64) Bill, Carl and Dan have a total of 70 model cars altogether. If Bill has as many model cars as Carl and Dan together, how many model cars does Bill have?

64) __________

65) Mike, Terry, Jerry and Barbara were invited to a party. Mike did not arrive last. Jerry arrived after Terry but before Barbara. Jerry did not arrive right after Terry. Of the 4 of them Mike was the _____ to arrive.

65) __________

66) Find two numbers that multiply to 9 and add to 10.

66) __________

67) If \( a \Delta b \) means \((10 + a) - (8 - b)\), express \( 4 \Delta 5 \) in simplest form. (Example \( 9 \Delta 7 = (10 + 9) - (8 - 7) = 19 - 1 = 18.\))

67) __________

68) In the addition problem at the right, find the number represented by \( ABC \).

68) __________
69) Valerie is lining up the following items. First a thumbtack, second a rubber-band, third a push-pin, fourth a paper clip, fifth a thumbtack again, sixth a rubber-band and so on. If she continues this pattern, the 26th item will be a _____.

70) Marie had only 5¢ and 7¢ stamps. If she needs 30¢ postage, she can use six 5¢ stamps. If she needs 31¢ postage, she can use three 7¢ stamps and two 5¢ stamps. What amount of postage between 20¢ and 30¢ cannot be made?

71) 17 + 12 = □ - 7. Find the number that belongs in the box.

72) Janet has 80¢. After spending 20¢ she gives half of her remaining money to Jack. Jack now has $1. How much money did Jack start out with?

73) Corinne is as much taller than her sister Chelsea as Chelsea is taller than their younger brother Dave. Corinne is 4' 4" tall and Chelsea is 3' 1" tall. That means Dave is _____' _____" tall.

74) For plumbing repairs Mr. Roberts charges an hourly rate plus a "service-call" charge. When he works 2 hours he charges a total of $116. When working 3 hours he charges a total of $161. Mr. Roberts' "service-call" charge is _____.

75) If 15 + A = 21, how much is 15 - A?

76) In the subtraction problem at the right, find the digit represented by Δ.

77) The last Friday of a particular month is on the 26th day of the month. What day of the week is the first day of that month?

78) Shirley dropped a ball from a height of 24 feet. Each time the ball bounced it traveled half as high. After 3 bounces the ball reached a height of _____ ft.
79) Mary starts with a number and divides that number by 2. She divides this new number by 2. The answer after the two divisions is then 4½. What was the number that Mary started with?

80) “Henry has more than 5 brothers,” says Alice. “He does not,” said Anne. “He has fewer than that.” “He has at least one brother,” said Amos. If only one statement is true, how many brothers does Henry have?

81) \( \frac{a}{b} \) means \((a + b) - c\). For example \( \frac{2}{4} \times \frac{5}{5} = (2 + 4) - 5 = 6 - 5 = 1 \).

Find the number \( k \) represents if \( \frac{k}{9} = 7 \).

82) Mary, Tony, Jake and Betsy ran in a race. Mary did not finish last. Jake finished after Tony but before Betsy. Jake did not finish right after Tony. Of the 4 of them Mary was the _____ to finish.

   a) 1\(^{st}\)    b) 2\(^{nd}\)    c) 3\(^{rd}\)    d) 4\(^{th}\)

83) Mrs. Maloney is going to put tiles down on her kitchen floor. She plans to use a pattern where there will be 3 square tiles for every 1 triangular tile. If she uses a total of 900 tiles, how many of those are in the shape of a square?

84) A passenger train has 297 passengers aboard. There are 45 passengers in each of the first 4 cars of the train. Each of the remaining 3 cars has an equal number of passengers. How many passengers are there in one of those cars?

85) If \( a \triangle b \) means \((a + a - b) + (b + b - a)\). For example: \( 5 \triangle 3 = (5 + 5 - 3) + (3 + 3 - 5) = 7 + 1 = 8 \). Find the value of \( 6 \triangle 5 \) in simplest form.

86) Pamela has 8 coins made up of pennies, nickels and dimes. She has at least one of each coin. What is the difference between the most amount of money she could have and the least amount of money she could have?

87) Larry has red, blue and green toothpicks. He puts them on the table in the order R, B, G, R, B, G, R, B, G, and so on. What color is the 50th toothpick?
88) A magazine ran a contest in which awards of $7 and $5 could be won. Each person could win only one award. Exactly $50 was given in $7 and $5 awards. At least one $7 and one $5 award was given. How many people were given awards?

89) Mike is Danielle's brother. Mike has one brother. Danielle has twice as many sisters as brothers. How many children are in the family?

90) If \( a + 2 = 3 \), how much is \( 25 - a \)?

91) New York time is 3 hours later than California time and 4 hours later than Alaska time. When it is 12 midnight in Alaska, what time is it in California?
   a) 1 A.M.   b) 1 P.M.   c) 11 P.M.   d) 11 A.M.   e) 4 A.M.

92) Carl bought as many 37-cent pens as he could with his $5. How much change did Carl receive?

93) Five of Mrs. Steven's students made guesses on the number of jelly beans in a jar. The guesses were 112, 90, 88, 76, 85. These guesses were off by 6, 8, 11, 16 and 20 (not in order). How many jelly beans are in the jar?

94) Find the number that belongs in the box.

\[
\begin{array}{c}
52 \\
\hline \\
25
\end{array}
\]

95) Matt has 35 miniature cars in his collection. If he puts 7 cars in each row, how many rows of cars will he have?

96) Ron's time for the race was 1 minute 29 seconds. Steve's time to run the race was 2 minutes 11 seconds. Ron finished _____ seconds ahead of Steve.

97) In the diagram at the right, point B is midway between points A and C. Point D is midway between C and E. If the distance from A to C is 32 inches and the distance from B to D is 36 inches, how many inches is it from A to E?
98) If \( a + 11 = 35 \), how much is \( -11 \)?

99) Add all the numbers that are in circle A with all the numbers that are in circle C. From that sum, subtract all the numbers that are in circle B. What is the final answer?

100) The difference between the price of a tomato and the price of a potato (less expensive) is 51¢. The sum of the two prices is 67¢. How much does a potato cost?

101) John's brother is \( 2\frac{1}{2} \) years old. His mother tells everyone that he is _____ months old.

102) Six cards numbered 1 through 6 are placed in a hat. One card is taken from the hat. The unit's digit of the sum of the numbers on the remaining cards is 9. What was the number on the card taken from the hat?

103) In the subtraction problem at the right, the 3 numbers have the same 4 digits, 0, 1, 8, 9 though in different order. Fill in the missing digits so that all 3 numbers have the same 4 digits.

104) Jake's soccer practice begins at 3:20 P.M. and lasts for an hour and a half. It takes him 25 minutes to change clothes and get home. If dinner is at 6:30 P.M., Jake has 1 hour and _____ minutes to practice his piano before dinner.

105) Seven plums and 3 pears weigh as much as 4 apples. One apple weighs as much as 1 plum and 1 pear. How many plums weigh as much as 1 pear?

106) If \( \square - 2 = 5 \), how much is \( \square + \square \) ?
107) Find the number that belongs in the box. 
\[
\begin{array}{c}
5 \\
- \square \\
27
\end{array}
\]

108) Math E. Matics, the most famous detective, was investigating a crime. Slick Gordon told him that at midnight on April 5 it was raining but 48 hours earlier the sun was shining. How did Math E. Matics know that Slick was lying?

109) How much larger is \((6 + 4 + 5)\) than \((20 + 5 - 19)\)?

110) If \(31 - 17 = K\), how much is \(31 - K\)?

111) An ant is trying to crawl up out of the sink. The sink is 20 inches high. It takes 9 seconds for the ant to crawl up 8 inches but then it slides down 2 inches in one second. The ant will first reach the top of the sink in ____ seconds.

112) In the two problems at the right, the larger \(39\) is ____ more than the smaller answer. \(114 \quad 39\) \(\quad -1 \quad 7 \quad +12\)

113) How much longer are three 12 foot planks of wood than four 8 foot planks of wood?

114) It is now 2:20 p.m. What time was it an hour and 45 minutes ago?

115) \(19 - 11 = 5 + \square\). Find the number that belongs in the box.

116) What number belongs in the box to make a true statement? \(3 + 7 + 10 = 2 + 9 + \square\).

117) Josh read Chapter 2 in his History book. It began at the top of page 10 and finished at the bottom of page 17. How many pages did Josh read?

118) At 6 p.m. the temperature was 12°C. By 3 a.m. the next morning the temperature was 4°C below zero (-4°C). How many degrees did the temperature drop during those 9 hours?
119) In the two problems at the right, the larger answer is ______ more than the smaller answer.

120) If 23 - □ = 9 + 8, what is the number that belongs in the □?

121) How many minutes does it take for the minute hand to travel as far as the hour hand travels in 3 hours?

122) If 8 + 4 = 34 - □, find the number that belongs in the box.

123) 4 + 7 + 8 + 11 + 13 does not equal 26. Which two numbers should be left out so that the remaining 3 numbers do add to 26?

124) The number that is 4 less than 20 is how much more than 10?

125) Marie has $1.31 in her pocket. She then returns 12 empty soda cans and gets a nickel for each can. How much money does Marie have now?

126) Facing the front of the room, Mary is third in line. When they turn to face the back of the room, Mary is fourth in line. How many students are in the line? (count Mary)

127) Courtney’s favorite number is between 20 and 50. If you count by 2’s, 3’s, 4’s, 6’s or 9’s you will reach her favorite number. You cannot reach it by counting by 5’s, 7’s or 8’s. What is Courtney’s favorite number?

128) To go from one 2-digit number whose digits are the same (like 22), to the next 2-digit number whose digits are the same, add ______.

129) At the pet shop there were 9 puppies in one cage and 5 kittens in another cage. How many more feet (paws) were there in the puppy cage than in the kitten cage?

130) Mrs. Wilson puts a “smiley face” on the worksheet for every 6 arithmetic problems done correctly. Margaret had 25 correct problems on her worksheet. How many “smiley faces” did Mrs. Wilson put on Margaret’s worksheet?

131) Start with 3 and add 8 four times. What number do you end up with?
132) Mrs. Muller bought 3 gifts. The first gift cost $27. The second gift cost $8 more than the first gift. The third gift cost $13 less than the first gift. How much did Mrs. Muller spend for the 3 gifts?  

133) How many different ways can you spell the word “CANAL” in the figure at the right? You can only move up (↑) or to the right (→) from one letter to the next and you cannot jump over any letters.  

134) How many triangles are there in the figure at the right?  

135) At Sam’s school, recess is at 1:15 p.m. Sam looks at the clock. The hour hand is between the 12 and the 1 and the minute hand is on the 8. That means recess begins in ______ minutes.  

136) A baseball bat costs $14.98, a ball costs $8.98 and a glove costs $27.98. Jason has $50 with him. How much does he have to borrow from his mom if he wants to buy all 3 items?  

137) Joe has 35 toy cars. He wants to put 5 cars in each row. How many rows will he have?  

138) Clara has 5 pennies, 5 nickels and 5 dimes. How many different ways can she make 32¢?  

139) Amy, Bill, Chuck, Dan and Earl had a race. Amy did not win. Bill came in 6 yards behind Amy. Dan came in 3 yards ahead of Chuck. Earl came in 5 yards ahead of Bill. Who won the race?  

140) How much larger is (10 + 9 - 4) than (8 + 8 - 5)?  

141) If □ + Δ = 10 and □ - Δ = 2, what is the number represented by □? (□ and Δ represent the same number each time they appear.)  

142) If the sum of four 5’s was added to the sum of five 4’s, the total would be ______.
143) A lobster’s age in years is approximately his weight multiplied by 4, plus 3 years. What is the age of a 7 lb. lobster?

144) Tennis balls come in cans of 3 balls or 5 balls. Brett has to buy exactly 87 tennis balls. What is the least number of full cans he will need to buy?

145) Let \( a \Delta b = (a + a) - (b + b) \). For example: \( 5 \Delta 3 = (5 + 5) - (3 + 3) = 10 - 6 = 4 \). Express \( 8 \Delta 5 \) in simplest form.

146) There are 18 people waiting in line for a taxi. At least 1 person but no more than 6 people must go in each taxi. No two taxis can have the same number of passengers. What is the least number of taxis needed to accommodate the 18 people?

147) In a leap year, February has 29 days. In a leap year, if Valentine’s Day, February 14, falls on a Friday, then which day of the week will appear 5 times that month?  
   a) Thursday  b) Friday  c) Saturday  d) Sunday  e) Monday

148) The numbers 1, 2, 3, 4, 5, 6, are represented by A, B, C, D, E, F, but not necessarily in that order. From the addition and subtraction problems at the right, find the 3-digit number represented by ABC.

149) 10 - a = □. Find the value of □ + a.

150) In a standard clock, the _____ between the numbers opposite one another is always the same. (On a clock numbers like 12 and 6, 7 and 1 are opposite each other.)  
   a) sum  b) difference  c) product

151) Use only the digits 1, 2, 3. What is the answer if you subtract the smallest number you can make using all 3 digits exactly once from the largest number you can make using all 3 digits exactly once?

152) Clara has 10 pennies, 10 nickels and 10 dimes. How many different ways can she make 32¢?
153) Marge needs to measure exactly one pint of apple cider from a barrel. She has available to her a 3-pint jug and a 5-pint jug. How many times does she need to fill the 3-pint jug in order to measure exactly one pint?
1) (6) Numbering the sections, the 6 triangles are 1, 2, 3, 4, 1 & 2, 3 & 4.

2) (4:02) Halfway between 4 and 4:20 is 4:10. In 8 minutes it will be 4:10. It is now 4:02.

3) (Gary and Marie) 

55 + 10 = 50 + 15 = 65.

4) (18) If 1 chicken can lay 3 eggs in 4 days, then 1 chicken can lay 6 eggs in 8 days. Three chickens can lay 18 eggs in 8 days.

5) (23) Miss Green has 22 students, Mrs. White has 18, Mr. Brown has 18. 
22 + 18 + 18 = 58. 82 - 58 = 24. Mr. Black is in room 23 (he has 24 students).

6) (a or Friday) The 1st, 8th, 15th, 22nd and the 29th will be on a Wednesday. There will be 5 Fridays that month (the 3rd, 10th, 17th, 24th and 31st).

7) (7) If $\Diamond = 3$, then $\Box = 1$, then $\triangle = 7$.

8) (13) 20 cans would be $1$, so they collected a total of 60 cans. 
18 + 9 + 20 = 47. 60 - 47 = 13.

9) (27) Most coins: 1D, 1N, 35P = 37 coins.  
Least coins: 4D, 1N, 5P = 10 coins.  
37 - 10 = 27.

10) ($1.00) She has 4 dimes (40¢) and 12 nickels (60¢). She has $1.00 altogether.

11) (6) Namely $\triangle ABE, \triangle ACE, \triangle ADE, \triangle BCE, \triangle BDE, \triangle CDE$.

12) All 4 sides add to 11.
13)  (9)  Numbering the sections, the 9 rectangles are:
1, 2, 3, 4, 1 & 2, 1 & 3, 3 & 4, 2 & 4,
1 & 2 & 3 & 4.

There are a total of 18 children (11 + 7). The end result has to be 6 children in
Room A and 12 in Room B. This can be accomplished by moving 5 children
from Room A to Room B.

15)  (7φ)  She can make 8φ, 9φ and 10φ. Once she can make three in a row, the next 3
amounts (11φ, 12φ, 13φ) are made by adding a 3φ stamp. She can make any
amount of postage greater than 7φ.

16)  (Parker)  Neither Moran nor Parker played second base (it wasn’t their first season).
Jones played second base. Moran earned more than the pitcher so he’s not
the pitcher; Parker is.

17)  (9)  Looking at the ten’s column, Δ must be 9.

18)  (12φ)  60φ + 30φ = 90φ. 75φ + 3φ = 78φ. 90φ - 78φ = 12φ.

19)  (5)  52 - 37 = 15. If 3 students traveled in each car, then 5 cars were needed.

20)  (17)  Drew won 3 games, Stan won 7 games (4 more than Drew) and 7 ties.
3 + 7 + 7 = 17.

21)  (11)  “B” must be 3. That makes “A” equal to 8. 8 + 3 = 11.


24)  (11)  B is 5″ from C (half of 10). 5″ + 6″ = 11″.

25)  (29)  Every 5 seconds he gains 3 yards. After 25 seconds he is 15 yards out. In 4
more seconds he will be 20 yards out for the first time (even if only for an
instant).
26) Adding to 10. Other possible choices only add to 8 or 9. Other arrangements of the numbers for the answer are also correct.

27) Six leaps is only 12 feet. By the 7th leap a distance of at least 13 feet is covered.

28) $33 + 50 + 11 = 94. 100 - 94 = 6.$

29) $1 + 2 + 3 + 4 + 5 + 6 + 7 = 28.$

30) Two quarters (an hour) and two dimes (20 minutes) would be the least expensive way to cover the time period.

31) Adam opened 1 and it stayed open. Mary closed 2 and 4, but Carol re-opened 4. Bonnie closed 3 and Dan closed 5.

32) $10 \Delta 8 = (10 + 8) - (10 - 8) = 18 - 2 = 16. 8 \Delta 6 = (8 + 6) - (8 - 6) = 14 - 2 = 12. 16 - 12 = 4.$

33) $12 + 12 + 1 = 25.$

34) $80\varphi + 80\varphi + 15\varphi + 15\varphi + 15\varphi + \$2.12 = \$4.17.$

35) Steven gave one cupcake to 4 people not in the class leaving 26 - 4 = 22 students in the class.

36) Five 3rd grade students made a total of 20 drawings (4 each). 32 - 20 = 12. Each of the six 2nd grade students made 2 drawings.

37) If 5 + “A” = 2 in the unit’s column, “A” must be 7 and carry the one. $45 + 37 = 82.$

38) Amy is now 12 and in 3 years she will be 15 years old.

39) Melissa added $1 + 3 + 5 + 7 + 9 + 0 + 2 + 4 + 6 + 8 = 45.$
40) (6)  
\[ 42 - 10 + 7 = 39, \quad 42 + 10 - 7 = 45, \quad 45 - 39 = 6. \]

41) (d or 6)  
Points are numbered by the different ways of getting to that point. At each new intersection add the numbers that lead to that point. (Most students will use trial and error, but this numbering technique can be used for more complicated problems.)

42) (b or 2 p.m.)  
2 p.m. is 4 hours from 6 p.m. and 2 hours from 12 noon.

43) (6)  
Numbering the sections the 6 triangles are: 1, 2, 3, 1 & 2, 2 & 3, 1 & 2 & 3.

44) (13)  
\[ 3 + 1 + 2 + 3 + 4 = 13. \]

45) (2Q, 1D)  
Al has 60¢, Ben has 40¢ and Casey has 20¢. Al’s 3 coins are 2 quarters and 1 dime.

46) (swimming)  
Ann in not on the swimming team nor on the track team (the girl on the track team lives near Ann), so Ann is on the field hockey team. Betty is not on the swimming team (same class as girl who is), so Betty is on the track team. Carol is on the swimming team.

47) (15)  
He has 3 so far. To get one more he has to read a total of 80 pages. \[ 80 - 65 = 15. \]

48) (6)  
2D, 3P; 1D, 2N, 3P; 3N, 8P; 1D, 1N, 8P; 1D, 13P; 2N, 13P.

49) ($150)  
First item $49. Second item $49 + $9 = $58. Third item $58 - $15 = $43. $49 + $58 + $43 = $150.
50) (7) 64 legs means 16 dogs and cats. Since 9 are dogs, 16 - 9 = 7 cats.

51)  

| C |  
|---|---|
| 9 |   |
| 13|   |
| 1 |   |

5 + 11 - 7 = 9, 7 + 11 - 5 = 13, 7 + 5 - 11 = 1.

52) (14) Melissa is now 10 and in 4 years she will be 14 years old.

53) ($7.50) Each pencil costs $1.50. $9.00 - $1.50 = $7.50.

54) (6)  

<table>
<thead>
<tr>
<th>1</th>
<th>E</th>
<th>2</th>
<th>E</th>
<th>3</th>
<th>LE</th>
<th>4</th>
<th>PLE</th>
<th>5</th>
<th>LE</th>
<th>6</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td></td>
<td>PL</td>
<td></td>
<td>P</td>
<td></td>
<td>P</td>
<td>PP</td>
<td></td>
<td>PP</td>
<td></td>
<td>PPL</td>
</tr>
<tr>
<td>APP</td>
<td>AP</td>
<td>AP</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

55) (8) Numbering the sections, the 8 triangles are: 1, 2, 3, 1 & 3, 1 & 2, 2 & 4, 3 & 4, 1 & 2 & 3 & 4.

56) (8) The board was 12 x 2 = 24 feet long. She could cut 8 pieces each of which would be 3 ft. long.

57) (11) Keep subtracting 4 from 51 until a number is reached where 5-pound bags can be used for the rest. Four 4-pound bags and seven 5-pound bags will hold all 51 pounds of sugar. 7 + 4 = 11 bags.

58) (6) The top, the bottom and the 4 sides.

59) ($3) Half of $16 is $8. Since Amy spent $5, Karen spent $8 - $5 = $3.

60) (35) If the class that took 4 stacks has 28 books then there were 7 books in each stack. Four stacks has 28 books and 5 stacks has 28 + 7 = 35 books.

61) (13) Since y + y is even, one is not carried from the unit’s place. So x + z = 5. y is either 3 or 8. Since one is carried from the ten’s place (x + z = 5 in unit’s place), y must be 8. 8 + 5 = 13.

62) (11) (9 + 7) - (3 + 2) = 16 - 5 = 11.

22
63) (e or L) For example: 10 - 6 = 4 and 10 - 4 = 6.

64) (35) If Bill has as many as Carl and Dan together, then Bill must have half the number of cars. Half of 70 is 35 cars.

65) (2nd) Jerry had to be 2nd or 3rd (after Terry but before Barbara). Since Jerry did not arrive right after Terry, Terry arrived first, Jerry 3rd and Barbara last. That leaves Mike to arrive 2nd.

66) (9 & 1) 9 x 1 = 9; 9 + 1 = 10.

67) (11) 4 Δ 5 = (10 + 4) - (8 - 5) = 14 - 3 = 11.

68) (398) 132 + 469 = 601. 999 - 601 = 398.

69) (rubber-band) Every fourth item is a paper clip. That means the 24th item is a paper clip, 25th a thumbtack and 26th a rubber-band.

70) (23¢) 21¢ → 3 at 7¢ 26¢ → 3 at 7¢ and 1 at 5¢
22¢ → 3 at 5¢ and 1 at 7¢ 27¢ → 4 at 5¢ and 1 at 7¢
24¢ → 2 at 5¢ and 2 at 7¢ 28¢ → 4 at 7¢
25¢ → 5 at 5¢ 29¢ → 3 at 5¢ and 2 at 7¢

71) (36) 17 + 12 = 29. 36 - 7 = 29. 36 belongs in the box.

72) (70¢) 80¢ - 20¢ = 60¢. Janet gave ½ of 60¢ or 30¢ to Jack. If he now has $1, he started with 70¢.

73) (3' 6'') 4' 4'' - 3' 11'' is 5''. Five inches shorter than 3' 11'' is 3' 6''.

74) ($26) If 3 hours is $161 and 2 hours is $116, then his hourly charge is $45 ($161 - $116). Since 2 hours of work ($90) costs $116, his “service-call” charge is $116 - $90 = $26.

75) (9) If 15 + A = 21, A must be 6. 15 - 6 = 9.

76) (8) Looking at the ten’s column, A must = 8.

77) (Monday) If the 26th was a Friday so was the 19th (26 - 7), the 12th and the 5th of the month. If the 5th was a Friday, the 1st was a Monday.
78)  (3)  12 ft. after the 1st bounce; 6 ft. after the second bounce and 3 ft. after the third bounce.

79)  (18) Working backwards, 4½ x 2 = 9 and 9 x 2 = 18.

80)  (none) If he has at least one, then at least two of the statements would have to be true. The only true statement is “He has fewer than that” (meaning fewer than 5).

81)  (8) (k + 9) - 10 = 7; k + 9 must = 17; k = 8.

82)  (b or 2nd) Jake had to be 2nd or 3rd (after Tony but before Betsy). Since Jake did not finish right after Tony, Tony finished first, Jake 3rd and Betsy last. That leaves Mary to finish 2nd.

83)  (675) Divide the 900 tiles into 4 parts, one part for triangles and 3 parts for squares. 900 ÷ 4 = 225. There are 225 triangles and 900 - 225 = 675 squares.

84)  (39) 45 + 45 + 45 + 45 = 180. 297 - 180 = 117. 40 + 40 + 40 would be too many passengers. Since 39 + 39 + 39 = 117, there are 39 passengers in each of the 3 remaining cars.

85)  (11) 6 Δ 5 = (6 + 6 - 5) + (5 + 5 - 6) = 7 + 4 = 11.

86)  (45¢) Most: 6 dimes, 1 nickel, 1 penny or 66¢. Least: 6 pennies, 1 nickel, 1 dime or 21¢. 66¢ - 21¢ = 45¢.

87)  (Blue) Every 3rd toothpick is green. The 48th toothpick is green, the 49th red and the 50th blue.

88)  (8) Five $7 awards and 3 $5 awards is the only combination totaling $50. (Start subtracting $5 from $50 until you reach a number divisible by 7.)

89)  (7) If Mike has one brother then Danielle has two brothers. Since she has twice as many sisters as brothers, Danielle has 4 sisters. The seven children are Danielle’s 2 brothers + her 4 sisters + Danielle.

90)  24) If a + 2 = 3, then a = 1. 25 - 1 = 24.

91)  (a or 1 A.M.) It is 1 hour later in California or 1 A.M.
92) (19¢) He bought 13 pens. 13 x .37 = $4.81. $5.00 - $4.81 = $.19.

93) (96) Take the 2 largest numbers that the guesses were off and pair those with two extreme guesses until you get the same number. Take 16 and 20 with 76 and 112. 112 - 20 = 92, 76 + 16 = 92 or 112 - 16 = 96, 76 + 20 = 96. 96 works with the other numbers (90 + 6, 88 + 8 and 85 + 11).

94) (27) If 52 - □ = 25, then 52 - 25 = □. 52 - 25 = 27.

95) (5) 7 + 7 + 7 + 7 + 7 = 35.

96) (42) 1 minute 29 seconds is 31 seconds from 2 minutes. Then add another 11 seconds. 31 + 11 = 42 seconds.

97) (72) From A to B is 16" (half of 32"). From B to C is also 16". If B to D is 36", C to D must be 20" (36 - 16). D to E is also 20". 16" + 16" + 20" + 20" = 72".


99) (21) Circle A: 9 + 2 + 3 + 5 = 19.
Circle C: 5 + 3 + 4 + 7 = 19. 19 + 19 = 38.
Circle B: 8 + 2 + 3 + 4 = 17. 38 - 17 = 21.

100) (8¢) 52 - 1, 53 - 2, etc., until you reach a pair that add to 67¢. 59 - 8.

101) (30) 12 + 12 + 6 = 30.

102) (2) 1 + 2 + 3 + 4 + 5 + 6 = 21. 21 - 2 = 19.

103) $\begin{array}{c}
7614 \\
-1467 \\
6147
\end{array}$

7614 - 1467 = 6147.

104) (15) He starts practice at 3:20 p.m. and finishes practice an hour and a half later which is 4:50 p.m. Twenty-five minutes after that is 5:15 p.m. With dinner at 6:30 p.m. he has an hour and 15 minutes to practice the piano.

105) (3) Since 7 plums and 3 pears weigh as much as 4 apples and 1 apple weighs as much as 1 plum and 1 pear, 7 plums and 3 pears weigh as much as 4 plums and 4 pears. Thus, 3 plums weigh as much as 1 pear.


108) (still midnight)) 48 hours before midnight is still midnight and the sun would not be shining. (Accept any answer that indicates the sun could not be shining at the time Slick indicated.)

109) (9) (6 + 4 + 5) = 15; (20 + 5 - 19) = 6. 15 - 6 = 9.

110) (17) 31 - 17 = 14. 31 - 14 = 17. For any a - b = c, a - c will = b.

111) (29) It will gain 6 inches in each 10 second interval. After 20 seconds it will be 12 inches up the sink. In the next 9 seconds it will reach the top. 20 + 9 = 29 seconds.

112) (8) 114 - 71 = 43. 39 + 12 = 51. 51 - 43 = 8.

113) (4) $8' + 8' + 8' + 8' = 32'$. $12' + 12' + 12' = 36'$. $36' - 32' = 4'$.

114) (12:35 P.M.) An hour ago it was 1:20. Break the 45 minutes into 20 minutes and 25 minutes. Twenty-five minutes before 1:00 is 12:35 P.M.

115) (3) 19 - 11 = 8; 5 + 3 = 8. 3 belongs in the box.

116) (9) 3 + 7 + 10 = 20; 2 + 9 + □ = 20. □ = 9.

117) (8) To find the number of pages read take the difference of the page numbers and add 1. 17 - 10 = 7. 7 + 1 = 8. (If you read the first 10 pages in a book, you read 10 - 1 = 9, 9 + 1 = 10 pages.)

118) (16) From 12° to zero is a drop of 12°. From zero to 4° below zero is a drop of 4°. 12° + 4° = 16°.

119) (26) 74 + 17 = 91. 120 - 55 = 65. 91 - 65 = 26.

120) (6) 23 - □ = 9 + 8 = 17. 23 - □ = 17.

121) (15) 5 + 5 + 5 = 15.

122) (22) 8 + 4 = 12. 34 - □ = 12. □ = 22.

26
123) (4 and 13) \[ 7 + 8 + 11 = 26. \]

124) (6) 16 is the number that is 4 less than 20 and 16 is 6 more than 10.

125) ($1.91) \[ 12 \times .05 = .60. \] $1.31 + .60 = $1.91.

126) (6) Two in front of Mary, 3 behind Mary and Mary. X X M X X X.

127) (36) Start with 9's: 27, 36, 45. Of these 3 numbers only 36 can be reached by counting by 2's.

128) (11) \[ 22 + 11 = 33; \text{ or } 33 + 11 = 44. \]

129) (16) Nine puppies would be 36 paws. Five kittens would be 20 paws. 36 - 20 = 16.

130) (4) For 24 correct problems she would get 4 “smiley faces.”

131) (35) \[ 3 + 8 = 11, \quad 11 + 8 = 19, \quad 19 + 8 = 27, \quad 27 + 8 = 35. \]

132) ($76) \[ $27 + $35 + $14 = $76. \]

133) (6)

\[
\begin{array}{ccc}
\text{L} & \text{L} & A \rightarrow L \\
\uparrow & \uparrow & \uparrow \\
A & N \rightarrow A & N \\
\uparrow & \uparrow & \uparrow \\
C \rightarrow A \rightarrow N; & C \rightarrow A & C \rightarrow A \\
\end{array}
\]

134) (5) Numbering the sections, the five triangles are 1, 2, 3, 1 & 2, 1 & 2 & 3.

135) (35) In twenty minutes it will be 1 o'clock and in 35 minutes it will be 1:15 P.M.

136) ($1.94) \[ $27.98 + $8.98 + $14.98 = $51.94. \quad $51.94 - $50 = $1.94. \]