



Elementary School Sprint Test 11022

Problems 1-30

Name: _____

School: _____

Grade: _____

Correct: _____

Incorrect: _____

SCORE (5 x Correct - 1 x Incorrect) = _____

Scorer's Initials: _____

Scorer's Initials: _____

DO NOT BEGIN UNTIL YOU ARE INSTRUCTED TO DO SO

This round of the competition consists of 30 problems. You will have 40 minutes to complete the problems. You are NOT allowed to use calculators, slide rules, books, or any other aids during this round. If you are wearing a calculator wrist watch, please put it on the end of the table now. Calculations may be done on scratch paper. Record only the letter of the answer in the blanks in the right-hand column of the competition booklet. If you complete the problems before time is called, use the remaining time to check your answers.

Scoring: Five points will be awarded for each correct answer. One point will be deducted for each incorrect answer. No deduction is taken for skipped problems.

1. What is the value of $1617 + 1718 + 1819$? 1. _____
 A) 4851 B) 5144 C) 5154 D) 5254
2. $120406 \div 11 =$ 2. _____
 A) 1246 B) 10906 C) 12496 D) 10946
3. Which of the following numbers is NOT prime? 3. _____
 A) 79 B) 77 C) 73 D) 71
4. 9 tens plus 3 hundreds minus 7 ones equals 4. _____
 A) 383 B) 397 C) 937 D) 923
5. $\frac{2}{3} \times \frac{6}{5} \times \frac{10}{9} =$ 5. _____
 A) $\frac{18}{17}$ B) $\frac{8}{9}$ C) $\frac{4}{9}$ D) $\frac{60}{135}$
6. 27 is what percent of 60? 6. _____
 A) 30% B) 35% C) 45% D) 50%
7. In the land of CoCo, 3 pocos equals 1 moco, 5 locos equals 1 joco, and 10 mocos equals 4 jocos. How many pocos equals 2 locos? 7. _____
 A) 3 B) 4 C) 5 D) 10
8. What is the largest number that evenly divides both 231 and 105? 8. _____
 A) 1 B) 3 C) 15 D) 21
9. At the snack bar, a soda costs 49 cents, a fruit roll-up costs 29 cents, and a granola bar costs 69 cents. How much will 2 sodas, 5 fruit roll-ups, and 3 granola bars cost? 9. _____
 A) \$4.60 B) \$4.50 C) \$4.40 D) \$4.30
10. $(24 \times 24) - (16 \times 16) =$ 10. _____
 A) (8×8) B) (40×40) C) (8×2) D) (8×40)
11. What is the remainder when $(11 \times 10 \times 9 \times 8 \times 7 \times 6)$ is divided by $(1 \times 2 \times 3 \times 4 \times 5)$? 11. _____
 A) 11 B) 44 C) 7 D) 0
12. It takes Andre 2.5 hours to drive the 150 miles from Sacramento to Santa Cruz. What is Andre's average speed on the trip (in miles per hour)? 12. _____
 A) 50 B) 55 C) 60 D) 75

13. Jin gave one-half of his candy to Jack and one-third of his candy to Kate. What fraction of his candy did Jin have left? 13. _____
 A) $\frac{1}{3}$ B) $\frac{1}{6}$ C) $\frac{1}{18}$ D) $\frac{2}{9}$
14. Courtney has a length of string. She can make 36 squares with sides of length 2 inches. If she makes triangles with sides of length 3 inches, how many triangles can she make? 14. _____
 A) 8 B) 12 C) 24 D) 32
15. What is the remainder when 1678394 is divided by 9? 15. _____
 A) 4 B) 7 C) 2 D) 0
16. Which of the following fractions is the SMALLEST? 16. _____
 A) $\frac{5}{65}$ B) $\frac{4}{44}$ C) $\frac{2}{24}$ D) $\frac{3}{42}$
17. Carem has six different positive whole numbers and their average is 18. She picks five of the six numbers and takes their average. She gets 20. What number did Carem NOT pick? 17. _____
 A) 4 B) 8 C) 15 D) 16
18. Which of the following is the largest? 18. _____
 A) (5×5) B) $(4 \times 4 \times 4)$ C) $(3 \times 3 \times 3 \times 3)$ D) $(2 \times 2 \times 2 \times 2 \times 2)$
19. Zami bought a book whose cover price was \$18.00. After the sales tax was added, the final amount Zami paid was \$19.08. What was the sales tax rate, in percent? 19. _____
 A) 6% B) $6\frac{2}{3}\%$ C) 7.5% D) 8%
20. A square, an equilateral triangle, and a regular hexagon all have the same perimeter. If the area of the square is 36 sq cm, what is the length of a side of the regular hexagon? 20. _____
 A) 9 cm B) 4 cm C) 8 cm D) 6 cm
21. $15 \times 39 - 5 \times 102 + 3 \times 35 - 30 = ?$ 21. _____
 A) 150 B) 0 C) 50 D) 2,070,675
22. What is the value of $(307 \times 209 \times 111)$? 22. _____
 A) 7122013 B) 7122053 C) 7122073 D) 7122093

23. Kathy uses the digits 1, 3, 5 and 9 to make four-digit numbers by using each digit exactly once. What is the difference between the second-largest number she can make and second-smallest number she can make?
 A) 7956 B) 8118 C) 7992 D) 8172 23. _____
24. What is the largest prime number that is less than 110?
 A) 103 B) 105 C) 107 D) 109 24. _____
25. Desmond runs 5 miles at a constant speed of 11 feet per second. How long, in minutes, does it take him to run the 5 miles?
 A) 40 B) 55 C) 45 D) 50 25. _____
26. Which of the following four math operations results in the LARGEST result?
 A) $1\frac{4}{5} + 1\frac{2}{3}$ B) $1\frac{4}{5} - 1\frac{2}{3}$ C) $1\frac{4}{5} \times 1\frac{2}{3}$ D) $1\frac{4}{5} \div 1\frac{2}{3}$ 26. _____
27. Amy, her two parents, and her two brothers go to a football game. An adult ticket is \$23 and a child ticket is \$16. They can also buy a family pass for \$69. If Amy and her brothers are eligible to purchase child tickets, how much money does the family save by buying a family pass?
 A) \$16 B) \$9 C) \$25 D) \$23 27. _____
28. Today (May 15, 2010) is a Saturday. What day of the week will May 14, 2011 fall on?
 A) Friday B) Saturday C) Sunday D) Monday 28. _____
29. Camille takes an odd prime number and multiplies it by itself, then adds an even number that is not negative. Which of the following can NOT be the answer?
 A) 7 B) 9 C) 11 D) 29 29. _____
30. Katie the Boxing Kangaroo hops three times for every two times she punches. At the end of her boxing match, the sum of her hops and her punches was 105. How many times did Katie hop in the boxing match?
 A) 105 B) 23 C) 42 D) 63 30. _____



Elementary School Target Test 11022

Name: _____

Grade: _____

Team/School: _____

SCORE: # 1 _____

SCORE: # 2 _____

Scorer's initials _____

Scorer's initials _____

DO NOT BEGIN UNTIL YOU ARE INSTRUCTED TO DO SO

This round of the competition consists of eight problems. They will be presented to you in pairs. Work on one pair of the problems will be completed and answers will be collected before the next pair will be distributed. The time limit for each set of the two problems is six minutes. The first pair of problems is on the other side of this sheet. When instructed to begin, pick up your pencil and begin working. Record your final answer in the designated space on the problem sheet. All answers must be complete, legible, and simplified to lowest terms. This round allows the use of calculators, and calculations may also be done on scratch paper, but no other aids are allowed. If you complete the problems before time is called, use the time remaining to check your answers.

Scoring: Ten points will be awarded for each correct answer. No deduction is taken for incorrect answers or skipped problems.

1. Rose's family donated the entire contents of their "change jar" to charity. In the change jar were 243 pennies, 87 nickels, 49 dimes, 85 quarters, and four dollar coins. How much money was in the change jar? 1. _____
2. Sawyer is racing in the Great Australian Animal Race. In this race, you run a 5 mile race (against a kangaroo), swim a 1 mile race (against a crocodile), and climb a 100 foot tree (against a koala). If Sawyer's total time for all three races is less than the animals' total time, Sawyer wins. A kangaroo runs at 4 miles per hour. A crocodile swims at 1.5 miles per hour. A koala climbs 2.5 feet per minute. Sawyer runs at a speed of 6 miles per hour, but he only swims at a speed of 0.75 miles per hour. As long as Sawyer can climb faster than a certain speed (in feet per minute), he can win the race. What is that speed? 2. _____



Elementary School Target Test 11022

Name: _____

Grade: _____

Team/School: _____

SCORE: # 3 _____

SCORE: # 4 _____

Scorer's initials _____

Scorer's initials _____

DO NOT BEGIN UNTIL YOU ARE INSTRUCTED TO DO SO

The second pair of problems is on the other side of this sheet. When instructed to begin, pick up your pencil and begin working. Record your final answer in the designated space on the problem sheet. All answers must be complete, legible, and simplified to lowest terms. This round allows the use of calculators, and calculations may also be done on scratch paper, but no other aids are allowed. If you complete the problems before time is called, use the time remaining to check your answers.

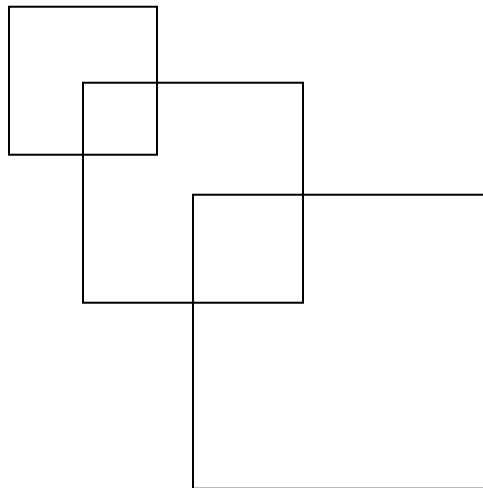
Scoring: Ten points will be awarded for each correct answer. No deduction is taken for incorrect answers or skipped problems.

3. Rose is going to France for a vacation and she needs French money (euros). At the airport, there is a money exchange center where she can exchange American dollars for French euros. For each one dollar she exchanges, she can receive 0.80 euros. The exchange center charges a fee for exchanging money. The fee is \$7.95 for the first 100 dollars exchanged, and then 3 cents for each dollar exchanged after the first 100. If Rose wants to end up with 140 French euros, how much money (in American dollars and cents) must she give the money exchange center? (Round to the nearest cent, and an error of plus or minus 1 cent will be allowed).

3. _____

4. Sun has three squares, one with side length 6, one with side length 8, and one with side length 10. She arranges them so that the corner of the second square is at the center of the first square, and that the corner of the third square is at the center of the second square. The result is figure shown in the diagram below. What is the area of this figure?

4. _____





Elementary School Target Test 11022

Name: _____

Grade: _____

Team/School: _____

SCORE: # 5 _____

SCORE: # 6 _____

Scorer's initials _____

Scorer's initials _____

DO NOT BEGIN UNTIL YOU ARE INSTRUCTED TO DO SO

The third pair of problems is on the other side of this sheet. When instructed to begin, pick up your pencil and begin working. Record your final answer in the designated space on the problem sheet. All answers must be complete, legible, and simplified to lowest terms. This round allows the use of calculators, and calculations may also be done on scratch paper, but no other aids are allowed. If you complete the problems before time is called, use the time remaining to check your answers.

Scoring: Ten points will be awarded for each correct answer. No deduction is taken for incorrect answers or skipped problems.

5. If the sum of the first 111 natural numbers ($1 + 2 + 3 + 4 + \dots + 111$) is 6216, what is the sum of the natural numbers from 9 to 119 ($9 + 10 + 11 + 12 + \dots + 119$)? 5. _____
6. A group of people is invited to a special community event. All the people are put into Room #1. Next, half of them are chosen to go to Room #2. Next, one-third of the people in Room #2 are chosen to go to Room #3. Next, 25% of the people in Room #3 are chosen to go to Room #4. Finally, 20% of the people in Room #4 are chosen to go to Room #5. At the start of the event, there were 840 people in Room #1. When the event was over, how many people were in Room #5? 6. _____



Elementary School Target Test 11022

Name: _____

Grade: _____

Team/School: _____

SCORE: # 7 _____

SCORE: # 8 _____

Scorer's initials _____

Scorer's initials _____

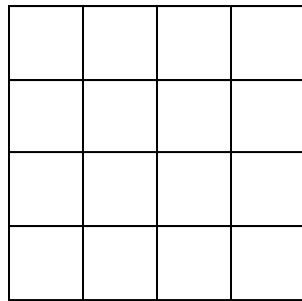
DO NOT BEGIN UNTIL YOU ARE INSTRUCTED TO DO SO

The fourth pair of problems is on the other side of this sheet. When instructed to begin, pick up your pencil and begin working. Record your final answer in the designated space on the problem sheet. All answers must be complete, legible, and simplified to lowest terms. This round allows the use of calculators, and calculations may also be done on scratch paper, but no other aids are allowed. If you complete the problems before time is called, use the time remaining to check your answers.

Scoring: Ten points will be awarded for each correct answer. No deduction is taken for incorrect answers or skipped problems.

7. When 90 is divided by a certain number D , the remainder is 10. What is the smallest possible value of the number D ? 7. _____

8. Juliet is a contestant on the game show *FIND THOSE SQUARES!*. On this show, a contestant is shown a diagram and wins money for finding squares. For each square she finds, she wins money equal to the area of the square in square units. For example, for finding a 1 unit by 1 unit square she wins \$1; for finding a 2 unit by 2 unit square she wins \$4. Juliet is shown the below diagram. If she finds all the squares in the diagram, how much money will Juliet win? 8. _____





Elementary School Team Test 11022

Problems 1-10

Team Name: _____

School: _____

Team Members: (Captain) _____

SCORE: _____

Scorer's Initials: _____

Scorer's Initials: _____

DO NOT BEGIN UNTIL YOU ARE INSTRUCTED TO DO SO

This round of the competition consists of 10 problems, which the team has 20 minutes to complete. Team members may work together in any way to solve the problems. Team members may talk during this section of the competition. This round allows the use of calculators, and calculations may also be done on scratch paper, but no other aids are allowed. All answers must be complete, legible, and simplified to lowest terms. The team captain must record answers on her/his own problem sheet. If the team completes the problems before time is called, use the remaining time to check your answers.

Scoring: Ten points will be awarded for each correct answer. No deduction is taken for incorrect answers or skipped problems.

1. What is the only two-digit number whose value is equal to two times the sum of its digits? 1. _____

2. Miles adds up all the numbers from 1 through 25 ($1 + 2 + 3 + \dots + 24 + 25$), then multiplies his sum by 26. Sawyer adds up all the numbers from 1 through 26 ($1 + 2 + 3 + \dots + 25 + 26$), then multiplies his sum by 25. What is the positive difference between their two totals? 2. _____

3. The hot water faucet of a bathtub can fill the tub in 8 minutes. The drain of the bathtub, when opened, can empty the full tub in 10 minutes. The bathtub is half-full and the drain is closed. Michael opens the drain and turns on the hot water faucet. How long (in minutes) will it take to fill the tub? 3. _____

4. Bret burps 2 times every 45 seconds. Jermaine burps once every 36 seconds. Dave burps 3 times every 50 seconds. Together, how many times do they burp in 15 minutes? 4. _____

5. $379ABC$ is a six-digit number where the letters A, B, and C each represent a different digit (which can not be 3, 7, or 9). If the number $379ABC$ is evenly divisible by 45, and the digit represented by the letter B is even, what is the largest possible value of the digit represented by the letter A? 5. _____

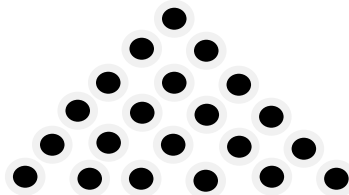
6. Mr. Douglas has 6 one-dollar bills that he is going to divide between his three sons Mike, Robbie, and Chip. If each son has to receive at least one dollar bill, how many different ways are there for Mr. Douglas to distribute the dollar bills between his three sons? 6. _____
7. Single copies of the new Porry Hatter book usually cost \$16 each. If Libby buys 20 or more copies of the book, they cost only \$13 each. How much money does Libby save by buying 20 copies of the Porry Hatter book instead of 19 copies? 7. _____
8. A rectangle is divided into two squares by a line segment going from one side to the side opposite it. If the area of one square is 25, what is the perimeter of the rectangle? 8. _____
9. The month of May has 31 days. What is the greatest number of Saturdays that could occur in the month of May? 9. _____
10. A horse and a mule are carrying packs on an expedition. The horse and the mule are each carrying a different number of sacks. The sacks are all the same size and weight. The horse says "My load is so heavy!" The mule says "Why are you complaining? If one sack was moved from your back to mine, I would be carrying twice as many sacks as you. If one sack was moved from my back to yours, we would be carrying the same number of sacks." How many sacks was the horse carrying? 10. _____



Elementary Countdown Round 11022

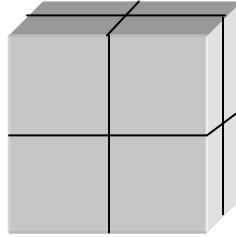
- 1) What is $(2 + 3 + 4 + 5 - 6 - 8)$? [0]
- 2) Today is Saturday. What day will it be 100 days from now? [Monday]
- 3) 36 divided by 3 equals 3 times what number? [4]
- 4) Sundeep and Murthy both start with the same number. Sundeep adds 6 to the number. Murthy multiplies the number by 2. They both get the same result. What number did they both start with? [6]
- 5) It is 2:00 PM right now. What time will it be in 100 hours? (Make sure to say if it is AM or PM). [6:00 PM]
- 6) Deveena has a pile of coins consisting of only quarters and dimes. Together, the change is worth 85 cents. What is the most number of dimes Deveena could have? [6]
- 7) What is the smallest odd prime number? [3]
- 8) On the math contest, a student receives 5 points for each correct answer and loses one point for each incorrect answer. Francesca gets 19 problems correct and 2 problems incorrect. What is her score? [93]
- 9) Karel has 8 nickels, 16 dimes, and four quarters. How much money (in dollars and cents) does he have all together? [\$3.00]
- 10) What is the smallest positive number that can be evenly divided by 2, by 3, and by 5? [30]

- 11) How many dots are in the figure below? [21]



- 12) May 5 is a "Palindrome Day", because the number of the month and the number of the day are the same (5/5). How many Palindrome Days are there in the year 2010? [12]

- 13) Shen buys a robot for \$5, sells it for \$7, buys it back for \$10, then sells it again for \$16. How much profit did she make on all the deals together? [\$8]
- 14) On the last four math contests, Yi scored 100, 84, 92 and 120. What was Yi's average score on the four math contests? [99]
- 15) A big cube is sliced into smaller cubes by making cuts halfway through each edge, as shown below. Once all the cuts are finished, how many smaller cubes result? [8]



- 16) What is the value of 111 ones plus 1 hundred plus 11 tens? [321]
- 17) Greta puts the numbers starting from 1 into four columns (A, B, C, and D) using the pattern shown below. Into which column (A, B, C, or D) will Greta write the number 42? [B]

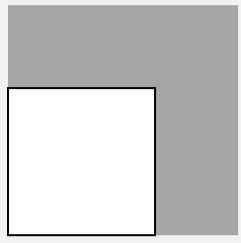
A	B	C	D
1	2	3	4
5	6	7	8
9	10	11	12

- 18) A digital camera and a memory card cost \$100 together. If the digital camera costs \$80 more than the memory card, how much does the memory card cost? [\$10]
- 19) If a train travels 1.5 miles in one minute, what is its speed in miles per hour? [90]
- 20) Eloise starts with a number. She multiplies the number by 4, adds 8 to the result of that operation, then divides that result by 3. If the final result was 28, what was the original number Eloise started with? [19]
- 21) Perkins has floor tiles measuring 4 inches by 6 inches. How many of these tiles would take to cover a floor measuring 2 feet by 3 feet, without overlapping any tiles? [36]
- 22) When a number is multiplied by itself, the result is called a "square number". For example: 1 (= 1x1) and 4 (=2x2) are square numbers. What is the largest square number that is less than 100? [81]
- 23) VJ has 40 M&Ms, all are either red or yellow. He gives half his yellow M&Ms to Mark. After this, VJ has 27 M&Ms left. How many red M&Ms does he have? [14]

- 24) What is the largest multiple of 3 that is less than 100? [99]
- 25) What is $18 + 19 + 20 + 21 + 22$? [100]
- 26) The product of two whole numbers is 19. What is their sum? [20]
- 27) 12 dozen shoes are divided into pairs. How many pairs are there? [72]
- 28) What is the time 7 hours and 7 minutes after 8:08 AM? (Make sure to put AM or PM after your answer) [3:15 PM]
- 29) If 2 groups are equal to 3 floops, and 4 floops are equal to 5 shoops, then how many groups are equal to 15 shoops? [8]
- 30) What is the value of $(400 - 78 - 22 - 84 - 16 - 81 - 19 - 27)$? [73]
- 31) Ana divided a certain number N by 6 and got 4 as her answer. If Carmen multiplied the same number N by 2, what would be her answer? [48]
- 32) Marcia is three years older than Jan. Greg is four years older than Jan. Peter is two years younger than Greg. How many years older than Peter is Marcia? [1]
- 33) Min has a collection of figures, all of them are either squares and triangles. She counts all the sides of the figures and gets a total of 19. What is the largest number of triangles Min could have? [5]
- 34) A rectangle and a square have the same area. The rectangle has side lengths of 2 and 8. What is the side length of the square? [4]
- 35) In one day, Sparky can eat 6 oranges and Anna can eat 2 oranges. How many days would it take the both of them to eat 24 oranges? [3]
- 36) What is the value of $(45 + 37 + 24 - 30 - 20 - 40)$? [16]
- 37) Rowena has a bug collection. Each day she adds 3 new bugs to her collection. If she has 28 bugs after 4 days, how many bugs will she have after 10 days? [46]
- 38) What is the value of $(25 \times 6 \times 14)$? [2100]
- 39) A swimming pool measuring 10 meters by 20 meters is enclosed by a deck that measures 1 meter in width. What is the area of the deck (in square meters)? [64]
- 40) Kaia stands in a line of people. She is the 13th person, counting from the front of the line. She is the 8th person, counting from the rear of the line. How many people are in the line? [20]

41) Paper clips cost 48 cents for one dozen. How many paper clips can be bought for \$1? [25]

42) If the inner square has side length 4, and the outer square has side length 6, what is the area of the shaded region? [20]



43) In the months of March and April, it only rained on every odd-numbered day. In those two months, how many days did it rain? [31]

44) 8 hours and 37 minutes is how many minutes? [517]

45) There are 4 people at a party. If each person shakes hands with each other person one time, then how many handshakes will happen? [6]

46) Nikolai writes down the numbers from 1 to 100. In how many different numbers does the digit 3 appear? [19]

47) What is the largest two-digit odd number with an even tens' digit? [89]

48) If Taji can run 10 kilometers in one hour, how long (in minutes) would it take her to run 500 meters? [3]

49) When Nnendi sells a short story, she gets paid 4 cents per word. If she sells a short story that is 3500 words, how much money (in dollars) does she get paid? [\$140.00]

50) Jenny can mail up to 3 books in one Special Book Mailing Box. If she has 26 books to mail, how many Special Book Mailing Boxes does Jenny need? [9]

51) If (the number of sides in a triangle) is multiplied by (the number of sides in a pentagon), what is the result? [15]

52) 2 lines can intersect in at most 1 point. What is the maximum number of points in which 4 lines can intersect? [6]

53) What is the average of 9, 18 and 36? [21]

54) Eleni has 1 quarter, 2 dimes, 3 nickels and 4 pennies. How much money (in cents) does Eleni have? [64 cents]

- 55) A line and a circle are drawn on a piece of paper so that the line passes through the center of the circle. How many times does the line cross the circle? [2]
- 56) A teacher brought 32 cookies to school for her class. Every student got a cookie, and 10 students took two cookies. If $\frac{1}{4}$ of the cookies were left over, how many students are in the class? [14]
- 57) Annika is watching the new *Math Girl* movie in the theatre. The movie is 1 hour and 26 minutes long, and there were 9 minutes of previews before the movie. If the previews started at 2:30, what time will the movie be done? [4:05]
- 58) How many positive integers less than 30 are divisible by 3 or 5 but not both? [12]
- 59) Azza likes to kick footballs. If he kicked one football 42 yards, two footballs 44 yards each, and one football 54 yards, what was the average distance (in yards) of all four of his kicks? [46 yards]
- 60) Maral has 100 pennies and Charlotte has no pennies. Maral gives half her pennies to Charlotte. Charlotte then gives half her pennies back to Maral. How many pennies does Maral have when they're done? [75]
- 61) What is the value of $(45 + 45 + 45 + 45) + (55 + 55 + 55 + 55)$? [400]
- 62) What is the sum of the first four positive prime numbers? [17]
- 63) Kylie has five coins. Only one of them is a penny. What is the least amount of money (in cents) that Kylie can have? [21 cents]
- 64) What is the value of $(27 \times 27) - (13 \times 13)$? [560]

MATH BOWL CHAMPIONSHIP ROUND QUESTIONS

- 65) In the Math Bowl Championship Round, two teams compete to answer 11 questions. Only one team can get credit for answering a question correctly. What is the minimum number of questions a team must answer correctly in order to ensure they win the Math Bowl Championship Round? [6]
- 66) What is $(18 \times 25 \times 22) \div (55 \times 15)$? [12]
- 67) June has 10 shapes which are either triangles or squares. When June counts up all the sides, the total is 34 sides. How many triangles does June have? [6]
- 68) Angel uses the digits 1 through 9 to make three three-digit numbers by using each digit exactly once. He then adds the three numbers together. What is the largest possible value of the sum he gets as his result? [2556]

- 69) What is the ones' digit of the product $(79 \times 79 \times 79)$? [9]
- 70) What is (the number of faces of a cube) times (the number of vertices of a cube)? [48]
- 71) We define the operation Ω as the average of two numbers, in other words $(A \Omega B) = (A+B)/2$. What is $2 \Omega (6 \Omega 4)$? [$3 \frac{1}{2}$ or 3.5]
- 72) Toya has 27 cent stamps and 9 cent stamps. She needs to put a total of 72 cents on a package. What is the smallest number of stamps she can use? [4]
- 73) Dr. Marvin Candle was born in an interesting year. The tens digit was three times the thousands digit, the hundreds digit was three times the tens digit, and the ones digit was the sum of the tens digit and the thousands digit. What year was Dr. Candle born? [1934]
- 74) When a certain two-digit number is divided by 7, the remainder is 5, and when it is divided by 9, the remainder is also 5. What is the smallest possible value of the number? [68]
- 75) In a Fibonacci sequence, each number after the second number is the sum of the previous two numbers. For example, the sequence 1, 1, 2, 3, 5 is a Fibonacci sequence. Carlos makes a Fibonacci sequence starting with two numbers A and B. The sequence starts A, B, 11, 20, 31. What is the value of A? [2]
- 76) How many two digit numbers are there in which the tens digit is greater than the ones digit? [45]
- 77) We will call 1234 a "mountain" number because each digit, reading left to right, is larger than the previous digit. What is the largest "mountain" number that is less than 10,000? [6789]
- 78) Morrison is counting numbers by starting at 100 and subtracting 7 each time. So, he starts out with 100, 93, 86, and continues. What is the last positive number Morrison counts? [2]
- 79) A rectangle has sides whose lengths are integers (whole numbers). The perimeter of the rectangle is 18. What is the largest possible value for the area of the rectangle? [20]
- 80) What is the value of $(26 + 27 + 28 + 29 + 30 + 31 + 32 + 33 + 34)$? [270]



Problems 1-80

Name: _____

School: _____

Grade: _____

Correct: _____

Incorrect: _____

SCORE: (5 x Correct - 4 x Incorrect =) _____

Scorer's Initials: _____

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DO NOT BEGIN UNTIL YOU ARE INSTRUCTED TO DO SO

This is a 10-minute test. There are 80 problems. Solve accurately and quickly as many as you can in the order in which they appear. **ALL PROBLEMS ARE TO BE SOLVED MENTALLY.** Make no calculations with paper and pen/pencil. Write only the answer in the space provided for each problem. Answers must be complete, legible, and simplified to lowest terms. You are not allowed to use calculators, slide rules, books, or any other aids during this round.

Every tenth problem, marked with an asterisk (*), is an estimation problem which requires approximate integer answers. Any answer to an estimation problem that is within five percent of the correct answer will be scored correct.

Scoring: Five points will be awarded for every correct answer. For every incorrect answer or skipped problem, four points will be deducted. No deduction is taken after the last problem attempted. **Erasures, mark-overs, mark-outs, and extraneous marks on the paper ARE counted as INCORRECT.**

1. $60 - 23 =$ _____
2. $4 + 44 + 444 =$ _____
3. $13 \times 2 \times 5 =$ _____
4. $108 \div 9 =$ _____
5. What digit is in the hundredths place value of 1234.5678? _____
6. $(3 \times 100) + (1 \times 10) + (2 \times 1000) =$ _____
7. $12 + 13 + 14 - 15 =$ _____
8. $2418 \div 6 =$ _____
9. What is the numerical value of CLXXVIII (Roman numerals)? _____
10. (*) Estimate the value of $(678 + 203 + 449)$ _____
11. $123 \times 11 =$ _____
12. Round 6789 to the nearest thousands: _____
13. $30 \times 50 \times 70 =$ _____
14. How many odd numbers are there between 6 and 25, inclusive? _____
15. $15 \times 15 =$ _____
16. What is the remainder when 375 is divided by 9? _____
17. $5 + 7 + 9 + 11 + 13 =$ _____
18. $47 \times 50 =$ _____
19. What number added to twenty-four is thirty-three? _____
20. (*) Estimate the value of $(421305 \div 703)$ _____
21. What is the smallest prime number larger than 32? _____
22. What is 15% expressed as a fraction? _____
23. $117 \times 25 =$ _____

24. 8 yards is how many feet? _____
25. $624 - 426 =$ _____
26. $25 + 25 \div 5 =$ _____
27. What is the largest whole number that evenly divides both 24 and 16? _____
28. $2.1 + 3.7 + 1.4 =$ _____
29. 16 is to 24 as 10 is to what number? _____
30. (*) Estimate the value of (401×352) _____
31. Write the value of .8 as a fraction _____ (fraction)
32. $10.7 + 11.6 + 3.5 =$ _____
33. $1.2 \times 0.5 =$ _____
34. $18 \times 22 =$ _____
35. $3 + 33 - 333 + 3333 =$ _____
36. $\frac{7}{9} - \frac{1}{9} =$ _____
37. 2 quarters and 8 nickels is equal in value to how many dimes? _____
38. $(15 \times 15) - (14 \times 14) =$ _____
39. How many centimeters is $6\frac{1}{4}$ meters? _____
40. (*) Estimate the value of the positive number that, when multiplied by itself, equals 12089.

41. $(6 \times 6 \times 6) =$ _____
42. How many sides does a heptagon have? _____
43. If the perimeter of a square is 32 feet, what is its area? _____ (square feet)
44. If $N = 4$, what is the value of $(6 \times N - 3)$? _____

45. Write the value of $(4\frac{1}{4} \times 4\frac{3}{4})$ as a mixed number: _____
46. $15 \times 38 =$ _____
47. What is 30% of 40? _____
48. What is the next term in the sequence 2, 5, 8, 11, ... ? _____
49. Write the value of $5\frac{2}{3} - 4\frac{1}{2}$ as a mixed number: _____
50. (*) Estimate the value of $(39 \times 40 \times 41)$: _____
51. What is the value of $(1 + 3 + 5 + 7 + 9 + 11 + 13 + 15)$? _____
52. What number, when multiplied by 6, equals 156? _____
53. If 1 quart is 32 ounces, how many ounces is 2.5 quarts? _____
54. How many prime numbers are there that are less than 30? _____
55. What is the largest number that evenly divides 36 and 63? _____
56. A square has area 25 square meters. What is its perimeter, in meters? _____
57. What is the smallest positive integer that is a multiple of 4 and 6? _____
58. $21 \div 1\frac{3}{4} =$ _____
59. What is the largest integer that evenly divides 35, 63, and 91? _____
60. (*) Estimate the value of $(1333 \times \frac{33}{10})$: _____
61. What positive number, when multiplied by itself, equals (16×36) : _____
62. $101 \times 123 =$ _____
63. Write the value of $(\frac{4}{5} + \frac{5}{4})$ as an improper fraction: _____
64. $16 - 42 =$ _____

65. Write the value of $\frac{9}{25}$ as a decimal: _____
66. How much (in degrees) does each angle of a square measure? _____
67. $100 \times 100 \times 100 =$ _____
68. What percent of 60 is 21? _____ %
69. What number, when multiplied by 0.25, gives a result of 1? _____
70. (*) Estimate the value of $(12 \times 12 \times 12)$ _____
71. A square whose sides measure 10 cm has the same area as a rectangle whose length is 5 cm and whose width is what? _____ (cm)
72. $20 + 21 + 23 + 26 + 30 =$ _____
73. $(4 \times 4 \times 4) \times (4 \times 4) \div (4 \times 4 \times 4 \times 4) =$ _____
74. $(102 \times 104) =$ _____
75. $(3 - 4 + 5 - 6 + 7 - 8 + 9 - 10 + 11 - 12) =$ _____
76. 15% of 16 equals 8% of what number? _____
77. $(5 \times 5) - ((3 \times 3) + (4 \times 4)) =$ _____
78. $((-3) \times (5)) - (2 \times 4) =$ _____
79. $(64 \times 13) + (16 \times 13) =$ _____
80. (*) Estimate the value of $(321 \times 123 - 2222)$: _____



Elementary School 11022 Answer Key

Sprint Test

1. C
2. D
3. B
4. A
5. B
6. C
7. A
8. D
9. B
10. D
11. D
12. C
13. B
14. D
15. C
16. D
17. B
18. C
19. A
20. B
21. A
22. D
23. B
24. D
25. A
26. A
27. C
28. B
29. A
30. D

Target Test

1. \$36.93
2. 4
3. \$185.20
4. 175
5. 7104
6. 7
7. 16
8. \$104

Team Test

1. 18
2. 325
3. 20
4. 119
5. 8
6. 10
7. \$44
8. 30
9. 5
10. 5

Countdown Test

1. 0
2. Monday
3. 4
4. 6
5. 6:00 PM
6. 6
7. 3
8. 93
9. \$3.00
10. 30
11. 21
12. 12
13. \$8.00
14. 99
15. 8
16. 321
17. B
18. \$10
19. 90
20. 19
21. 36
22. 81
23. 14
24. 99
25. 100
26. 20
27. 72
28. 3:15 PM
29. 8
30. 73
31. 48
32. 1
33. 5
34. 4
35. 3
36. 16
37. 46
38. 2100
39. 64
40. 20
41. 25
42. 20
43. 31
44. 517
45. 6

46. 19
47. 89
48. 3
49. \$140.00
50. 9
51. 15
52. 6
53. 21
54. 64 cents
55. 2
56. 14
57. 4:05
58. 12
59. 46 yards
60. 75
61. 400
62. 17
63. 21
64. 560

**MATH BOWL CHAMPIONSHIP
ROUND**

65. 6
66. 12
67. 6
68. 2556
69. 9
70. 48
71. 3.5 or $3\frac{1}{2}$
72. 4
73. 1934
74. 68
75. 2
76. 45
77. 20
78. 2
79. 270
80. 6789

Number Sense Test

1. 37
2. 492
3. 130
4. 12
5. 6
6. 2310
7. 24
8. 403
9. 178
10. (*) [1264-1396] (1330?)
11. 1353
12. 7000
13. 105,000
14. 10
15. 225
16. 6
17. 45
18. 2350
19. 9
20. (*) [570-629] (~600)
21. 37
22. $\frac{3}{20}$
23. 2925
24. 24
25. 198
26. 30
27. 8
28. 7.2
29. 15
30. (*) [134094-148210] (140,000?)
31. $\frac{4}{5}$
32. 25.8
33. 0.6
34. 396
35. 3036
36. $\frac{2}{3}$
37. 9
38. 29
39. 625
40. (*) [105-115] (~110)
41. 216
42. 7
43. 64
44. 21
45. $20\frac{3}{16}$
46. 570
47. 12
48. 14
49. $1\frac{1}{6}$
50. (*) [60762-67158] (64000?)
51. 64
52. 26
53. 80
54. 10
55. 9
56. 20
57. 12
58. 12
59. 7
60. (*) [4179-4618] (~4400)
61. 24
62. 12423
63. $\frac{41}{20} = 2\frac{1}{20}$
64. -26
65. 0.36
66. 90
67. 1,000,000
68. 35
69. 4
70. (*) [1642-1814] (~1728)
71. 20
72. 120
73. 4
74. 10608
75. -5
76. 30
77. 0
78. -23
79. 1040
80. (*) [35398-39124] (~30,000)

For the estimation problems, the numbers in brackets are the range of acceptable values for the answer. The number in parentheses is the exact answer.

Sprint Test Solutions

- $1617+1718+1819 = 3335 + 1819 = 5154$.
Answer: 5154 (C)
- Dividing it gives 10946. Check: $10946 \times 11 = 109460 + 10946 = 120406$. **Answer: 120406 (D)**
- $77 = 7 \times 11$. **Answer: 77 (B)**
- $90 + 300 - 7 = 390 - 7 = 383$. **Answer: 383 (A)**
- The product = $120 / 135 = (8 \times 15) / (9 \times 15) = 8/9$. **Answer: 8/9 (B)**
- $27/60 = 9/20 = 45/100 = 45\%$ **Answer: 45% (C)**
- If 5 locos equals 1 joco, then 20 locos equals 4 jocos. 4 jocos also equals 10 mocos. 10 mocos equals 30 pocos. So, 20 locos equals 30 pocos, so 2 locos equals 3 pocos. **Answer: 3 (A)**
- $231 = 21 \times 11 = 3 \times 7 \times 11$. $105 = 5 \times 21 = 5 \times 3 \times 7$. They both have (3×7) in common, so the largest number that equally divides both of them (also called the Greatest Common Factor) is 21. **Answer: 21 (D)**
- We could do all the multiplication $((2 \times 49) + (5 \times 29) + (3 \times 69))$. There is a faster way. Each item costs one penny less than a multiple of 10, so we can figure out the amount as multiples of 10, then subtract one penny per item. $((2 \times 50) + (5 \times 30) + (3 \times 70) - 10) = (100 + 150 + 210 - 10) = 450$ cents = \$4.50. **Answer: \$4.50 (B)**
- $(24 \times 24) - (16 \times 16) = 576 - 256 = 320 = (8 \times 40)$. **Answer: (8 x 40) (D)**
- We notice that 5 divides 10, 4 divides 8, and $(2 \times 3) = 6$. So the bottom evenly divides the top, and the remainder is zero. **Answer: 0 (D)**
- Speed = Distance divided by Time. Andre's speed = $150 / 2.5 = 300 / 5 = 60$ miles per hour. **Answer: 60 (C)**
- Jin gave away (one-half plus one-third) of his candy. So he gave away $(1/2 + 1/3) = (2/6 + 3/6) = 5/6$ of his candy. So he had $(1 - 5/6) = 1/6$ of his candy left. **Answer: 1/6 (B)**
- Each square that Courtney makes has perimeter $(4 \times 2) = 8$ inches. So she has $(8 \times 36) = 288$ inches of string. Each triangle would have a perimeter of $(3 \times 3) = 9$ inches. So she can make $288/9 = 32$ triangles. **Answer: 32 (D)**
- We could divide it out, but there's a faster way. The remainder when a number is divided by 9 is equal to the remainder when (the sum of its digits) is divided by 9. So the remainder is $(1 + 6 + 7 + 8 + 3 + 9 + 4)/9 = 38/9 = 4$ with remainder 2. **Answer: 2 (C)**
- Let's simplify all four fractions. They become (from A to D), $1/13$, $1/11$, $1/12$ and $1/14$. Since they have the same numerator (1), the smallest fraction is the one with the largest denominator which is $1/14$ which is D. **Answer: 3/42 (D)**
- For the six numbers, their sum is $(6 \times 18) = 108$. Once Carem removes a number, the sum is $(5 \times 20) = 100$. The difference is the number she removed: $(108 - 100) = 8$. **Answer: 8 (B)**
- The four values are, from A to D, 25, 64, 81, and 32. The largest is 81, which is C. **Answer: (3x3x3x3) (C)**
- The amount of sales tax is the difference between the cover price and the final amount paid, which is $\$19.08 - \$18.00 = \$1.08$. To find the percentage, we divide the sales tax by the cover price. $\$1.08 / \$18.00 = 6/100$, which is 6%. **Answer: 6% (A)**
- If the area of the square is 36, its side has length 6, and its perimeter is 24. This is also the perimeter of the hexagon. Since a hexagon has 6 sides, the side has length $24/6 = 4$. **Answer: 4 (B)**
- We could do all the multiplication and subtraction and addition, but maybe there's a faster way. $(5 \times 102) = (15 \times 34)$. $(3 \times 35) = (15 \times 5)$. $30 = (15 \times 2)$. So the value becomes $(15 \times 39) - (15 \times 34) + (15 \times 7) - (15 \times 2)$. We can factor out the 15 to get $15 \times (39 - 34 + 7 - 2) = 15 \times (10) = 150$. **Answer: 150 (A)**
- Look at the answers. Notice that they are the same except for the value of the tens' digit! Since the answer is one of the four answers, we only have to figure out the value of the tens' digit. We can do this by figuring out the tens' digit of the product which would be $(7 \times 9 \times 11) = (63 \times 11) = 693$, the tens' digit is 9, and the answer must be 7122093. **Answer: 7122093 (D)**

23. The largest number she can make is 9531 and the second-largest is 9513. The smallest is 1359 and the second-smallest is 1395. The difference is $(9513 - 1359) = 8154$. **Answer: 8154 (B).**
24. 105 is not prime ($105 = 5 \times 21$) so it's not 105. We can check each number by trying to divide it by the prime numbers that are less than 11 (since 11×11 is greater than each of the numbers). Since we're looking for the largest number, let's start with 109. 109 turns out to be prime. **Answer: 109 (D)**
25. 11 feet per second is $(11 \times 60) = 660$ feet per minute. Since one mile is 5280 feet, it takes Desmond $5280/660 = 8$ minutes to run one mile. Five miles takes him $(5 \times 8) = 40$ minutes. **Answer: 40 (A).**
26. Since both numbers are greater than 1, division and subtraction both result in numbers that are less than $1 \frac{4}{5}$, so the answer must be multiplication or addition. When we add the two fractions, we get 2 and $\frac{22}{15}$, or 3 and $\frac{7}{15}$. When we multiply, we get $(\frac{9}{5} \times \frac{5}{3}) = (\frac{45}{15}) = 3$. **Answer: $1 \frac{4}{5} + 1 \frac{2}{3}$ (A).**
27. If they bought individual tickets, they would pay $(2 \times \$23) + (3 \times \$16) = \$46 + \$48 = \$94$. They save $\$94 - \$69 = \$25$. **Answer: \$25 (C).**
28. There are 365 days in a year and 7 days in a week, so one year is 52 weeks and 1 day. This means that May 15, 2011 will be one day more than May 15, 2010. So May 15, 2011 is Sunday, which means that May 14, 2011 is Saturday. **Answer: Saturday (B)**
29. The smallest odd prime is 3, and $(3 \times 3) = 9$. Since the smallest even number that is not negative is 0, the smallest answer is 9. So 7 can't be the result. **Answer: 7 (A)**
30. Since she hops three times for every two punches, the sum of her hops and punches will be a multiple of 5 and the hops will be $\frac{3}{5}$ times that total. Since there were 105 (hops and punches), the number of hops is $\frac{3}{5} * 105 = 315/5 = 63$. **Answer: 63 (D)**

Target Test Solutions

- The total of the money, in cents, is $(243 \times 1) + (87 \times 5) + (49 \times 10) + (85 \times 25) + (3 \times 100) = (243 + 435 + 490 + 2125 + 300) = 36.93$. There was \$36.93 in the money jar. **Answer: \$36.93**
- First, let's figure out how long it takes, in minutes, for the animals to do the three parts of the race. For the kangaroo, 5 miles at 4 miles per hour takes $(5/4) = 1.25$ hours, which is $(1.25 \times 60) = 75$ minutes. For the crocodile, a 1 mile swim takes $(1/1.5) = 2/3$ hours, which is $(2/3 \times 60) = 40$ minutes. For the koala, the climb takes $(100/2.5) = 40$ minutes. The animals' total time is $(75 + 40 + 40) = 155$ minutes. Now, let's do Sawyer's times. The run takes him $(5/6 \times 60) = 50$ minutes. The swim takes him $(1/0.75) = 4/3$ hour, which is 80 minutes. To win, he must climb the tree in less than $(155 - 50 - 80) = 25$ minutes. 100 feet in 25 minutes = 4 feet per minute. **Answer: 4**
- Rose must give the exchange center enough American dollars to pay the fee and to get 140 euros back. First, let's do the euros. Since she gets 0.80 Euros for each dollar, to get 1 Euro ($= 0.80 + \frac{1}{4}(0.80)$) she must exchange $(1 + \frac{1}{4}$ dollars) = \$1.25. To get 140 euros, she must exchange $(\$1.25 \times 140) = \175.00 . The fee for exchanging \$175.00 will be \$7.95 for the first 100 dollars plus $(0.03 \times 75) = \$2.25$ for the remaining 75 dollars. The total fee is $\$7.95 + \$2.25 = \$10.20$. The total she must give is $\$175 + \$10.20 = \$185.20$. **Answer: \$185.20**
- The area of the whole figure will be the sum of the areas of the squares minus the areas where they overlap. The areas of the squares are $(6 \times 6) + (8 \times 8) + (10 \times 10) = 200$. If the corner of the second square is on the center of the first square, then the area where they overlap is $\frac{1}{4}$ of the area of the small square = $\frac{1}{4} \times 36 = 9$. Similarly, the area where the second and third square overlap is $\frac{1}{4} \times 64 = 16$. So the area of the overall figure is $(200 - 9 - 16) = 175$. **Answer: 175**
- There are a couple ways we can approach this problem. First way: There are $(111 - 1 + 1) = 111$ numbers in the first sum, and $(119 - 9 + 1) = 111$ numbers in the second sum. Also, each number in the second sum is 8 more than a number in the first sum (9 and 1, 10 and 2, etc). So the second sum is $(111 \times 8) = 888$ more than the first sum, making $(6216 + 888) = 7104$. Another way is to realize the second sum is equal to the first sum minus $(1 + 2 + 3 + 4 + 5 + 6 + 7 + 8) = 36$, plus $(112 + 113 + 114 + 115 + 116 + 117 + 118 + 119) = 924$. So the answer is $(6216 - 36 + 924) = 7104$. **Answer: 7104**
- Let's walk through this step by step. There were 840 people in Room #1. Half of them went to Room #2, so Room #2 had $(\frac{1}{2} \times 840) = 420$ people. One third of those $(\frac{1}{3} \times 420) = 140$ went to Room #3. 25% is also $\frac{1}{4}$, so $(140 \times \frac{1}{4}) = 35$ went to Room #4. Finally 20% is $\frac{1}{5}$, and $(35 \times \frac{1}{5}) = 7$ people went to Room #5. **Answer: 7**
- If the remainder was 10, then the number D must be greater than 10. Also, since $90 - 10 = 80$, 80 must be a multiple of the number D (D must be a factor of 80). The only numbers greater than 10 that evenly divide 80 are 16, 20, 40 and 80. The smallest of those is 16. **Answer: 16**
- First, let's figure out how many squares of each size are in the diagram. There are 16 squares that are 1 unit by 1 unit, 9 squares that are 2 by 2, 4 that are 3 by 3, and 1 that is 4 by 4. So Ilana wins \$1 for each of the first 16 (1 by 1) squares, \$4 for the next 9 (2 by 2), \$9 for each of the next 4 (3 by 3), and \$16 for the (4 by 4). The grand total of her winnings is $(16 \times \$1) + (9 \times \$4) + (4 \times \$9) + (1 \times \$16) = \$16 + \$36 + \$36 + \$16 = \$104$. **Answer: \$104**

Team Round Solutions

1. The smallest value of the sum of the digits of a two-digit number is $(1+0=)$ 1. The largest possible value is $(9+9=)$ 18. So the two digit number must be between 10 and $(2 \times 18=)$ 36. It must also be even. If we quickly try all even two-digit numbers between 10 and 36, the only one that works is 18 (sum of digits is 9). **Answer: 18**
2. We're certainly not going to do all the addition in this problem. We need some sort of shorthand to help us. Let's let the symbol S represent the sum of the numbers from 1 to 25 $(1 + 2 + 3 + \dots + 25)$. Then we can write the sums as $(S \times 26)$ and $(S + 26) \times 25$. The difference is $(25 \times 26 - S)$ which, if we write it out, turns out to be S . So the difference is $(1+2+3+ \dots +25)$. We can add these up, or pair numbers to make 26 12 times plus 13, which is 325. **Answer: 325**
3. In 1 minute, the faucet can fill $1/8$ of the tub, and the drain can drain $1/10$ of the tub. So, in one minute $(1/8 - 1/10 = 5/40 - 4/40 =)$ $1/40$ of the tub will be filled. Since the tub is half-full, to fill the tub $1/2$ of it must be filled. Since $1/2 = 20/40$, it will take 20 minutes to fill the tub. **Answer: 20.**
4. 15 minutes is $(15 \times 60 =)$ 900 seconds. In those 900 seconds, Bret burps $(900/45 \times 2) = 40$ times, Jemaine burps $(900/36 \times 1 =)$ 25 times, and Dave burps $(900/50 \times 3) = 54$ times. Together they burp $(40 + 25 + 54 =)$ 119 times. **Answer: 119.**
5. If 379ABC is divisible by 45, then it is divisible by 9 and by 5. If the number is divisible by 9, then the sum of its digits $(3+7+9+A+B+C= 19+A+B+C)$ must be divisible by 9. If the number is divisible by 5, then it must end in 0 or 5 and C must be 0 or 5. Let's look at each of these two cases. If C is 0, then $(19+A+B)$ is divisible by 9, so $(A+B)$ must be 8 or 17. A can't be 9, but A could be 8 and B could be 0. If C is 5, then $(24+A+B)$ must be divisible by 9, so $(A+B)$ must be 3 or 12. In the second case, A could be 8 and B could be 4. Either way, the biggest possible value of A is 8. **Answer: 8.**
6. Since they each have to receive at least one dollar, there's only 3 dollars left to divide between them. Let's list out all the possibilities for the distribution, with each trio of numbers being the number for Mike, Robbie and Chip respectively. The possibilities are: $(1,1,4)$, $(1,4,1)$, $(4,1,1)$, $(1,2,3)$, $(1,3,2)$, $(2,1,3)$, $(2,3,1)$, $(3,1,2)$ and $(3,2,1)$. This makes 10 ways. **Answer: 10.**
7. If Libby buys 19 copies, it costs $(19 \times \$16 =)$ \$304. If she buys 20 copies, it costs $(20 \times \$13 =)$ \$260. She saves $(\$304 - \$260 =)$ \$44. **Answer: \$44.**
8. The line segment divides the rectangle into two squares, each of area 25. This means that the side of the square is 5. The rectangle has one square side along one of its sides, and two square sides along the other side. So the dimensions of the rectangle are 5 and 10, and the perimeter is 30. **Answer: 30.**
9. The most Saturdays would happen if the first day in May is a Saturday. So the days that would be Saturdays are May 1, May 8, May 15, May 22, and May 29, making 5 Saturdays.. **Answer: 5**
10. From when the mule and the horse are carrying the same number of sacks, we can move two sacks from the horse to the mule and then the mule would be carrying twice as many packs as the horse. Once the two packs are moved, the mule would be carrying 4 more packs than the horse (for example, if they were both carrying 3, then after two were moved the mule would have 5 and the horse would have 1). Since the amount the mule carried would be twice the amount the horse carried, the difference is the amount the horse is carrying which would be 4. So the mule was carrying 8 packs after a pack was moved from the horse to the mule, and the horse was carrying 4 packs. This means that when they first started the mule was carrying $(8-1=)$ 7 packs, and the horse was carrying $(4+1=)$ 5 packs. We can also solve this by trying possible values for the packs the horse is carrying and see if we can get numbers that fit the conditions of the problem. **Answer: 5.**