

1. What percentage is 135 of 450? \_\_\_\_\_(%)1

2.  $N = 2000 + 2001 + \dots + 2008 + 2009$ . Find  $N$ . \_\_\_\_\_ 2

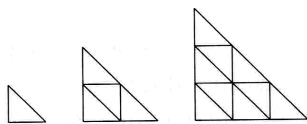
3. If 20 is added to  $\frac{1}{3}$  of a number, the result is the double of the number.  
 What is the number? \_\_\_\_\_ 3

4. In the equation that follows,  $A$  and  $B$  represent positive whole numbers.  
 $\frac{A}{3} + \frac{B}{4} = \frac{11}{12}$ . What is the value of  $A + B$ ? \_\_\_\_\_ 4

5. Tom found an old book in the attic. When he opened it, there was page 24 on the left side, and page 45 on the right.  
 How many sheets of paper were missing between these two pages? \_\_\_\_\_(sheets) 5

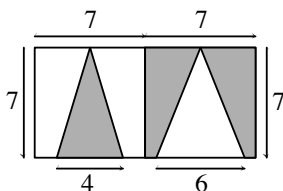
6. Betty wants to purchase a bicycle but is \$23 short. Claire wants to purchase the same bicycle but is \$25 short. If they combine their money, they will have just enough to buy the bicycle.  
 What is the cost of the bicycle (in dollars)? \_\_\_\_\_(\$ ) 6

7. Using small triangular tiles, David made bigger and bigger triangles. For the first triangle he needed 1 tile, for the second triangle he needed 4 tiles, and for the third triangle he needed 9 tiles (see figure).  
 How many tiles did he need to make the fifth triangle?



\_\_\_\_\_ (tiles) 7

8. Two large congruent squares with sides 7 units long share one side and each circumscribes an isosceles triangle (see figure).  
 What is the combined area, in square units, of the shaded regions?

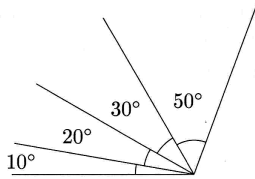


\_\_\_\_\_ 8

9. Hila drives from her home at 50 km per hour to pick up Joe (the babysitter) from his home located 25 km away. On the trip back to her home, due to heavy traffic, she averages only 20 km per hour.  
 How much time (in minutes) does it take for Hila to drive the entire round trip? \_\_\_\_\_(min) 9

Grade Seven (7) Division

10. How many angles of different sizes smaller than  $180^\circ$  are there in the diagram?



\_\_\_\_\_ 10

11. Four lights flash at exactly 12:00. The first keeps flashing every 3 seconds, the second every 4 seconds, the third every 7 seconds, and the fourth every 8 seconds. How many seconds pass until the next time they all flash again at the same time?

\_\_\_\_\_ (sec) 11

12. A boy has the following seven coins in his pocket: 2 pennies, 2 nickels, 2 dimes, and 1 quarter. He takes out two coins, and records the sum of their values. How many different sums can he record?

\_\_\_\_\_ 12

13. The positive whole numbers from 1 to 3000 are arranged in columns in the pattern shown below. Please note that the numbers 7, 14 and so on are in column B. Name the letter under which the number 2009 will appear.

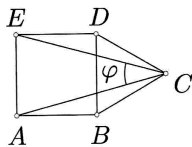
| <u>A</u> | <u>B</u> | <u>C</u> | <u>D</u> | <u>E</u> | <u>F</u> | <u>G</u> |
|----------|----------|----------|----------|----------|----------|----------|
| 1        | 2        | 3        | 4        |          |          |          |
|          | 7        | 6        | 5        |          |          |          |
| 8        | 9        | 10       | 11       |          |          |          |
|          | 14       | 13       | 12       |          |          |          |

\_\_\_\_\_ 13

14. The perimeter of a rectangle is 220 units and the measure of each side is a whole number of units. How many different areas in square units can the rectangle have?

\_\_\_\_\_ 14

15.  $ABDE$  is a square, and the triangle  $BCD$  is equilateral. What is the degree measure of  $\angle ACE$  (the angle  $\varphi$  in the figure)?

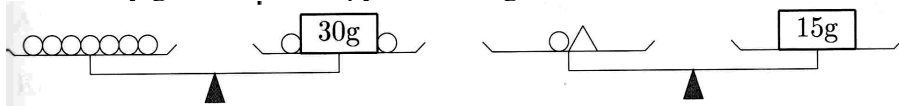


\_\_\_\_\_ ( $^\circ$ ) 15

16. At the lunch party for the 50 students in the class, 35 of the students ate a pizza, and 30 of them ate a cookie. If exactly 21 of them ate both items, how many of the 50 students ate neither pizza nor cookie?

\_\_\_\_\_ 16

17. On the scales there are balls of equal weight, a pyramid, and two boxes (one with weight of 30g, and the other with weight of 15g (see figure)). How many grams does the pyramid weigh?



\_\_\_\_\_ (g) 17

18. A bag contains 500 beads, each of the same size, but in 5 different colors. Suppose there are 100 beads of each color. Without looking, what is the least number of beads one must pick to make sure there are 5 beads of the same color among the beads that were picked?

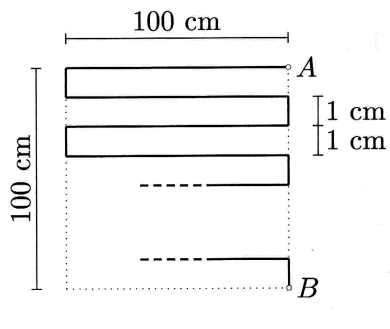
\_\_\_\_\_ 18

Grade Seven (7) Division

19. Zilpa starts with the number 2, and counts by 3's until she reaches 5000. Her sequence is: 2, 5, 8, 11, ... , 2009, 2012, ... where 2 is the first number, 5 is the second number, 8 is the third number and so forth. If 2009 is the N-th number, what is the value of N? \_\_\_\_\_ 19

20. The old town is full of mice: 25% of them are white, 75% are black. 50% of the white and 20% of the black mice have grey eyes. All together there are 99 mice with grey eyes. How many mice live in the old town? \_\_\_\_\_(mice) 20

21. How long is the zig-zag path from point A to point B (in cm)?  
The figure is not drawn to scale.



\_\_\_\_\_ (cm) 21

22. Thirteen plums weigh as much as two apples and one pear. Four plums and one apple have the same weight as one pear. How many plums have the same weight as one pear? \_\_\_\_\_(plums) 22

23. In the “magic-square” below, the number X, and four more numbers, are placed in the vacant spaces so that the sum of the three numbers in each row, in each column, and in each of the two main diagonals is the same. What is the value of X?

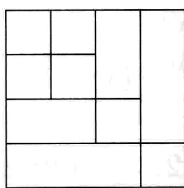
|    |   |    |
|----|---|----|
| 15 | — | 35 |
| 50 | — | —  |
| 25 | X | —  |

\_\_\_\_\_ 23

24. Gadi has four special coins whose values are \$1, \$4, \$7, and \$8. How many different amounts can Gadi make using one or more of the coins? \_\_\_\_\_ 24

25. What is the greatest possible number of intersection points between 3 lines and 2 circles? \_\_\_\_\_ 25

26. How many rectangles are in the figure?



\_\_\_\_\_ 26