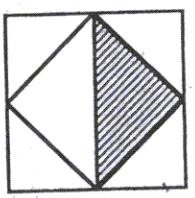
PIMS Elementary Grades Math Competition NAME: _____
30 April 2005
Sprint Round - Grade Six Division SCHOOL: _____

1. Six Canadian students (each from a different province) are meeting at a National math competition and each one of them gives his provincial flag as a gift to each of the other five students. How many provincial flags have been given altogether? _____ 1

2. The midpoints of the sides of a square with area 108 square units are joined as shown. Find the area of the shaded region.



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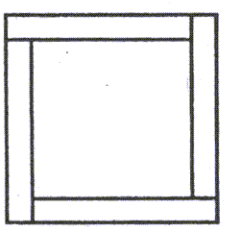
3. In a school of 350 students, 77 are in Grade 6. What percent of the students are in Grade 6? _____ 3

4. Four rectangular strips of wood, each 72 cm long and 7 cm wide, are arranged to form a square as shown. Find the area of the inner square.



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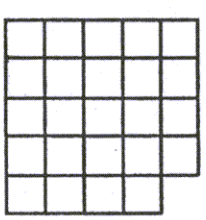
5. Calculate: $\frac{2\times4\times6\times8\times10\times12\times14}{4\times5\times6\times7\times8} =$ _____ 5

6. Natasha has chosen 3 different positive whole numbers less than 20. She found that their product is 100. What is their sum? _____ 6

7. Half (1/2) of the students in a class are 10 years old, one sixth (1/6) are 12 years old, and the rest are 11 years old. The number of students that are 11 years old is 7 more than the number of students that are 12 years old. How many students are 10 years old? _____ 7

8. Find the total number of squares (of all sizes) in the diagram.



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9. 16% of N is 48% of 2005. Find the value of N. _____ 9

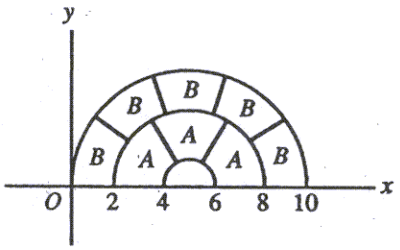
10. 345 people attended the school concert. 98 of them were kids and the rest were adults. Each kid paid an entrance fee of \$1.50 and each adult paid \$3.00. How much money (in \$) did the school collect from the entrance fees? _____ 10

11. Find the units digit of the following sum: $2004^3 + 2005^3 + 2006^3$. _____ 11

12. A car left Kamloops at 9:00 AM and arrived at Vancouver, 340 *km* away, at 1:15 PM the same day. What was the average speed of the car in *km* per hour? _____ 12

13. Five typists can type 750 pages in 9 hours. How many pages can two typists type in 3 hours? _____ 13

14. In the diagram, the curved lines are semicircles. All areas marked A are equal to each other, and all areas marked B are equal to each other. Find the value of A/B.



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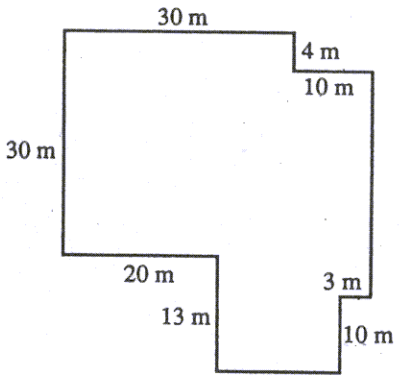
15. When a cup is full of milk, the total weight is 410 grams. When the cup is half full of milk, the total weight is 330 grams. Find the weight of an empty cup (in grams). _____ 15

16. $N = (4+8+12+\ldots+100+104)-(2+4+6+\ldots+50+52)$. Find N. (Hint: $(2+4+6+\ldots+48+50)=650$). _____ 16

17. The diagram shows the plan of a new fenced area. What is the length of the fence around that enclosed area?



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18. A drawer in a dark room contains ten white socks and 12 black socks. Two socks are removed at random. What is the probability that one of the two socks is white and the other sock is black? Express your answer as a common fraction. _____ 18

19. How many multiples of 9^2 are greater than 9^4 and smaller than 9^5 ? _____ 19

20. The product of three consecutive whole numbers is 46620. What is the sum of these three numbers? _____ 20

21. The number 2005 is equal to the sum of 401 consecutive integers. What is the largest of these integers? _____ 21

22. Standard Canadian coins are: 1c, 5c, 10c, 25c, 1$, and 2$. Find the smallest sum of money that you can't pay using ten or fewer standard coins. Express your answer in cents. _____ 22

23. What is the smallest whole number greater than 2 that will have a remainder of 2 when divided by any member of the following set {3,4,5,6,8}? _____ 23

24. What is the smallest whole number with exactly eight factors? (Hint: please note that the number 4 has exactly three factors: 1, 2, and 4). _____ 24

25. Find the sum of all the 3-digit whole numbers that can be formed by using the digits 5, 6, and 7. (Hint: digits can repeat so the following are valid 3-digit numbers that should be included in the sum: 555, 767, and 756). _____ 25

26. Two different two-digit whole numbers are selected at random. What is the probability that their product is less than 200. Express your answer as a common fraction. (Hints: (1) there are 90 different two-digit numbers, (2) the pair {10,11} produces the smallest product and the pair {11,18} produces the largest product less than 200). _____ 26