PIMS Elementary Grades Math Competition
30 April 2005
Sprint Round - Grade Five Division

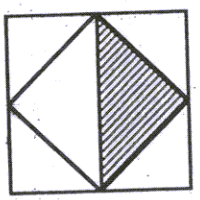
NAME: _____

SCHOOL: _____

1. Five 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 four students. How many provincial flags have been given altogether?

_____ 1

2. The midpoints of the sides of a square with area 72 square units are joined as shown. Find the area of the shaded region.

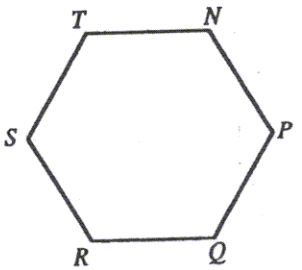


_____ 2

3. What is 1.75% of $12,000?

_____ 3

4. The diagram represents a regular hexagon with a perimeter of $57\ cm$. Find the length (in cm) of the line segment NR (not drawn).



_____ 4

5. Calculate: $\dfrac{20\times 40\times 60\times 80\times 100}{1\times 2\times 3\times 4\times 5} =$

_____ 5

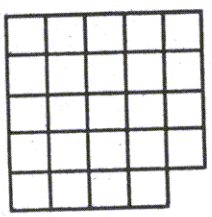
6. $N = 1+2+3+\ldots+9+10$. Find the largest prime factor of N.

_____ 6

7. Let P be the sum of the first 50 even whole numbers. Let Q be the sum of the first 50 odd whole numbers. Find the value of $P-Q$.

_____ 7

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



_____ 8

9. If $1\ mm$ on a map of Vancouver represents 25 meters, how many meters are represented by $1.3\ cm$ on the map?

_____ 9

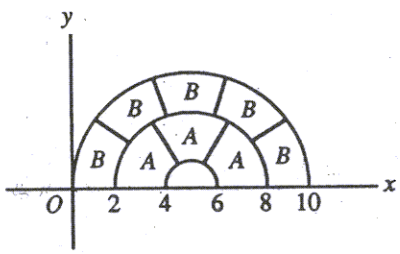
10. Amy bought three dozens eggs at \$2.29 per dozen and paid for them with a \$10 bill. What was the proper change that was given back to Amy? _____ 10

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

12. A train travels 4.25 *km* in 5 minutes. At this speed, how many *km* does it travel in one hour? _____ 12

13. Find the average value of 61, 53, 48, 86, and 72. _____ 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.

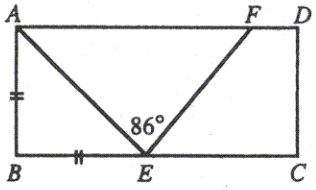


_____ 14

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. $1\times 2 = 2$, $11\times 22 = 242$, and $111\times 222 = 24642$. What is the value of 1111×2222 ? _____ 16

17. ABCD is a rectangle. AB=BE and $\angle$AEF is 86°. What is $\angle$AFE in degrees?



_____ 17

18. A drawer contains ten socks with one pair of each of the following colours: brown, black, blue, green, and white. How many socks must be removed from the drawer to guarantee that at least two socks of the same colour have been removed? _____ 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. M is a two-digit integer. The two-digit integer N is obtained by reversing the digits of M. The difference between M and N is one eleventh ($1/11$) of the sum of M and N. Find the value of $M + N$.

_____ 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 4, 5, and 6. (Hint: digits can repeat so the following are valid 3-digit numbers that should be included in the sum: 444, 656, and 645).

_____ 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