PIMS Elementary Grades Math Competition NAME: _____
03 May 2014
Sprint Round - Grade Seven Division SCHOOL: _____

1. You throw one fair die. What is the probability of not getting the number 1?
Express your answer as a common fraction.

_____ 1

2. What is the digit sum of 2014?

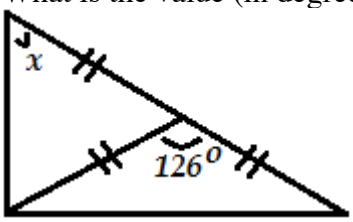
_____ 2

3. The area of the rectangle is 48 and the value of the shorter side is 6.
What is the value of its perimeter?

_____ 3

4. You bought a ticket to a hockey game at a cost of $180 plus 5% tax.
How many dollars did you pay in total? _____($) 4

5. The right triangle below consists of 2 isosceles triangles.
What is the value (in degrees) of the angle x?



_____(°) 5

6. What is the sum of the five smallest primes? _____ 6

7. Round 21% of 21 to the nearest integer. _____ 7

8. Every student in a class of 26 sent an e-mail to each of the other students of the class. How many e-mails were sent in total?

_____ 8

9. What fraction is 15% of 15% of 25? _____ 9

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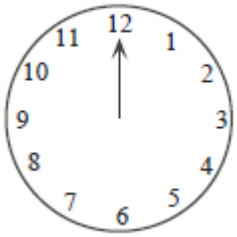
10. Round $\sqrt{0.2014 \times 10000}$ to the nearest whole number. _____ 10

11. What is the acute angle (in degrees) between the hour hand and the minute hand at 3:24?



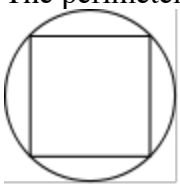
_____(°) 11

12. What is the value of 2014×1986? _____ 12

13. Linda's salary in 2013 went down 20% (compared with her 2012 salary). What increase (in percent) to her 2013 salary will raise her 2014 salary to a level 5% more than what she earned in 2012? Round your answer to the nearest integer. _____(%)13

14. Let 20<N<60. If you divide N by 5 the remainder is 2. If you divide N by 6 the remainder is 1. What is the remainder if you divide N by 13? _____ 14

15. The perimeter of the inscribed square is 40. Round the area of the circle to the nearest integer.



_____ 15

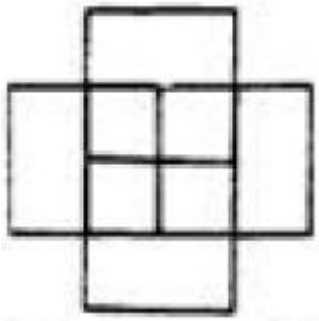
16. In the summation below D=B+C. What is the value of A+B+C+D?

$$\begin{array}{r} 2BA \\ +\,C6D \\ \hline 8AD \end{array}$$

_____ 16

17. $3^{11} \times 3^{2014} = 3^{N \times 27}$. What is the value of N? _____ 17

18. How many rectangles that are not also squares are there in the figure below?



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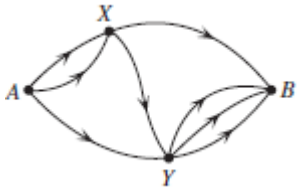
19. What is the smallest whole number N such that $5^N > 4000000$? _____ 19

20. The measures of the sides of triangle A are 5cm, 5cm and 6cm.
The measures of the sides of triangle B are 5cm, 5cm and 8cm.

What is their combined area (in square cm)? _____(cm^2) 20

21. You traveled 4.725 km at a speed of 13.5 km/h.
How many seconds did you travel? _____(s)21

22. In how many ways can you walk from Point A to point B if you must walk along the directions marked by arrows?



_____ 22

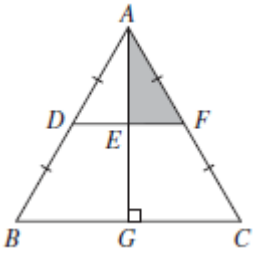
23. Suppose that when a man is at point A (see the figure for Question 22), the probability that he walks along any of the three paths is $\frac{1}{3}$. If he is at point X the probability that he walks along any of the 2 paths is $\frac{1}{2}$. If he is at point Y, the probability that he walks along any of the three paths is $\frac{1}{3}$. Two men walk independently from point A to point B. What is the probability that both choose the same path?

_____ 23

24. In a club, the ratio of boys to girls was $\frac{13}{19}$. Then, 4 more boys joined the club and now the new ratio is $\frac{5}{7}$.

How many students (boys and girls combined) are now in the club? _____ 24

25. ΔABC is equilateral with side 4. $AD = DB$, and ΔADF is equilateral.
What is the difference between the area of $EFCG$ and ΔAEF?
Express your answer as $\sqrt{N}$ where N is a positive whole numbers.



_____ 25

26. Find the sum of all prime factors of $3 \times 5 \times 2014$? _____ 26