## BRITISH COLUMBIA SECONDARY SCHOOL MATHEMATICS CONTEST, 2014

## **Junior Preliminary**

## Wednesday, April 2

Triangle ABC is isosceles with AB = AC. If BC = 12, and the area of triangle ABC is 48, then the

(D) 1007

(E) 1008

The value of  $(2014 + 2012 + 2010 + \cdots + 2) - (2013 + 2011 + 2009 + \cdots + 1)$  is:

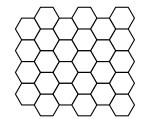
(C) 1006

(B) 2

(A) 1

	length of side AB is:									
	(A)	10	(B)	$6\sqrt{2}$	(C)	6	(D)	$12\sqrt{2}$	(E)	9
3.	Twenty five consecutive integers add to 50. The largest integer in the sum is:									
	(A)	10	(B)	12	(C)	14	(D)	20	(E)	24
4.	While playing <i>Minecraft</i> , Lin stacks cubical sandstone blocks to form a pyramid. Each level of the pyramid is formed by placing lines of blocks adjacent to each other, with each line having one less block than the next, with the last line having only one block. The longest line on each level contains one less block than the longest line on the level below it. (See the diagram.) If the longest line of the bottom level of the pyramid contains 10 blocks, then the total number of blocks in the pyramid is:									
	(A)	220		(B) 200		(0	C) 1	10		
	(D)	55		(E) 10						_
5.		graph of $y =$ nent $PQ$ is:	10 (x	+1)(x-3) in	nterse	ects the <i>x</i> -axis	at tw	o points P an	d Q.	The length of the line
	(A)	20	(B)	2	(C)	40	(D)	<u>2</u> <del>5</del>	(E)	4
6.	A group of 40 students has an average age of 12 years. A group of 60 parents has an average age of 40 years. The average age of the combined group of these students and parents is:									
	(A)	26	(B)	28.8	(C)	30	(D)	32	(E)	36
7.		set of $N$ objects is to be distributed amongst 8 boxes so that it is certain that there is a box containing least 3 of these objects. The smallest value of $N$ is:								
	(A)	8	(B)	9	(C)	16	(D)	17	(E)	18
8.	If 5 workers can dig 5 holes in 5 hours, the time that it will take 50 workers to dig 200 holes is:									
	(A)	1	(B)	5	(C)	20	(D)	100	(E)	200

9. Leslie is instructed to colour the honeycomb pattern shown, which is made up of hexagonal cells. If two cells share a common side, they are to be coloured with different colours. The minimum number of colours required is:



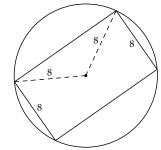
(A) 2

(B) 3

(C) 4

(D) 5

- (E) 6
- 10. If the numbers from 1 to 2014 are listed, the number of times that the digit 4 appears is:
  - (A) 202
- (B) 300
- (C) 600
- (D) 602
- (E) 604
- 11. A rectangular envelope falls on a circular pizza that has a radius of 8 cm in such a way that all four of its corners are at the edge of the pizza. If the length of each of the two shorter sides of the envelope is equal to the radius of the circle, the area of the rectangular envelope is:



- (A) 64
- (B)  $64\sqrt{3}$
- (C) 96

- (D) 128
- (E)  $128\sqrt{3}$
- 12. The numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10 each appear on a ball in a drum. Four different balls are selected randomly, without replacement, from the drum. The probability of the product of the four numbers appearing on the balls selected being odd is:
  - (A)  $\frac{1}{2}$
- (B)  $\frac{1}{16}$
- (C)  $\frac{2}{35}$
- (D)  $\frac{3}{70}$
- (E)  $\frac{1}{42}$