

BRITISH COLUMBIA COLLEGES

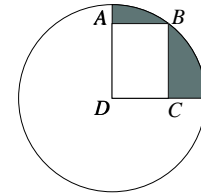
Junior High School Mathematics Contest

Preliminary Round March 10, 1999

1. A multiple choice examination consists of 20 questions. The scoring is +5 for each correct answer, -2 for each incorrect answer, and 0 for each unanswered question. John's score on the examination is 48. What is the maximum number of questions he could have answered correctly?

(a) 9 (b) 10 (c) 12 (d) 14 (e) 16

2. $ABCD$ is a rectangle, D is the centre of the circle, and B is on the circle. If $AD = 4$ and $CD = 3$, then the area of the shaded region is between:



(a) 4 and 7 (b) 5 and 6 (c) 6 and 7
(d) 7 and 8 (e) 8 and 9

3. An 8-inch pizza is cut into 3 equal slices. A 10-inch pizza is cut into 4 equal slices. A 12-inch pizza is cut into 6 equal slices. A 14-inch pizza is cut into 8 equal slices. From which pizza should you take a slice if you want as much pizza as possible? (Assume all pizzas are round.)

(a) 8-inch (b) 10-inch (c) 12-inch (d) 14-inch (e) does not matter

4. Thirty dollars is to be split among 8 people. Each person gets at least \$1; at least one person gets more than \$5; at least four other people get more than \$1. If all 8 people get an exact number of dollars, the largest amount (in dollars) that could be received by a person is:

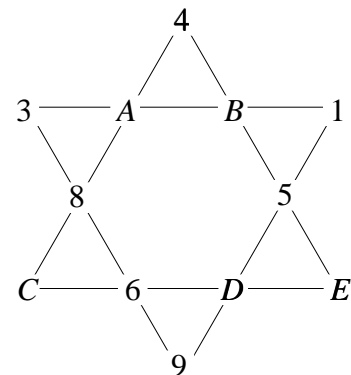
(a) 13 (b) 15 (c) 17 (d) 19 (e) 23

5. In a group of fifty children each one is either blonde or brunette and is either blue-eyed or brown-eyed. Fourteen are blue-eyed blondes, thirty one are brunettes, and eighteen are brown-eyed. The number of brown-eyed brunettes is:

(a) 5 (b) 7 (c) 9 (d) 13 (e) 18

6. The numbers 1 to 12 are to be placed so that the sum of the four numbers in each of the six rows is the same. The 7 must go in the place marked:

(a) A (b) B (c) C (d) D (e) E



7. In a movie theatre line, x people are behind Mark, who is y places in front of Sam. If there are z people in front of Sam, how many people are in the line?

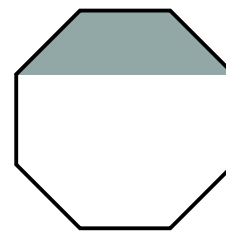
(a) $z - x + y + 2$ (b) $z + x - y$ (c) $z - x + y - 1$ (d) $z + x - y + 1$ (e) $z - x + y$

8. The degree measures (A , B , and C) of the interior angles of a triangle are multiples of 20 where $A \leq B \leq C$. How many possible values of (A, B, C) exist?

(a) 6 (b) 7 (c) 9 (d) 27 (e) 28

9. The figure to the right is a regular octagon. What fraction of its area is shaded?

(a) $\frac{1}{3}$ (b) $\frac{1}{4}$ (c) $\frac{1}{5}$ (d) $\frac{1}{6}$ (e) $\frac{3}{8}$



10. In this unusual game of noughts (Os) and crosses (Xs), the first player to form a line of three Os or three Xs **loses**. It is X's turn. Where should he place his cross to make sure he does not lose?

A	O	D
B	X	E
C	X	O

(a) A (b) B (c) C (d) D (e) E

11. At the Nuclear Physics & Sumo Wrestling Institute, 99% of the 100 students are girls, but only 98% of the students living on campus are girls. If some girls live on campus, how many students live off campus?

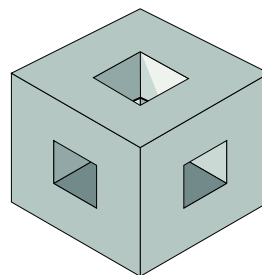
(a) 1 (b) 2 (c) 49 (d) 50 (e) 98

12. Three painters can paint 4 houses in 5 days. To the nearest whole number of days, how long would it take 7 painters to paint 18 houses if all the work was done at the same rate all the time?

(a) 3 (b) 4 (c) 7 (d) 10 (e) 18

13. A 3 by 3 by 3 cube has three holes, each with a 1 by 1 cross-section running from the centre of each face to the centre of the opposite face. The total surface area (in square units) of the resulting solid is:

(a) 24 (b) 48 (c) 72 (d) 78 (e) 84



14. On the planet Aardvark, there are as many days in a week as there are weeks in a month. The number of months in a year is twice the number of days in a month. If there are 1,250 days in an Aardvark year, how many months are there in an Aardvark year?

(a) 50 (b) 25 (c) 20 (d) 10 (e) 5

15. The notation $n!$ is defined by $n! = (n)(n - 1)(n - 2) \cdots (2)(1)$. For example $3! = 3 \times 2 \times 1 = 6$. The units (ones) digit in the sum $1! + 2! + 3! + 4! + 5! + \cdots + 1998! + 1999!$ equals:

(a) 0 (b) 3 (c) 4 (d) 6 (e) 9