Provincial 2008 Face-off Questions
Actually Used

1. The first term of a geometric sequence is 0.3, and the second term is 0.6. What is the sixth term of the sequence? Express your answer as a decimal, to one decimal place.

2. What is the height of a cone which has the same base and the same volume as a cylinder of height 15 cm?

3. What is the value of $11 + 22 + 33 + 44 + 55 + 66 + 77 + 88 + 99$?

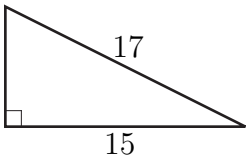
4. Alicia bought two 2-inch binders and four 1-inch binders. The 2-inch binders cost \$5.50 each, and the 1-inch binders cost \$3.25 each. What was Alicia's average cost, in dollars, per binder?

5. If $3x + 5y = 345$ and $5x + 3y = 543$, what is the value of $x + y$?

6. What is the sum of all the positive integers that are perfect cubes and that are each less than 100?

7. An elephant can eat 20 bags of grain in 2 hours. At this rate, how many bags of grain can the elephant eat in 24 minutes?

8. In the right-angled triangle below, the hypotenuse has length 17 units, and one of the legs has length 15 units. How many units^2 are in the area of the triangle?



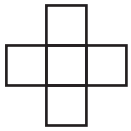
9. In an election, Alfie got 60% of the votes and Beth got the rest of the votes. If Alfie got 120 more votes than Beth, how many people voted?

10. What is the sum of the (decimal) digits of $10^6 - 8$?

11. The sum of all the positive integers from 1 to n (inclusive) is greater than 100. What is the smallest possible value of n?

12. How many positive factors of $2^6 \times 5^6$ are perfect squares?

13. The numbers 1, 2, 3, 4, and 5 are placed in the squares of the cross below, one to a square. Let H be the sum of the numbers in the horizontal line of squares, and let V be the sum of the numbers in the vertical line of squares. What is the smallest possible value of $H + V$?



14. If $x \star y = x^2 + 3xy + y^2$, what is the value of $3 \star 7$?

15. A hen lays an egg every 26 hours. How many eggs will she lay in 13 weeks?

16. Alfie's back yard is a rectangle 10 metres wide and 20 metres long. He is tired of mowing the lawn. How many cubic metres of concrete does Alfie need in order to cover the back yard with an 8 cm thick layer of concrete?

17. The sum of two different positive integers is equal to 14. What is the smallest possible value of the sum of their squares?

18. The volume of a spherical ball is 288π cubic cm. What is the number of cm in the radius of the ball?

19. The Delta Blues basketball team played 50 games, and lost 24 more games than it won. (There are no ties in basketball.) How many games did the Blues win?

20. The table below shows daily rainfall, in mm, during one dismal November week.

day	Su	M	Tu	W	Th	F	Sa
mm	12	8	15	16	10	13	17

What was the average daily rainfall (in mm) that week?

21. What number is halfway between 1492 and 2008?

22. In old British coinage, a 1 shilling coin was worth 12 pence, and a 1 pound coin was worth 20 shillings. What was the value, in pence, of 1 pound, 5 shillings, and 3 pence?

23. Fruit "R" Us sells mangos at 5 for 4 dollars. SellHigh sells mangos at 4 for 5 dollars. How many more dollars does it take to buy 20 mangos at SellHigh than at Fruit "R" Us?

24. What is the smallest positive integer that does not divide 840?

25. Express $1 + \cfrac{1}{1 + \cfrac{1}{1 + \cfrac{1}{1}}}$ as a common fraction.

26. The fifteen numbers 1, 2, 3, ..., 14, 15 can be divided into three groups so that the sum S of the numbers in any group is the same. What is that sum S?

27. Alicia picks at random an integer from 1 to 6 (inclusive), with all choices equally likely. Beth independently picks at random an integer from 1 to 6. What is the probability that Alicia's number is *greater* than Beth's? Express your answer as a common fraction.