2003 Mount Rainier Math Invitational
## Sixth Grade Individual Test
Written by Michelle Fong, Kate Iwamoto and Rachel Haller

Reduce all fractions and answers should be left in terms of π.

Questions 1-20 are worth 2 points each

1. Solve for x when 4x + 30 = 57

2. At the General Store, oranges were on sale, four for $1.50. If Terry bought 14 oranges from the General Store, how much did he pay?

3. What is the probability of drawing a red card and the King of Spades in a standard deck of cards without replacement?

4. What is the 10th number in the following sequence: 1, 2, 4, 7, 11, 16…?

5.
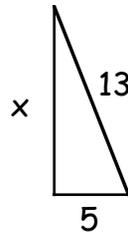
   Find x in the right triangle above.

6. What is 62 – 6 x 3 ÷ 2?

7. There is 3 chocolate, 8 booger, 6 liver, 4 earwax, 10 vomit and 11 dirt flavored beans in a bag of Bernie Bott's Every Flavor Beans. What is the probability that you get a chocolate flavored bean on the first try?

8. What is the greatest common factor of 84, 51 and 66?

9. If you flip a coin 13 times, what is the probability that on the eighth flip, it will be tails?

10. Kate gets 42 hours of sleep every week. How many hours of sleep does she get in one year? (Assume that there are 365 nights in a year.)

11. Find the area of the shaded region in the figure below. The diameter of the circle is 8 and the longest side of the triangle is the diameter.
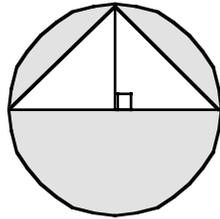

12. There are four kibbles for every one toggle, there are five toggles for every two bits, and three bits to every one tib. How many kibbles are in three tibs?

13. Farmer Daisy raises chickens and pigs. She counted 26 heads and 134 toes. If each pig has 4 toes and each chicken has 6 toes, how many pigs does Farmer Daisy have?

14. Rachel got 75, 85, 91, and 77 on four algebra tests. What does she need to get on her fifth test to have an average score of 84?

15. What is the slope of the line containing the points (2,3) and (7,8)?

16. How many diagonals does an octagon have? (Hint: A octagon has eight sides.)

17. What is (543!) divided by (541!)?

18. Simplify: $(5x)^2 - 2x^2$

19. What is the probability of rolling a sum of 7 with 2 standard dice?

20. Jack and Sally are folding papers. Jack can fold 200 papers per hour and Sally can fold 30 every 10 minutes. In hours, how long will it take to fold 1,140 papers if they work together?

Questions 21-30 are worth 3 points each

21. In how many ways can you arrange the letters in the word "BABBLE"?

22. Geico the Gecko gets tossed into a ditch during a car accident. Every day he crawls up 9 feet, every night he slides down 6 inches. If the ditch is 128 feet high, how many days will it take for him to get to the top?

23. If there are 13 people on a math team and if everyone shakes each other's hand once, how many handshakes take place?

24. What is the sum of the first 500 even numbers starting with 2?

25. Find the area of the triangle.
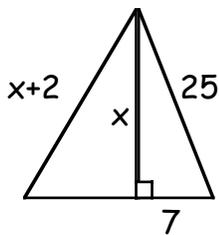
26. Kate buys a house for 100,000 dollars. The house increases in value 10% over the previous year. How much is it worth after 2 years?

27. How many cubic inches are in 12 cubic feet?

28. What is the slope of the line perpendicular to the line y = 3x + 3?

29. When you take the number of sides in a decagon, subtract the number of sides in a heptagon, add the number of sides in a triangle, subtract the number of sides in an octagon, and multiply this number by 6541, what is the result?

30. What is A + B + C – D? The figure is not to scale and all measures are in degrees.