

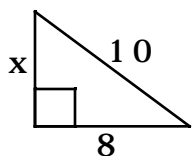
**2001 Mount Rainier Math Invitational
Sixth Grade Individual Test**

Reduce all fractions and answers may be left in terms of π or use 3.14 for π . You will have 35 minutes for this test.

Questions 1- 20 are worth 2 points each

1. What is $3^2 \times 9^5 \times 4^2 \times 7 \times 13$ multiplied by zero?

2.



Find x .

3. How many 2 letter words can you make from the word "SEVEN"?

4.

Evaluate: $\frac{1}{2} + \frac{1}{3} + \frac{1}{6}$?

5.

Eric bakes a cake. The probability that the cake will be good is $\frac{3}{201}$.

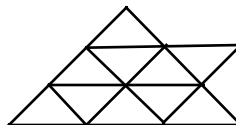
What is the probability that the cake won't be good?

6.

Britney Spears goes to the mall to buy a shirt, pants and a pair of shoes. If she finds 9 shirts, 5 pants and 2 pairs of shoes, how many different outfits could she choose?

7.

How many triangles are in the figure?



8.

If you flip a coin 7 times, what is the probability that on the seventh flip, it will be heads?

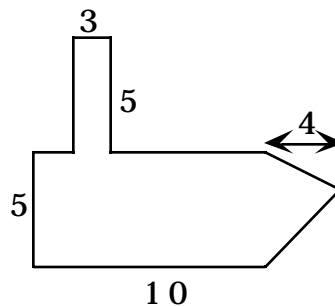
9.

What is the sum of the first 20 positive integers?

10.

What is $6 \times 5 \times 4 \times 3 \times 2 \times 1 - 5 \times 4 \times 3 \times 2 \times 1$?

11. How many lines of symmetry does an equilateral triangle have?
12. If Grand Master Eric has a party with 9 of his friends and all ten of them shake each other's hand once, how many handshakes take place?
13. Jon plays "Phoenix" for 12 hours, and loses 97.5 points every hour; how many points will he have if he started with 2,000 points?
14. In a running race, if Jane is 50 feet behind George and Jane is running 10 feet every 2 seconds and George is running 10 feet every 4 seconds (because he is tired), how seconds will it take Jane to catch up to George?
15. If there are 12 red socks and 6 blue socks in the drawer, and $\frac{1}{6}$ of the red socks have polka dots, what is the probability that I pick a red sock with polka dots?
16. There are 12 moogles for every 1 chocos, there are 9 chocos to one mog, and there are 5 mogs to one chocobo. How many moogles are in 2 chocobos?
17. If you reach into a bag of 8 apple, 9 cherry and 7 grape lollipops, what is the probability that you get an apple flavored pop on the first try?
18. If Eric runs 15 mph and Jon walks 3 mph, how fast does Ryan need to run in order to be exactly halfway between Jon and Eric after 1 hour?
19. What is the area of the following figure?



20. What is $(16!)$ divided by $(14!)$?

Questions 21- 30 are worth 3 points each

21. Frank collected trash in the town of Wallabee. Everyone had their trash picked up but only $\frac{1}{3}$ of them paid for recycling. Frank received \$10 for trash pickup and \$20 for recycling pickup. If Frank received \$17,650, how many people lived in Wallabee?
22. Ms. Steven was very upset when her class average came out to be C on her history quiz. If 12 students had F's, 6 had C's and the rest had A's, how many students are in Ms. Steven's class?
23. If 5 chickens lay 6 eggs in two days, how many days will it take 10 chickens to lay 30 eggs?
24. What is the 11th number in this sequence, 1, 1, 2, 3, 5, 8, ... ?
25. Mary had to drive from Fairyland to Roboville as fast as she could. They were 2000 miles apart. If she could only go 10 hours a day at 40 miles per hour, how many days would it take her?
26. Pikachu climbs a tree. Every day he goes up 5 feet, every night he slides down 6 inches. If the tree is 14 feet high, how many days will it take for him to get to the top?
27. Martha was going for the world record for the greatest number of people on a dance floor. She figured she could squeeze each person into a $1\frac{1}{2}$ square foot area. If the dance floor is 27 feet wide and 93 feet long, how many dancers can she fit on the floor?
28. If $\frac{n!}{(n-1)!} = 4$, what is n?
29. If $6x + 5x = -5 + 8x$, find x ?

30. When Rapunzel was up in her tower, her hair wasn't instantly long. Each year it grew 12 feet (it was enchanted), but each month she trimmed 1 inch of split ends. If her tower was 231 feet high, how many years did it take for her hair to touch the ground?

**2001 Mount Rainier Math Invitational
Sixth Grade Team Algebra Test**

Reduce all fractions and answers may be left in terms of π or use 3.14 for π . You will have 20 minutes for this test.

Questions 1- 5 are worth 2 points each

1. Simplify: $2(3X+2) - 3X + 2$
2. Find X: $X/3 + 6 = 12$.
3. Evaluate for A=3 and B=9: $AB - A + B/A$.
4. If a \$300 TV is reduced 20%, what is the new price?
5. If you take twice my number and add 5 to it, you get 1. What is my number

Questions 6- 10 are worth 3 points each

6. If you square my age and then add 11, you get 180. What is my age?
7. Amy has the same number of brothers as sisters. Her brother Andy has twice as many sisters as brothers. How many children are in the family?
8. I have a rectangular garden whose length is three times as large as its width. Its area is 363 square feet. What is the length of my garden?
9. Find all values of X such that: $(X-1)^2 = 64$.
10. If $A + B = 20$ and A equals the square root of 196, then what does B equal?

**2001 Mount Rainier Math Invitational
Sixth Grade Team Geometry Test**

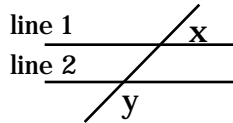
Reduce all fractions and answers may be left in terms of π or use 3.14 for π . You will have 20 minutes for this test.

Questions 1- 5 are worth 2 points each

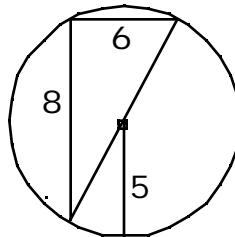
1. How many rectangles are in the figure below?



2. Bill and Jane had lunch together. At 1pm, Bill started walking north at 3 mph and Jane walked east at 4 mph. How far apart are they at 4pm?
3. If line 1 and line 2 are parallel and angle x is 45° , then what is the measure of angle y ?

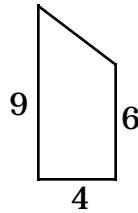


4. I need 294 square inches of cardboard to make a cubic box (with lid). What is the length of each side?
5. A right triangle fits inside a circle. Using the information in the diagram find the area in the circle that is not part of the triangle.

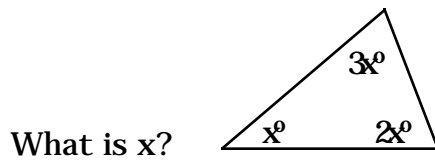


Questions 6- 10 are worth 3 points each

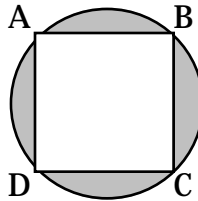
6. Find the perimeter of the figure below.



- 7.



8. The square ABCD is placed inside a circle of radius 10. What is the area of the shaded region?



9. A swimming pool is 35 feet long, 15 feet wide and 6 feet deep. How many gallons of water will it take to fill it if there are 7.48 gallons in a cubic foot (round to the nearest gallon)?
10. Sid was standing next to a pine tree, which cast a shadow of 30 feet. Sid is 6 feet tall and his shadow was 9 feet long. How tall is the tree?

**2001 Mount Rainier Math Invitational
Sixth Grade Team Pressure Round**

Reduce all fractions and answers may be left in terms of π or use 3.14 for π . You must turn in an answer to a problem at 3, 6, 9, 12 and 15 minutes. The first answer turned in is worth 3 points, the second 4 points, ..., and the fifth is worth 7 points.

1. Over 2 years, if I buy 10 CD's a year, which is cheaper? A) Buying each CD for \$10 at Warehouse Music or B) Joining the CD club which charges \$65 membership the first year and \$30 the second year but allows you to buy music at \$5 per CD.
2. Australia sells pop cans that have 4 times larger diameter and are 2 times taller than American pop cans. How many six-packs of American pop would I need to have more pop than one can of Australian pop?
3. There was a bike race. Willy finished two places ahead of Robby, who was last place. Butch finished two places behind Art and two ahead of Betsy, who was two ahead of Willy. Clarence finished five places ahead of Betsy and just behind Simon, who finished first. What place did Willy finish?
4. What is the sum of all the whole numbers from 1 to 100 inclusive?
5. A figure is formed by a 6x8 rectangle with a semi-circle on each side. What is its area?

2001 Mount Rainier Math Invitational
Sixth Grade Team Who Wants to be a Mathematician

Any wrong answer and you will lose any points past the last “safe zone” (after questions 4 and 8). You may use up to two LifeLines by putting “LL” as the answer for a question. There is no credit for that question but it does not count as a wrong answer. Reduce all fractions and answers may be left in terms of π or use 3.14 for π . You will have 20 minutes for this test.

Questions 1- 4 are worth 1 point each

1. How many sides does a pentagon have?
2. What is $37 + 96$?
3. How many prime numbers are between 20 and 40?
4. What is the next number in the sequence: 1, 4, 9, 16, 25, ___?

Questions 5- 8 are worth 2 points each

5. What is the measure of each angle in an equilateral triangle?
6. If I roll two fair six-sided dice, what is the probability that both numbers will be the same?
7. Solve for x : $3x + 8 = 6x + 1 - 2x$
8. What is the circumference of a circle with an area of 16 square units?

Questions 9- 11 are worth 3 points each

9. How many 2×2 squares are in a square with area of 64 units?
10. In how many ways can I arrange the letters in the word “ARRANGE”?
11. What is the units (ones) digit of 3 raised to the power of 2001?

Question 12 is worth 4 points

12. Find the positive difference between the areas of the two circles.

