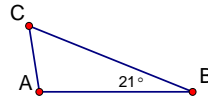
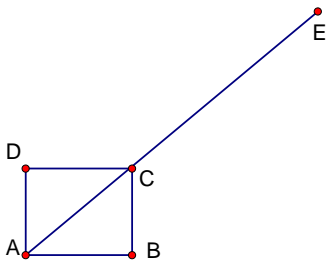
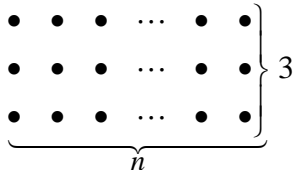
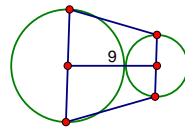


1. The Fibonacci sequence is 1,1,2,3,5,8,... Each number after the first two numbers is the sum of the preceding two numbers. What is the first perfect square greater than 1 to occur in this sequence?	1.
2. Jaynce has a 3" x 5" picture. She enlarges the picture so its new measurement is 9" x 15". By what number is the area of the original picture multiplied to get the area of the enlarged picture?	2.
3. The ratio of boys to girls in a class of 42 students is 3:4. How many more girls are there than boys in the class?	3. girls
4. What is the greatest possible value of $(\quad) \times (\quad) + (\quad)$ if the parentheses are filled with 3, 5, and 7, and each of the three integers is used exactly once?	4.
5. The time in Oklahoma City is two hours later than the time in Los Angeles. If a plane leaves Los Angeles at 2:45 pm and flies to Oklahoma City in 2 hours and 40 minutes, at what local time does it land in Oklahoma City?	5.
6. If the measure of angle C is triple the measure of angle B, what is the measure of angle A in triangle ABC? The figure is not drawn to scale.	6. degrees
7. A regular octagon has the same perimeter as a regular hexagon with 24 cm sides. What is the length of each side of the octagon?	7. cm
8. In a certain dormitory, there are 72 rooms for 131 students. If each room is occupied by either one or two students, how many rooms are occupied by just one student?	8. rooms
9. What is the sum of the first 15 terms of the arithmetic sequence -5,-3,-1,1,3,...?	9.
10. How many digits are in the number $2 \times 10^{25} + 7$ when it is written out?	10. digits
11. For all positive integers n , the symbol $n!$ denotes the product of the first n integers ($4! = 4 \cdot 3 \cdot 2 \cdot 1$). Find the value of n for which $(3!)(5!)(7!) = n!$	11.
12. How many zeros are there in the product $2^5 \times 5^4$?	12. zeros
13. The operation Υ is defined for positive integers a and b as $a \Upsilon b = \frac{a^b}{\sqrt{ab}}$. Express the value of $9 \Upsilon 2$ as a common fraction in simplest radical form.	13.
14. What value of x gives the minimum value for $x^2 - 6x - 5$?	14.
15. A salesperson can choose one of two monthly salary plans. With plan A, the base salary is \$800 and they receive a 10% commission on sales. Plan B has a base salary of \$1200 with 5% commission on sales. For a month with \$25,000 in sales, what is the positive difference in the earnings from the two plans?	15. \$
16. Find the value of x that satisfies $(3^x)(4^x) = 7^x$.	16.
17. Simplify $\left(\frac{3a^2b}{2bc^2}\right)^2 \left(\frac{4b^2c^2}{9ab^2c}\right)^3$	17.
18. The diagonals of a rhombus measure 18 feet and 12 feet and are perpendicular bisectors of each other. What is the perimeter of the rhombus? Express your answer in simplest radical form.	18. feet
19. Let $10^{51} - 9$ be written as an integer in standard form. Find the sum of the digits of this integer.	19.
20. If s is 80% of p and f is 110% of s , what is the value of f when $p = 90$? Give your answer as a decimal.	20.
21. Oscar rolls three standard dice once. What is the probability the sum of the numbers rolled is greater than 15? Express your answer as a common fraction.	21.



<p>22. Water weighs approximately 62.4 lbs/ft^3. How much does the water in a right circular cylinder tank with a 7 foot diameter and 2 foot height weigh (to the nearest 10 pounds) if the tank is full? Use $\frac{22}{7} = \pi$.</p>	<p>22.</p> <p style="text-align: right;">lbs.</p>
<p>23. What is the ordered pair of positive integers (a, b), with b as small as possible, for which $\frac{5}{8} < \frac{a}{b} < \frac{16}{25}$?</p>	<p>23.</p> <p style="text-align: right;">(,)</p>
<p>24. Two non-congruent circles are externally tangent. Each base of an isosceles trapezoid is a diameter of one of the circles. If the distance between the centers of the circles is 9, find the area of the trapezoid. Figure not drawn to scale.</p>	<p>24.</p> <p style="text-align: right;">sq. units</p>
<p>25. There are a total of 70 squares of all sizes whose vertices are points on this rectangular $3 \times n$ grid. What is the value of n?</p>	<p>25.</p>
<p>26. What is the least possible value of $x-1 + x+1.5 + x+2$?</p>	<p>26.</p>
<p>27. Find the sum of $(1+2) + (2+3) + (3+4) + \dots + (83+84) + (84+85)$.</p>	<p>27.</p>
<p>28. Find the remainder when 3^{2007} is divided by 15.</p>	<p>28.</p>
<p>29. If N is a three-digit number whose unit's digit is 4, find the probability that N is divisible by 6. Express your answer as a common fraction.</p>	<p>29.</p>
<p>30. The area of square $ABCD$ is 1. Diagonal AC is extended twice its length to point E. Find the length of BE in simplest radical form.</p>	<p>30.</p>



Tie-breaker: Explain why the Triangle Inequality $(|a+b| \leq |a|+|b|)$ is true.

5th Annual
Oklahoma School of Science and Mathematics
Middle School Mathematics: An Awesome Contest
March 3, 2007



NAME (Please Print) e-mail _____	AGE 	DATE OF BIRTH mm/dd/yy __ / __ / __	GRADE LEVEL (Circle one) 7 8
SCHOOL 	GENDER (Circle one) M F	HOME ADDRESS _____ City _____ Zip ____	SCORE (For official use)
Parents' names: (Please print)			

Directions: Use scratch paper provided to do your work. Calculators are allowed, but not necessary. Write the answer to each question in the box to the right of the question. All fractions should be in simplest form. Round decimal answers to three decimal places. Units are not necessary unless specifically requested in the problem.

This is a 30-question, 1-hour contest. It will be graded out of 30 points. Your score will be the number of correct answers. There is no partial credit or penalty for wrong answers. Please continue working or reworking problems until time is called.

Do Not Open Or Turn Over Until Instructed To Do So