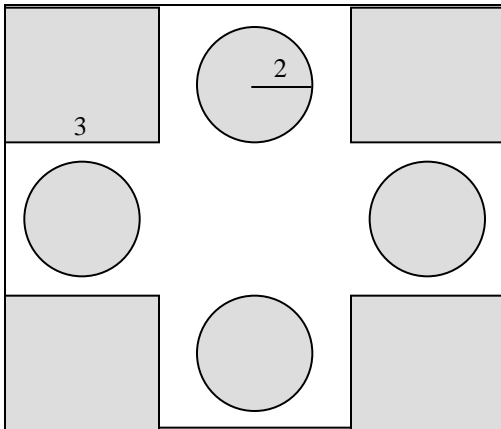


Illinois Mathematics and Science Academy
Mu Alpha Theta's
2000 Junior High Math Contest
Seventh Grade Individual

1. When Timmy was asked his age, he responded, "My age is 24 less than my father's age." When Timmy's father was asked his age, he responded, "My age is three times Timmy's age." How old is Timmy?
2. Jill has a beautiful garden. The shaded regions (4 equal squares and 4 equal circles) in the figure below are where the plants are. If she must use one gallon of water for every 6 square feet every 2 days, how many gallons of water does she need in a month (30 days)? Round the answer to the nearest tenth.



3. Millie was worried that she would not have enough money to buy her brother a graduation gift, so she counted how much she had. It came to \$7.00. Her mother said that she could earn some extra money by doing special chores. Twelve days later she had \$ 103.00. If her mother paid her the same amount each day, how much money did Millie have after 10 days?
4. The ratio of a rectangular TV screen's width to its length is 3:4. If the diagonal of the screen is 40 inches, how large is the TV screen in square inches?

5. In Mrs. Hilton's class, $\frac{1}{4}$ of the students received C's, $\frac{1}{3}$ of the students got B's, and the rest of the students received A's. If ten people got A's, how many people got C's?

6. In a game of Ghetto Basketball, normal shots are worth 5 points and shots outside of the 8-point arc are worth 8 points. What is the highest integral score that cannot be achieved?

7. Big Danny, the basketball player, averaged 18.8 points per game for the five games. How many points must he score in the next game to average 20 points per game?

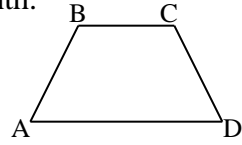
8. What is the smallest positive integer divisible by all of the first ten positive integers?

9. Pete can do a job in 6 hours. Andrew can do the same job in 3 hours. If they work together, how many hours will it take for them to do the job?

10. The angles of a triangle are in the ratio 1 : 3 : 5. What is the measure of the largest angle?

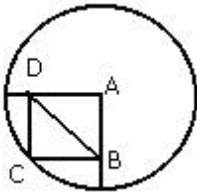
11. If x is 40% of z and y is 50 % of z , what percent of x is y ?

12. An isosceles trapezoid has bases with lengths 3 and 6. If the altitude is 4, what is the perimeter of the trapezoid? Round your answer to the nearest tenth.



13. If ten pints of a fifteen percent sugar solution are mixed with fifteen pints of a ten percent sugar solution, what is the concentration of sugar in the final solution?

14. If ABCD is a square and the length of AB is equal to six, find the length of DB.



15. What is $(100,001)(100,001) - (100,003)(99,999)$?

16. If $\sqrt{7 + \sqrt{x}} = 4$, solve for x .

17. If $A + B = 12$ and $B + C = 4$, what is the value of $A - C$?

18. What percent of one hour is five seconds? Round your answer to the nearest tenth.

19. A rectangular block of cheese (16 cm by 12 cm by 7 cm) is covered with wax. If the block is cut into 1 cm cubes, what percent of the cubes will have wax on at least one side? Leave your answer rounded to the nearest tenth.

20. What is the unit digit on 7^{36} ?

Answer Key: 2000 7th Grade Individual
(Not guaranteed!)

1. 12
2. 215.7
3. 87
4. 768
5. 6
6. 27
7. 26
8. 2520
9. 2
10. 100
11. 125%
12. 17.5
13. 12
14. 3 (2)
15. 4
16. 81
17. 8
18. 13.9
19. 47.9
20. 1