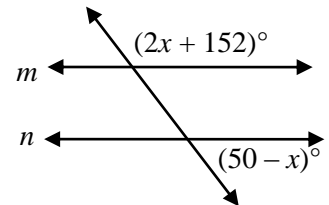


**2007 Pizitz Mathematics Tournament  
Eighth Grade Test**

1. The weatherman is predicting a 55% chance of snow on Sunday. What are the odds for snow on Sunday?  
 A. 11:20                      B. 11:9                      C. 9:11                      D. 9:20                      E. NOTA
2. Simplify:  $9^{-1} + 6^0 - 3^2 + 1^3$ .  
 A.  $-6\frac{8}{9}$                       B.  $11\frac{1}{9}$                       C. 2                      D.  $10\frac{8}{9}$                       E. NOTA
3. Solve:  $\frac{2}{3}(6x - 15) = 22$ .  
 A. 1.75                      B. 3                      C. 9.25                      D. 8                      E. NOTA
4. The formula  $t = \frac{\sqrt{h}}{4}$  represents the time  $t$  in seconds that it takes an object to fall from a height of  $h$  feet. If an egg is dropped from a height of 324 feet, how long will it take to reach the ground?  
 A.  $2\sqrt{9}$  sec.                      B. 9 sec.                      C. 4.5 sec.                      D. 18 sec.                      E. NOTA
5. What is the greatest common factor for  $8a^2b^3$ ,  $12a^3b^2c$  and  $20a^2bc^2$ ?  
 A.  $120a^2b$                       B.  $4a^2b$                       C.  $4a^3b^3c^2$                       D.  $120a^3b^3c^2$                       E. NOTA
6. Julie is mixing 2 cups of pure orange juice with 2 quarts of water. What will be the percentage of orange juice in the resulting solution?  
 A. 25%                      B. 37.5%                      C. 20%                      D. 50%                      E. NOTA
7. Given  $m \parallel n$ , solve for  $x$ .  
 A.  $x = -22$                       C.  $x = 22$   
 B.  $x = -34$                       D.  $x = 34$                       E. NOTA



8. Evaluate for  $x = -2$ :  $\frac{3x^2 - 13x - 10}{3x + 2}$ .  
 A. 7                      B.  $\frac{7}{2}$                       C. -7                      D. 1                      E. NOTA
9. What is the slope of the line containing the points  $(9, -6)$  and  $(15, -14)$ ,  
 A.  $\frac{4}{3}$                       B.  $-\frac{3}{10}$                       C.  $-\frac{10}{3}$                       D.  $\frac{3}{4}$                       E. NOTA
10. A solid candy jawbreaker is cut in half. If its diameter is 4 cm, what is the surface area of a half piece?  
 A.  $5\pi \text{ cm}^2$                       B.  $\frac{20}{3}\pi \text{ cm}^2$                       C.  $20\pi \text{ cm}^2$                       D.  $12\pi \text{ cm}^2$                       E. NOTA

11. The table shows the total number of students that had arrived at a school party at selected times on a Friday evening. Between which two time periods was the greatest rate of change in students per minute?

<b>Time (p.m.)</b>	6:45	6:55	7:00	7:30
<b>Students</b>	180	320	395	540

- A. 6:45 and 6:55      B. 6:55 and 7:00      C. 7 and 7:30      D. 6:45 and 7      E. NOTA
12. Certain integers between 20 and 200 have an odd number of factors. Find the greatest positive difference between two such integers.
- A. 171      B. 178      C. 176      D. 174      E. NOTA
13. For her party, Jing ordered a 4 ft. long subway with 3 different meats and 2 different cheeses. She made 16 cuts equally spaced along the length. How long was each piece?
- A.  $2\frac{3}{4}$  in.      B.  $2\frac{2}{3}$  in.      C.  $2\frac{14}{17}$  in.      D. 3 in.      E. NOTA
14. Tom and Jerry are sitting on opposite sides of a see-saw. Tom is 5 ft. 10 in. tall and weighs 150 pounds. Jerry is 5 ft. 3 in. The see-saw is level when each sits a distance equal to the other's height from the center of the see-saw. What is Jerry's weight?
- A. 124 lb.      B. 158 lb.      C.  $166\frac{2}{3}$  lb.      D. 135 lb.      E. NOTA
15. A rectangle with integral side lengths has a diagonal of  $\sqrt{61}$  m. If its perimeter is 22 m, what is its area?
- A.  $30\text{ m}^2$       B.  $18\text{ m}^2$       C.  $28\text{ m}^2$       D.  $24\text{ m}^2$       E. NOTA
16. While graphing the equation  $y = 3x^2 + 3x - 2$ , Wei spilled some Mt. Dew on his paper and could no longer read the coordinates for the vertex. All he could read was  $(-0.5, \quad)$ . What was the missing coordinate?
- A. 4.25      B. -4.25      C. 0.25      D. -2.75      E. NOTA
17. A petri dish contains  $1.28 \times 10^{11}$  bacteria. An antibiotic spray kills one-half of the colony every ten seconds up to two minutes. How many bacteria are alive  $1\frac{1}{2}$  minutes after spraying?
- A. 250,000      B. 2,500,000      C. 250,000,000      D. 25,000,000      E. NOTA
18. Brett is pouring a walkway around his 16 ft. by 20 ft. rectangular pool. The walkway will be 4 inches thick and 4 feet wide. How much concrete will he need?
- A.  $117\frac{1}{3}$  cu. ft.      B. 88 cu. ft.      C.  $106\frac{2}{3}$  cu. ft.      D. 80 cu. ft.      E. NOTA
19. When Mrs. Chilton lived near Canada, children could go outside for recess when the temperature was greater than  $-30^\circ$ . The high temperatures on selected days in January were  $-48^\circ$ ,  $-20^\circ$ ,  $-35^\circ$ , and  $-17^\circ$ . What is the sum of the range and mean high temperatures?
- A.  $-1^\circ$       B.  $1^\circ$       C.  $-61^\circ$       D.  $65^\circ$       E. NOTA

20. In a relay race Jenny ran 1700 meters south from the starting point, then passed the baton to Sushma, who ran 1500 meters east. Sushma passed the baton to Joann, who ran 900 meters north. She passed the baton to Mohini, who ran directly to the starting point in 10 minutes. At what rate in kilometers per hour did Mohini run?

- A. 51 km/hr                      B. 10.2 km/hr                      C. 1.7 km/hr                      D. 13.8 km/hr                      E. NOTA

21. Simplify:  $(\sqrt{72} + 3\sqrt{98}) \div \sqrt{128}$ .

- A.  $4^{12/13}$                       B.  $\frac{13\sqrt{2}}{8\sqrt{8}}$                       C.  $13/64$                       D.  $3^{3/8}$                       E. NOTA

22. Find the area bounded by  $x = -1$ ,  $x = 5$ ,  $y = 0$  and  $y = -2x + 13$ .

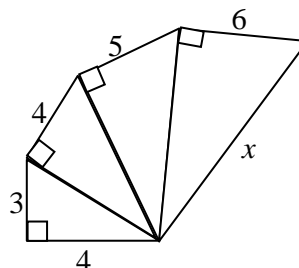
- A. 38 sq. units                      B. 40 sq. units                      C. 54 sq. units                      D. 26 sq. units                      E. NOTA

23. Pop's Pizza offers 4 types of meat and 3 types of cheese. In how many ways could a pizza with two meats, different or double of the same meat, and one cheese be ordered?

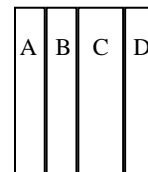
- A. 36                      B. 18                      C. 9                      D. 30                      E. NOTA

24. Find  $x$ .

- A.  $2\sqrt{51}$                       C.  $3\sqrt{34}$   
B.  $\sqrt{102}$                       D. 40                      E. NOTA



25. A set of encyclopedias are arranged alphabetically from left to right on a shelf. Volumes A, B, and D contain the same number of pages, so that each volume measures  $1\frac{3}{8}$  inches between the covers. Volume C measures  $2\frac{1}{4}$  inches between its covers. Each cover measures  $\frac{5}{16}$  inch thick. What is the distance from the first page in volume A to the last page in volume D?



- A.  $5\frac{1}{2}$  in.                      B.  $8\frac{1}{4}$  in.                      C.  $7\frac{5}{16}$  in.                      D.  $8\frac{7}{8}$  in.                      E. NOTA

**Tiebreakers** Please write answers to tiebreakers in the top margin on the back of the scantron.

TB1. John borrowed \$1800 at a simple annual interest rate of 12% for six months. He repaid the total amount owed during that time. What was the average monthly payment?

TB2. What is  $3210_4 + 210_3 + 10_2$  in base ten?

TB3. Find the number of diagonals in an icosagon.