

CIE-USA/DFW

Math Comp 2010

Grade 7

40 questions

Time: One Hour

Note:

- Make sure to write all your answers on the answer sheet. Only the answer sheet will be graded.
- Each question only has one correct answer.
- Print your name clearly and legibly below.

Name _____

Room _____

1. Find the square root: $\sqrt{7.29} = ?$

- A. -2.7
- B. 2.7
- C. ± 2.7
- D. 2.57
- E. -2.8

2. If $x^2 = 32400$, then $x = ?$

- A. 190
- B. -190
- C. ± 180
- D. ± 170
- E. ± 160

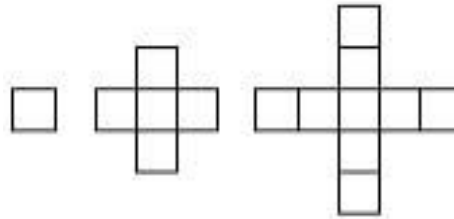
3. Solve $-\frac{2s+1}{6} < \frac{3-5s}{12}$

- A. $s > -5$
- B. $s < -5$
- C. $s < 5$
- D. $s > 5$
- E. $s < -\frac{5}{8}$

4. The school auditorium was $\frac{5}{6}$ full. What percent of the auditorium was full?

- A. 83.3%
- B. 0.833%
- C. 85.3%
- D. 0.853%
- E. 87.5%

5. It takes four toothpicks to build the first figure in this set. How many toothpicks are needed to build the thirteenth figure?

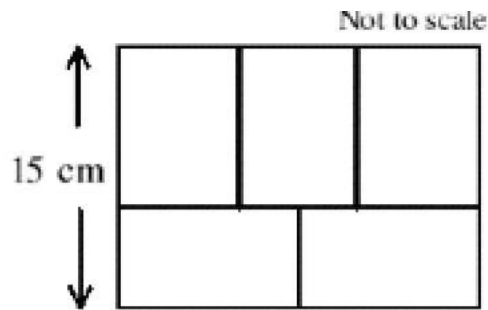


- A. 148
B. 145
C. 144
D. 151
E. 152
6. Mr. Lee will be serving 30 people at a barbeque. He plans to make two hamburgers for each person. Mr. Lee spent \$60.00 at the store on the meat, which sells for \$2.5 per pound. If Mr. Lee wants to make all the hamburgers the same size, what will be the size, in pounds, of each hamburger?
- A. 0.6 pounds
B. 0.3 pounds
C. 0.4 pounds
D. 0.5 pounds
E. 0.2 pounds
7. What is the last digit of 2^{2010} ?
- A. 2
B. 4
C. 6
D. 8
E. None of above

8. In the graph of the function $y = (x+1)^2 + 2$, which described the shift in the vertex of the parabola compared to the function $y = (x-1)^2 - 2$?

- A. 2 units to the right, and then 4 units up
- B. 2 units to the right, and then 4 units down
- C. 2 units to the left, and then 4 units up
- D. 2 units to the left, and then 4 units down
- E. None of above

9. Five identical rectangles fit together inside a larger rectangle as shown. What is the area, in cm^2 , of the larger rectangle?



- A. 270
- B. 300
- C. 330
- D. 360
- E. 450

10. Arrange these numbers in order from the smallest to the largest

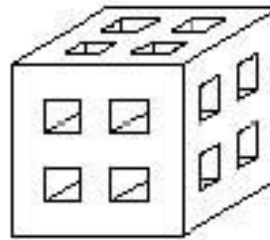
$$-2, -\sqrt{8}, \pi, |6-9|, 4, \frac{22}{5}, 1\frac{2}{3}, 15^0$$

- A. $-2, -\sqrt{8}, 15^0, 1\frac{2}{3}, |6-9|, \pi, 4, \frac{22}{5}$
- B. $-2, -\sqrt{8}, 1\frac{2}{3}, |6-9|, \pi, 4, \frac{22}{5}, 15^0$
- C. $-\sqrt{8}, -2, 1\frac{2}{3}, |6-9|, \pi, 4, \frac{22}{5}, 15^0$
- D. $-\sqrt{8}, -2, 15^0, 1\frac{2}{3}, |6-9|, \pi, 4, \frac{22}{5}$
- E. $-\sqrt{8}, -2, 1\frac{2}{3}, \pi, |6-9|, 4, \frac{22}{5}, 15^0$

11. A recipe for 8 waffles calls for $1\frac{1}{3}$ cups of milk, $3\frac{1}{2}$ cups of flour, and $2\frac{1}{4}$ cups of other ingredients. How many cups of milk, flour, and other ingredients are needed totally to make 64 waffles?

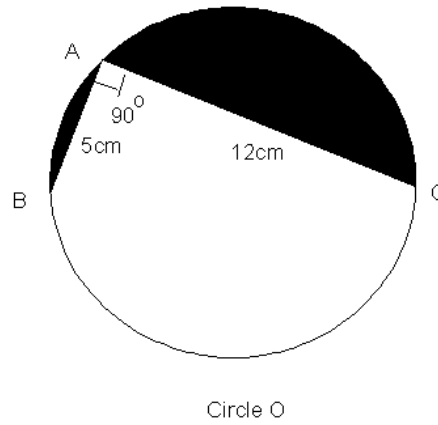
- A. $54\frac{2}{3}$
- B. $56\frac{2}{3}$
- C. $56\frac{1}{3}$
- D. $55\frac{1}{3}$
- E. $55\frac{2}{3}$

12. In a 5 by 5 by 5 cube, four symmetrically placed 1 by 1 square holes are cut perpendicular to each face all the way through to the opposite face as shown. How many small 1 by 1 by 1 cubes are left after this construction?



- A. 73
- B. 75
- C. 81
- D. 96
- E. 105

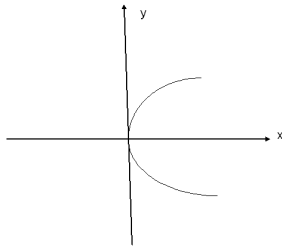
13. What's the shaded area?



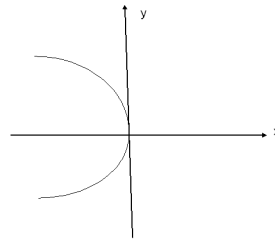
- A. 36.33 B. 40.44 C. 45.33 D. 30.44 E. 60.33

14. Which graph shows $x = -y^2$?

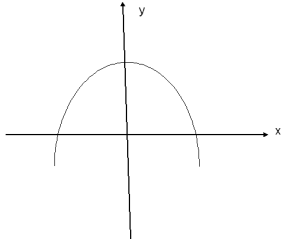
A.



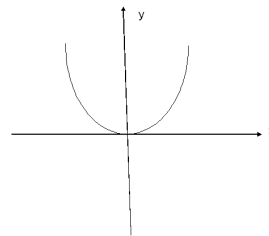
B.



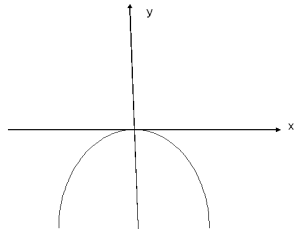
C.



D.



E.



15. What is the value of $\frac{55^2 + 2 \times 55 \times 45 + 45^2}{55^2 - 45^2}$

- A. 8
- B. 11
- C. 10
- D. 9
- E. 7

16. One year a monthly calendar looked like the diagram below. The sum of the numbers in one of the 3x3 arrays of this calendar is 162. What is the smallest number in that 3x3 array?

M	Tu	W	Th	F	Sa	Su
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

- A. 8
- B. 9
- C. 10
- D. 16
- E. 17

17. Jed scored the following numbers of points in his last 10 basketball games: 8, 21, 7, 15, 9, 15, 8, 9, 7 and 2. What is the median number of points scored by Jed in these 10 games?

- A. 10.6
- B. 15
- C. 8
- D. 8.5
- E. 9

18. The class had a budget of \$1100 for the trip. They had reserved 60% of the money for food and beverages. The remainder of the money was used for transportation. If transportation costs \$2.5 per person, the maximum number of students were able to participate is?

- A. 176
- B. 175
- C. 174
- D. 173
- E. 172

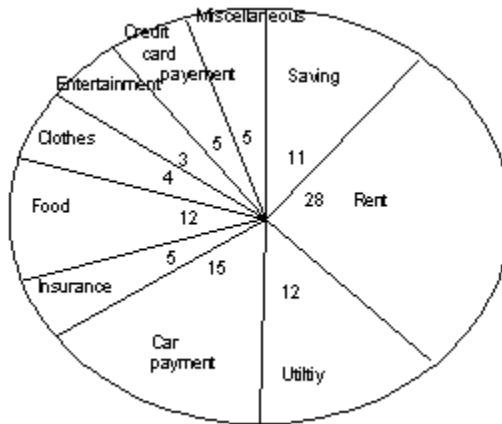
19. If $a < b$ and $c < b$, which statement must be true?

- A. The values of a , b , and c are positive.
- B. The value of b is the largest one in these three numbers.
- C. The values of a , b , and c are negative.
- D. The value of a is greater than the value of c .
- E. None of above

20. One tomato and one walnut cost as much as one apple and one pear. A pear costs as much as an apple and a walnut. A tomato costs as much as a pear and four walnuts. How many walnuts does a tomato cost?

- A. 8
- B. 12
- C. 9
- D. 10
- E. 11

21. David budgets \$1000 of his job earnings on a monthly basis. The graph below shows his monthly budget, which conclusion can be drawn from the information given?



- A. More than 30% of David's budget is for credit card payments, insurance, and food combined
 B. David budgets \$ 320 for utilities, insurance, and his card payment combined.
 C. Less than 50% of David's budget is for rent, food, and utilities combined.
 D. David budgets \$175 for savings, entertainment, and clothes combined
 E. None of above.

22. What is the x-coordinate of the x-intercept of the function $-\frac{4}{5}y = -12x + 24$?

- A. 3
 B. -3
 C. 2
 D. -2
 E. 1

23. A rectangle has a length of $5x - 1$ and a width of $4x + 2$ which expression describes the area of the rectangle best?

- A. $20x^2 - 14x - 2$
 B. $20x^2 - 6x + 2$
 C. $20x^2 - 6x - 2$
 D. $20x^2 + 6x - 2$
 E. $20x^2 + 6x + 2$

24. $\pi^0 \times (-6) - \sqrt{72} \div \left(\frac{1}{-\sqrt{18}}\right) \times \sqrt{9} \times \sqrt{8} \div \sqrt{32} + \sqrt{64} \times 10\sqrt{5} \div (-\sqrt{125}) = ?$

- A. $2\sqrt{5}$
- B. 0
- C. 32
- D. $-2\sqrt{5}$
- E. $3\sqrt{2}$

25. Take two sheets of 8 inch by 12 inch paper. Fold one sheet vertically into fourths to form the sides of a rectangular prism. Fold the other sheet horizontally into fourths to form the sides of a different rectangular prism. What is the difference in volume, in cubic inches, between the larger prism and the smaller prism?

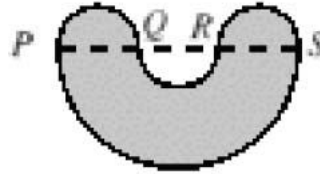


- A. 12
- B. 18
- C. 24
- D. 30
- E. 36

26. $(-4x^2 + 9y^2)(2x^2 + y^2 - 3xy) = ?$

- A. $(3y + 2x)(3y - 2x)(x + y)(2x - y)$
 - B. $(3y + 2x)(3y - 2x)(x - y)(2x + y)$
 - C. $(3y + 2x)(3y - 2x)(x - y)(2x - y)$
 - D. $(3y + 2x)(3y - 2x)(x + y)(2x + y)$
 - E. $(3y + 2x)(2x - 3y)(x - y)(2x - y)$
27. By walking at $\frac{4}{5}$ th of her usual speed, Professor McGonagall reaches her office 15 minutes later than usual. What is her usual time?
- A. 40 minutes
 - B. 45 minutes
 - C. 50 minutes
 - D. 55 minutes
 - E. 60 minutes
28. What is the cost in dollars to steam clean a room 30 yards wide and 50 yards long if the steam cleaners charge 20 cents per square foot? (1 yard=3 feet)
- A. \$2700
 - B. \$270
 - C. \$900
 - D. \$150
 - E. \$1500

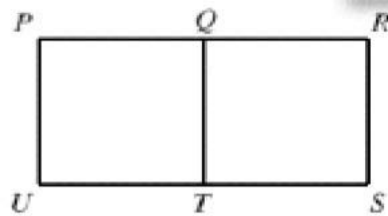
29. The points P, Q, R, and S are collinear with $PQ = QR = RS = 2$. The shape is made up of semi-circles with diameters PQ, QR, RS, and PS. The perimeter of the [shaded] shape is



- A. 3π
B. $\frac{7}{2}\pi$
C. 6π
D. $\frac{9}{2}\pi$
E. 5π
30. $-\left(\frac{1}{4}x - 2 - \frac{1}{4}\right) = -(4x - 1)$, $x = ?$

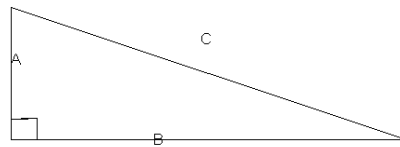
- A. $\frac{1}{4}$
B. $-\frac{1}{2}$
C. $\frac{1}{3}$
D. $-\frac{1}{3}$
E. $-\frac{1}{4}$

31. The figure shows rectangle PRSU and segment QT that divides the rectangle into two congruent squares, and $QT = \frac{1}{2}US$. How many right-angled triangles can be drawn using three of the points {P, Q, R, S, T, U} are vertices?



- A. 8
- B. 9
- C. 10
- D. 12
- E. 14

32. If hypotenuse C is 35 centimeters and leg B is 28 centimeters, what is the perimeter of this triangle?



- A. 88 cm
- B. 87 cm
- C. 85 cm
- D. 84 cm
- E. 21 cm

33. Jane is as old now as Nancy was 5 years ago. If the sum of their ages is 51. How old will Nancy be in 4 years?

- A. 26 years old
- B. 25 years old
- C. 28 years old
- D. 23 years old
- E. 32 years old

34. $\sqrt{|2 \times 37 - 3^2 \times 11|} = ?$

- A. 9
- B. -5
- C. 5
- D. -9
- E. 6

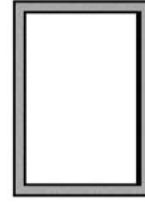
35. Find the missing number: $\frac{1-2}{3} - \frac{4-5}{6} = \frac{7-8}{9-?}$

- A. 5
- B. -7
- C. 7
- D. -5
- E. 3

36. $4x^2 - 4y^2 - 9z^2 - 12yz = ?$

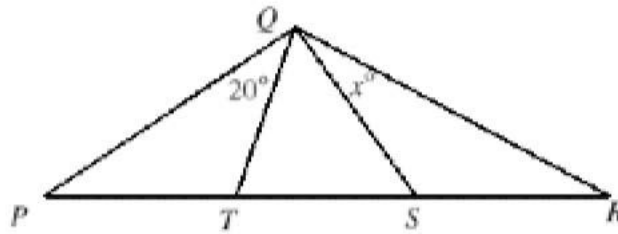
- A. $(2x + 2y + 3z)(2x - 2y - 3z)$
- B. $(2x + 2y - 3z)(2x - 2y - 3z)$
- C. $(2x + 2y + 3z)(2x - 2y + 3z)$
- D. $(2x + 2y - 3z)(2x - 2y + 3z)$
- E. $(2x - 2y - 3z)(2x - 2y + 3z)$

37. A 30 cm by 40 cm page of a book includes a 2 cm margin on each side. What percent of the page is occupied by the margin?



- A. 14%
- B. 16%
- C. 18%
- D. 20%
- E. 22%

38. In the diagram, $PT = QT = TS$; $QS = SR$; and $\angle PQT = 20^\circ$. What is the value of x ?

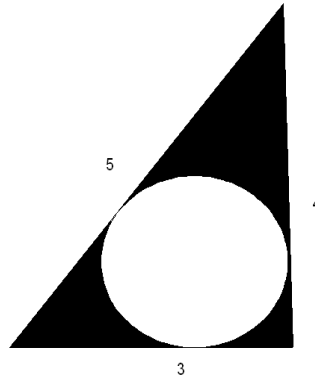


- A. 20
- B. 25
- C. 30
- D. 35
- E. 40

39. If $x=2010$, $y=9999$, then $\frac{2x - |5x - y| - |2x - y|}{\frac{3x}{y}} = ?$

- A. -3333
- B. 3333
- C. 2010
- D. -2010
- E. -6030

40. What is the area of the shaded part of the triangle surrounding the circle? (unit is cm)



- A. 2.66 cm^2
- B. 2.76 cm^2
- C. 2.86 cm^2
- D. 2.96 cm^2
- E. 3.06 cm^2