## 2018 SCSU MATH CONTEST 7<sup>th</sup> and 8<sup>th</sup> Grade Test

**DIRECTIONS:** Select the BEST response from those given. Scientific and graphing calculators are allowed. Symbolic graphing calculators are not allowed.

1.	Jenny enters her apa	artme	ent building on th	e first	t floor and runs u	o to t	he third floor in 3	2 seo	conds. At this rate,
	how many seconds	would	d it take for her to	run <sup>-</sup>	from the first floo	or up	to the sixth floor?		
	A. 64	В.	80	C.	96	D.	192	E.	None of these
2.	A 2×2×2 cube is rer	nove	d from each corne	er of a	an 8×8×8cube.	Wha	t fraction of the 8	×8×	8 cube is removed?
	A. $\frac{1}{8}$	в	$\frac{1}{4}$	C.	1	D.	$\frac{1}{16}$	F	$\frac{1}{32}$
	8	υ.	4	С.	2	υ.	16	с.	32
					1			1	
3.	3 teaspoons $=1$ tak	olespo	oon and 4 tablesp	oon =	$=$ $\frac{-}{4}$ cup. How ma	any te	easpoons equal 1	— си 3	ps?
	A. 24	В.	36	C.	48	D.	64	Ε.	None of these
4.	Lucy has only nickels more quarters than	nicke	ls. These coins h	ave a	value of \$3.00. H	ow n	nany coins are in L		
	A. 17	В.	21	C.	22	D.	25	E.	31
5.	Suppose that you ar on the merry-go-rou 360 degrees with yo	und a	t 10:45 pm, what						
	A. 1:00 am		3:15 am	C.	7:45 am	D.	10:45 pm	Ε.	None of these
6.	A bucket filled with remaining water we	igh 1	3.5 pounds. How	many	y pounds would th	ne en	npty bucket weigh	?	
	A. 1	В.	2	C.	5.75	D.	11.5	Ε.	23
7.	A large piece of cons the other to form a s continues, where th stack, <u>in cm</u> , after th	stack e sta	. This stack is cut ck is cut in half an	in hal d one	lf and one half is p e half is placed on	blace top	d exactly on the or of the other.Wha	ther	This process
	A. 1.024 cm	В.	5.12 cm	C.	10.24 cm	D.	51.2 cm	Ε.	102.4 cm
8.	Simplify: $\frac{\frac{2}{3} + \frac{3}{8} \times 2}{\frac{2}{3} - \frac{3}{8} \div 2}$								
	A. $2\frac{22}{23}$	В.	$6\frac{2}{3}$	C.	$7\frac{1}{5}$	D.	$10\frac{3}{8}$	E.	$14\frac{1}{7}$
9.	The arithmetic sequ you eventually see in			8, 62	4, 630, 636,	is co	ntinued. Which n	umt	per below would
	A. 4862		10,367	C.	75,284	D.	99,482	Ε.	102,624
10.	Mr. Smith recorded								

 Mr. Smith recorded the test scores for 25 students. He used the scores recorded and calculated the mean to be 70. However, Sandra's score of 86 was incorrectly marked as 36. What is the correct mean for the 25 students? Assume that the other 24 test scores were recorded correctly.

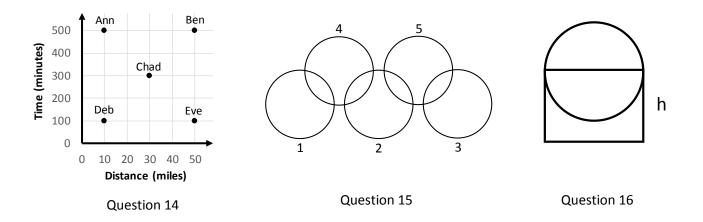
Α.	72	B. 74	C. 76	D. 78	Ε.	80

11.	If Q quarts of motor oil cost a total of C cents, how many gallons of this oil can you buy for D dollars?							
	A. $\frac{DQ}{25C}$	В. <u>4DQ</u>	C. <u>DQ</u>	D. $\frac{DQ}{4C}$	E. <u>25DQ</u>			
	25 <i>C</i>	С	400 <i>C</i>	4 <i>C</i>	С			
12.	A mixed number is to	be formed by plac	ing three different dig	its from the set {1, 2, 3	3, 4, 5} in the spaces of $\Box$ .			
	The fractional part of the mixed number must be less than 1. What is the difference between the largest and smallest possible mixed numbers that can be formed?							
	A. $4\frac{4}{15}$	B. $4\frac{3}{10}$	C. $4\frac{7}{20}$	D. $4\frac{9}{20}$	E. $4\frac{3}{5}$			
13.		-	-		number of widgets at 2			

widgets for \$5. The store owner sold all of the widgets at 3 widgets for \$7. How much did the store owner gain for each dozen widgets she sold?

A. \$2 B. \$3 C. \$4 D. \$6 E. \$8

Use the three figures below to answer questions 14, 15, and 16.



14. The time taken to travel various distances is shown in the graph above. Which person travelled the fastest on average?

Α.	Ann	Β.	Ben	C.	Chad	D.	Deb	Ε.	Eve
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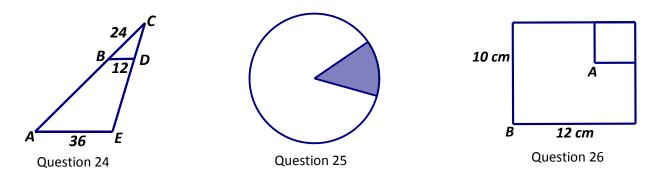
- 15. The five numbered rings shown in the diagram above represent five different colors. The colors are Red, Green, Blue, Yellow and Orange, but not necessarily in that order. It is known that:
  - The Blue ring does not intersect the Green ring
  - The Yellow ring intersects only the Blue ring
  - The Red ring is to the right of the Green ring and on the same level as the Green ring Which ring number is colored Orange?
  - A. 1 B. 2 C. 3 D. 4 E. 5
- 16. In the diagram shown above, the circle and rectangle have the same area. One side of the rectangle is a diameter of the circle. What is the ratio of the radius of the circle to the height of the rectangle?

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

17.	What is the longest piece of straight dry spaghetti that will fit (without bending or breaking) in a cylindrical can that has a radius of 3 inches and a height of 10 inches?					
	A. $\sqrt{13}$ in	B. $90\pi$ in	C. √109 in	D. $2\sqrt{34}$ in	E. $30\pi$ in	
18.	If the sum of two wh	nole numbers is 24 m	ore than their differe	nce, what must one of th	e numbers be?	
	A. 0	B. 6	C. 12	D. 48	E. 64	
19.	An evil witch casts a at 6:00 pm, at what t		•	hours. If the spell makes	the princess fall asleep	
	A. 8:00 am	B. 10:00 am	C. 12:00 pm	D. 4:00 pm	E. 8:00 pm	
20.	Mable catches two P how many Pokemon		•	e catches none in the oth	er 70%. At this rate,	
	A. 12	B. 15	C. 24	D. 96	E. 267	
21.			and and 47 are in cho in neither band nor cl	bir. 13 of these students noir?	are in both band and	
	A. 2	B. 6	C. 15	D. 19	E. 22	
22.	The sum of five cons integers?	secutive even integer	rs is 130. What is the	sum of the digits of the g	reatest of the five	
	A. 3	B. 4	C. 8	D. 31	E. 52	
23.	How many of the po	sitive divisors of 220	(including 220) are e	ven numbers?		

A. 4	B. 5	C. 6	D. 7	E. 8
		•••••		

Use the three figures below to answer questions 24, 25, and 26.



24. In the figure shown above,  $\overline{BD}$  is parallel to  $\overline{AE}$ , BD = 12, AE = 36, and CB = 24. The perimeter of triangle ACE is 162. Find the length of  $\overline{CD}$ . C. 21 D. 22.5 E. 27 A. 13.5 B. 18

25. A sector of a circle of radius 8.4 cm has a central angle of 50°, as shown above. Find the perimeter of this sector, rounded to the nearest tenth of a centimeter. A. 7.3 B. 15.7 C. 16.8 D. 21.9 E. 24.1

26. In the figure shown above, Point A is the vertex of a square that measures 4 cm on each side. What is the length in centimeters of segment AB? A. 6 B. 8 C. 10 D. 14 E. 24

- 27. The average of *a* and *b* is 10. The average of *b* and 10 is  $\frac{c}{2}$ . What is the average of *a* and *c*?
  - A. 15 B.  $\frac{a-b}{2}$  C. 20 D.  $\frac{b-a}{2}$  E. 30

28. Two fair six-sided dice, one red and one green, are tossed. What is the probability that the number showing on the red die is higher than the number showing on the green die?

A.  $\frac{7}{12}$  B.  $\frac{1}{2}$  C.  $\frac{1}{6}$  D.  $\frac{2}{3}$  E.  $\frac{5}{12}$ 

29. You have 70 ounces of light blue paint that is in a ratio of 3 parts blue to 7 parts white. You mix it with 70 ounces of darker blue paint that is 5 parts blue to 2 parts white. What is the ratio of blue to white in the mixture?
A. 71 to 69
B. 140 to 71
C. 20 to 50
D. 71 to 70
E. 8 to 9

30. If  $n=3^{x}+3^{x}+3^{x}$ , then  $n^{2} =$ A.  $9^{3x}$  B.  $27^{2x}$  C.  $9^{x+1}$  D.  $27^{6x}$  E.  $27^{3x}$ 

31. Find the 2018<sup>th</sup> digit to the right of the decimal in the expansion of  $\frac{1}{13}$ . A. 2 B. 3 C. 6 D. 7 E. 9

Alice, Ben and Carol found some money. They agreed that Alice should receive \$2 less than one-third of the money, Ben should receive \$8 more than one-fourth of the money, and Carol should receive the remaining \$19. How much money should Alice receive?

A. \$15 B. \$18 C. \$25 D. \$30 E. \$35

33. A right triangle on the coordinate system has vertices at A(2,1), B(2,5), and C(6,1). The triangle is rotated 90° clockwise about point *C*. What are the coordinates of the image of *B*?

- A. (10,5) B. (6,5) C. (1,5) D. (2,-3) E. None of these
- 34.  $\frac{T}{R} = \frac{2}{3}$  and  $\frac{S}{T} = 6$ . Find  $\frac{R+S}{T}$ . A.  $1\frac{2}{3}$  B.  $6\frac{2}{3}$  C.  $7\frac{1}{5}$  D.  $7\frac{1}{2}$  E. 12
- 35. Line *l* passes through the points (0,4) and (5,2). What is the *y*-intercept of a line perpendicular to *l* that passes through the point (2,1)?
  - A. (0,-0.5) B. (0,-2.5) C. (0,-4) D. (0,-5.5) E. (0,-6)