Potpourri

Select the letter of the most appropriate answer and shade in the corresponding region on the answer sheet. If no answer seems appropriate then shade in region E on the answer sheet.

### Solve the problem.

- 1) A quiz has 19 problems. The total point value of the quiz is 69 points. If each multiple-choice problem is worth five points and each true-false problem is worth three points, how many of each kind of problem does the quiz have?
  - A) 4 multiple-choice and 15 true-false problems
  - C) 7 multiple-choice and 12 true-false problems
- B) 6 multiple-choice and 13 true-false problems
- D) 5 multiple-choice and 14 true-false problems
- 2) Ms. Smith has 29 32-cent and 20-cent stamps all told. The stamps are worth \$7.24. How many of each stamp does she have?
  - A) 17 32-cent stamps and 12 20-cent stamps
  - C) 11 32-cent stamps and 18 20-cent stamps
- B) 10 32-cent stamps and 19 20-cent stampsD) 12 32-cent stamps and 17 20-cent stamps

### Complete the magic (addition) square.

3) Use each number 23, 24, 25, 26, 27, 28, 29, 30, and 31 once.

262527302328							
A)	B)	C)	D)				
262931252724302328	262924252731302328	263129252724302328	263124252729302328				
Guess the rule used to change one m	1 2 2 20						
4) Number Chosen 6 Number Given Back 30	7         8         9         10           34         38         42         46						
A) 3n + 8	B) n <sup>2</sup> + 10	C) 4n + 6	D) 6n – 4				
Solve the problem.         5) A rectangle has area of 110 square meters. Its length and width are whole numbers. Which measurements give the smallest perimeter?         A) 5 meters by 22 meters       B) 2 meters by 55 meters         C) 9 meters by 11 meters       D) 10 meters by 11 meters							
6) A rectangular field is to be width, then how wide is th		encing. If the length of the fie	eld is 70 feet longer than the				
A) 280 ft	B) 380 ft	C) 420 ft	D) 350 ft				
7) How many posts does it tal A) 25	ke to support a straight fend B) 22	e 230 feet long if posts are pl C) 23	aced every 10 feet? D) 24				
8) How many posts does it tal are placed every 15 yards?	ke to support a fence around	d a square field that measure	s 120 yards on a side if posts				
A) 36	B) 33	C) 32	D) 9				

9) How many cuts are needed to divide a pole 12 feet into 2-foot sections?

A) 3 B) 2 C) 6 D) 5

# Provide an appropriate response.

10) The following sequence is made of black circles. How many circles are needed for the 10th figure? The 15th figure?

	· · · · · ·						
	A) 55, 120	B) 45, 105	C) 66, 136	D) 57, 108			
	11) A pet shop has a total of 22 d many birds?	ogs and birds. Altogether the	re are 68 feet. How many dog	s are there and how			
	A) 13 dogs and 9 birds		B) 11 dogs and 11 birds				
	C) 14 dogs and 8 birds		D) 12 dogs and 10 birds				
Write	the set in set builder notation.						
	12) {17, 18, 19, 20} A) {x ∈ N  16 < x < 21}	B) $\{x \mid 17 < x < 20\}$	C) {x ∈ N   17 < x < 20}	D) $\{x \in N \mid x < 21\}$			
	A) $\{x \in \mathbb{N} \mid 10 < x < 21\}$	D) $\{x \mid 17 < x < 20\}$	C) $(x \in \mathbb{N}   17 < x < 20)$	$D) \{x \in \mathbb{N} \mid x < 21\}$			
Let A	$= \{1, 3, 5, 7\}, B = \{5, 6, 7, 8\}, C = \{5, 7$	8}, D = $\{2, 5, 8\}$ , and U = $\{1, 2, 5\}$	3, 4, 5, 6, 7, 8}. Decide if the	set relationship is true or			
Let A false.	= {1, 3, 5, 7}, B = {5, 6, 7, 8}, C = {5,	8}, D = {2, 5, 8}, and U = {1, 2,	3, 4, 5, 6, 7, 8}. Decide if the	set relationship is true or			
	= { <b>1</b> , 3, 5, 7}, B = {5, 6, 7, 8}, C = {5, 13) C ⊆ D	8}, D = {2, 5, 8}, and U = {1, 2,	3, 4, 5, 6, 7, 8}. Decide if the	set relationship is true or			
		8}, D = {2, 5, 8}, and U = {1, 2,	3, <b>4</b> , 5, 6, 7, 8}. Decide if the a B) False	set relationship is true or			
	13) C ⊆ D A) True	8}, D = {2, 5, 8}, and U = {1, 2,		set relationship is true or			
	13) C ⊆ D A) True 14) A ≠ {7, 5, 3, 1}	8}, D = {2, 5, 8}, and U = {1, 2,	B) False	set relationship is true or			
	13) C ⊆ D A) True	8}, D = {2, 5, 8}, and U = {1, 2,		set relationship is true or			
false.	13) C ⊆ D A) True 14) A ≠ {7, 5, 3, 1} A) True		B) False B) False	-			
false. Let U	13) C ⊆ D A) True 14) A ≠ {7, 5, 3, 1}		B) False B) False	-			
false.	<ul> <li>13) C ≤ D <ul> <li>A) True</li> </ul> </li> <li>14) A ≠ {7, 5, 3, 1} <ul> <li>A) True</li> </ul> </li> <li>= {q, r, s, t, u, v, w, x, y, z}, A = {q,</li> </ul>		B) False B) False				
false. Let U	<ul> <li>13) C ⊆ D A) True</li> <li>14) A ≠ {7, 5, 3, 1} A) True</li> <li>= {q, r, s, t, u, v, w, x, y, z}, A = {q, 15) A∪B</li> </ul>	s, u, w, y}, B = {q, s, y, z}, and	B) False B) False	-			
false. Let U	<ul> <li>13) C ≤ D <ul> <li>A) True</li> </ul> </li> <li>14) A ≠ {7, 5, 3, 1} <ul> <li>A) True</li> </ul> </li> <li>= {q, r, s, t, u, v, w, x, y, z}, A = {q,</li> </ul>		B) False B) False I C = {v, w, x, y, z}. List the el	ements in the following			
false. Let U	<ul> <li>13) C ⊆ D A) True</li> <li>14) A ≠ {7, 5, 3, 1} A) True</li> <li>= {q, r, s, t, u, v, w, x, y, z}, A = {q, 15) A∪B</li> </ul>	s, u, w, y}, B = {q, s, y, z}, and	B) False B) False I C = {v, w, x, y, z}. List the el	ements in the following			

Draw and shade a Venn diagram that corresponds to the set.



A) {19}	B) {21}	C) {-21}	D) {-19}
<b>Evaluate the function.</b> 21) If $f(x) = -5x^2 - 6x - 5$ , fin	- 1 (( 6)		
A) -149	B) -144	C) -191	D) 61
A) -149	D) -144	C) -171	D) 01

### Provide an appropriate response.

- 22) Gerald made a trip to his friend's house for a birthday party. His trip is shown below, where his distance (in miles) from home is graphed as a function of the hours past 4:00. Refer to the graph to answer the questions about his trip.
  - (i) What time did he leave home?
  - (ii) When did he realize he forgot his gift?
  - (iii) How far from home was he when he realized he forgot his gift?
  - (iv) What did he do about the forgotten gift?



## 26) You are paid \$9 for the first two hours and \$34 for each additional hour and you work for more than two hours. Give an expression for your pay P for h hours. A) P = 18 + 34(h - 2) B) P = 18 + 34h C) P = 9 + 34(h - 2) D) P = 9 + 34(h - 1)

27) A long distance phone call costs \$2.30 for the first minute plus \$1.30 each additional minute. What is the cost of a 32 minute call?

A) \$111.60	B) \$42.60	C) \$43.90	D) \$95.68
		, .	

Compute the distance between the two points.

28) (6, -1) and (4, -7)			
A) 32	B) 2√10	C) 32√2	D) 4

Compute the slope of the line segment determined by the given pair of points.

29) A(-8, 2), B(-9, 2)

D)  $-\frac{4}{17}$ A) 0 B) - 4 C) Undefined

### Solve the problem.

30) A motorcycle daredevil is planning a stunt to perform at a county fair. A ramp must be built to give him a 20% grade, or slope. If the vertical height at the end of the ramp must be 15 ft to assure that the stunt is a success, what must be the length of the horizontal run?

- 31) Suppose the sales of a particular brand of appliance are modeled by the linear function S(x) = 80x + 5700, where S(x) represents the number of sales in year x, with x = 0 corresponding to 1982. Find the number of sales in 1993. D) 6500 A) 13,160 B) 6580 C) 13,080
- 32) Suppose f(x) = mx + b is a mathematical model for actual time as a function of estimated time, where f(x)represents actual time and x represents estimated time and m and b are constants. If m = 3.9 and b = -3.2, find f(x) when x is 30 min. A) 113.8 min B) 42.48 min C) 120.2 min D) 17.52 min

### Find an equation in slope-intercept form of the line satisfying the specified conditions.

33) Through (8, 2), perpendicular to -8x - 7y = -92A)  $y = -\frac{7}{8}x + 5$  B)  $y = \frac{7}{8}x - 5$  C)  $y = \frac{8}{7}x - \frac{40}{7}$ D)  $y = -\frac{7}{8}x + \frac{23}{2}$ 

### Provide an appropriate response.

34) What is the equation of the line that is tangent to the circle of radius 4 at (0, 4) and whose center is at the origin?

A) x = 4B) y = x + 4C) y = 4D) y = x - 4 Refer to the figure to answer the question. Line DH is parallel to line IM. Line BO is perpendicular to line DH.



Find the unknown length in the right triangle.

41)



Find the standard deviation.

47) 4, 3, 10, 23, 39, 35, 49			
A) 23	B) 286.5	C) 16.9	D) 23.3

Two dice are rolled. Find the probability of the event described.

48) The score on the dice is 3.

A) $\frac{1}{18}$	B) $\frac{1}{4}$	C) $\frac{1}{9}$	D) $\frac{1}{12}$
49) The score on the di	ce is either 12 or at most 6.		
A) $\frac{17}{36}$	B) $\frac{4}{9}$	C) $\frac{1}{2}$	D) $\frac{5}{12}$

Find the probability.

50) When a single card is drawn from an ordinary 52-card deck, find the probability of getting a black card.

A) 
$$\frac{1}{52}$$
 B)  $\frac{1}{2}$  C) 2 D)  $\frac{1}{4}$ 

51) When a single card is drawn from an ordinary 52-card deck, find the probability of getting a seven.

- 52) If you are dealt two cards successively (without replacement) from a standard 52-card deck, find the probability of getting two black cards.
  - A)  $\frac{1}{2652}$  B)  $\frac{13}{51}$  C)  $\frac{25}{102}$  D)  $\frac{25}{51}$
- 53) A bag contains 8 red marbles, 2 blue marbles, and 1 green marble. What is the probability of choosing a marble that is not blue?
  - A)  $\frac{2}{11}$  B) 9 C)  $\frac{11}{9}$  D)  $\frac{9}{11}$
- 54) A bag contains 13 balls numbered 1 through 13. What is the probability of selecting a ball that has an even number?
  - A)  $\frac{6}{13}$  B)  $\frac{13}{6}$  C)  $\frac{2}{13}$  D) 6
- 55) One digit from the number 7,414,334 is written on each of seven cards. What is the probability of drawing a card that shows 7, 4, or 1?

A) 
$$\frac{3}{7}$$
 B)  $\frac{5}{7}$  C) 1 D)  $\frac{1}{7}$ 

56) What is the probability that the arrow will land on 4 or 5?

A) $\frac{4}{5}$	B) 1	C) $\frac{2}{5}$	D) $\frac{1}{5}$
57) If a single fair die is rolled, fir	nd the probability of a 4 given	that the number rolled is odd	1.
A) $\frac{1}{6}$	B) 1	C) $\frac{1}{2}$	D) 0
58) If two cards are drawn witho that the first card was a heart	-	ind the probability that the se	cond card is red, given
A) $\frac{4}{17}$	B) $\frac{22}{23}$	C) $\frac{26}{51}$	D) $\frac{25}{51}$
How many distinguishable permutation 59) CRITICS	ns of letters are possible in t	he word?	
A) 2520	B) 1260	C) 5040	D) 20,160
Solve the problem.			
60) How many ways can a presid A) 220	ent, vice-president, and secre B) 6	etary be chosen from a club w C) 36	ith 12 members? D) 1320
61) How many ways can a comm A) 30,240	ittee of 5 be selected from a cl B) 252	lub with 10 members? C) 50	D) 100,000
<b>Find the odds.</b> 62) What are the odds in favor of	drawing a 1 from these cards	?	
12345			
A) 1:5	B) 1:4	C) 4:1	D) 5:1
63) A number cube labeled with a showing a 4?	numbers 1, 2, 3, 4, 5, and 6 is t	ossed. What are the odds in fa	avor of the cube
A) 2:3	B) 1:6	C) 1:5	D) 1:4
<b>Solve the problem.</b> 64) Suppose a charitable organiza \$1.00 each, find the expected s	-		f 3000 tickets are sold at
A) -\$0.81	B) -\$0.83	C) -\$0.85	D) -\$1.00
65) A contractor is considering a weather, strikes, and such) of			
A) \$24,500	B) \$27,000	C) \$21,700	D) \$20,500

Patponrri 2023

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