

Penny Sikes 5th and 6th Grade Mathematics Tournament

Sponsored by Farmers and Merchants Bank

2016 6th Grade Individual Test

- 1) Make sure your name, the full name of your school, and your grade are correct on the answer sheet.
- 2) NO CALCULATORS!
- 3) DO NOT OPEN THIS TEST BOOKLET UNTIL INSTRUCTED TO DO SO BY THE TEST MONITOR.
- 4) If you must leave to go to the restroom, raise your hand and a monitor will escort you to the nearest restroom. Remember you have a time limit.
- 5) Read each problem carefully and mark each answer on your answer sheet.
- 6) Each correct answer on the test will be counted as one point on your individual score.
- 7) If individuals have the same written test score, ties will be broken by determining which student gave correct answers to the most difficult item(s) on the test.
- 8) When the individual testing is over, please make sure you take your pencil, test, and scratch work with you. You will need the pencil for the ciphering rounds.

2016 6th Grade Test

1. The table below shows how many t-shirts of each color Paul has in his closet.

Color	Number of Shirts
Green	3
Red	4
White	5
Blue	8
Total	20

What percentage of Paul's shirts are blue?

- (a) 4% (b) 8% (c) 40% (d) 60%
2. Rita is moving a pile of 120 rocks by hand to build a rock wall. If h represents the number of rocks that she can carry in one load, which expression represents the total number of loads needed to move the entire pile of rocks?
- (a) $120 + h$ (b) $120h$ (c) $120 - h$ (d) $\frac{120}{h}$
3. There are 2 ways to travel directly between A and B. There are 3 ways to travel directly between B and C. There are 2 ways to travel directly between C and D. There are 3 ways to travel directly between A and C. Visiting a letter more than once is not allowed. In how many ways can one travel from A to D?
- (a) 18 (b) 16 (c) 14 (d) 12
4. The average temperature is 25 degrees Celsius in Jackson County, 32 degrees Celsius in Hancock County, and -32 degrees Celsius in Randolph County. Which list shows the counties from coolest to warmest?
- (a) Hancock, Jackson, Randolph (b) Jackson, Randolph, Hancock
(c) Randolph, Jackson, Hancock (d) Randolph, Hancock, Jackson

5. Marcus spent \$3.25 to wash his car. If one quarter operates the car wash for 60 seconds, how long did it take him to wash his car?

- (a) 10 minutes (b) 13 minutes (c) 16 minutes (d) 32.5 minutes

6. In a scale drawing, one-half inch represents 3 feet. If the same scale is used, how many inches will be needed to represent 24 feet?

- (a) 2 inches (b) 4 inches (c) 8 inches (d) 12 inches

7. Courtney has to answer this question correctly for her team to win the math review game.

If a cornstalk grows 8 inches every month, how many months (m) will it take for the cornstalk to be 70 inches tall?

Which equation can be used to solve this problem?

- (a) $m + 8 = 70$ (b) $m - 8 = 70$ (c) $\frac{m}{8} = 70$ (d) $8m = 70$

8. Each year my allowance doubles from the previous year. My allowance is now \$2. Three years ago my allowance was:

- (a) \$0.25 (b) \$0.50 (c) \$0.75 (d) \$1.00

9. If 1 hip = 3 hops, and if 2 hops = 5 hip-hops,

then ? hips = 15 hip-hops.

- (a) 2 (b) 3 (c) 5 (d) 6

10. The greatest common factor of $2 \times 3 \times 4 \times 5$ and $6 \times 7 \times 8 \times 9$ is

- (a) 6 (b) 8 (c) 24 (d) 48

11. Cora's bill for dinner at a restaurant was \$69. She left an 18% tip. What was the amount of the tip?

- (a) \$81.42 (b) \$12.42 (c) \$1.24 (d) \$124.20

12. This table shows how the number of flowers on the pink bush, p , depends on the number of flowers on the red bush, r .

r	p
6	3
7	4
8	5
9	6

How would you write this as an equation?

- (a) $p = 3r - 1$ (b) $p = r - 3$ (c) $p = 3r - 3$ (d) $p = 3r + 1$

13. Of all the factors of 48, how many are divisible by 2?

- (a) 5 (b) 7 (c) 8 (d) 9

14. Mai earns \$5.50 per hour at her after-school job. How many hours does she have to work to earn \$132?

- (a) 16 (b) 20 (c) 22 (d) 24

15. Seven individual socks are drawn at random without replacement from a basket containing seven different pairs of socks. If the first six socks drawn are all different from one another, what is the probability that the next sock drawn at random from the basket is also different from the rest?

- (a) $\frac{1}{2}$ (b) $\frac{1}{4}$ (c) $\frac{1}{7}$ (d) $\frac{1}{8}$

16. Hunter checked the prices of 5 items available for purchase in the cafeteria. The prices were:

\$2.00 \$3.00 \$4.00 \$8.00 \$6.00

What is the range of the prices of the items?

- (a) \$4.00 (b) \$4.60 (c) \$6.00 (d) \$8.00

17. A tank is in the shape of a triangular prism. If the triangular base has an area of 116 square feet, and the tank is 30 feet tall, how much water would the tank contain when it is full?

- (a) 3480 ft³ (b) 870 ft³ (c) 1740 ft³ (d) 6960 ft³

18. The table shows the annual profit for five companies.

2003 Profits

Company	Profit
I	\$300,000
II	\$275,000
III	\$250,000
IV	\$325,000
V	\$300,000

Which statement is true about the annual profit for the five companies?

- (a) company IV made \$25,000 less than company V
(b) no company made less than \$275,000 profit
(c) no company made more than \$300,000 profit
(d) company IV made \$75,000 more profit than company III

19. What is the ratio of yellow cylinders to total cylinders?



- (a) 3:1 (b) 2:1 (c) 1:2 (d) 1:3

20. Mandy has the following data:

5 15 5 17 *m*

If the mean is 11, which number must *m* be?

- (a) 8 (b) 11 (c) 13 (d) 15

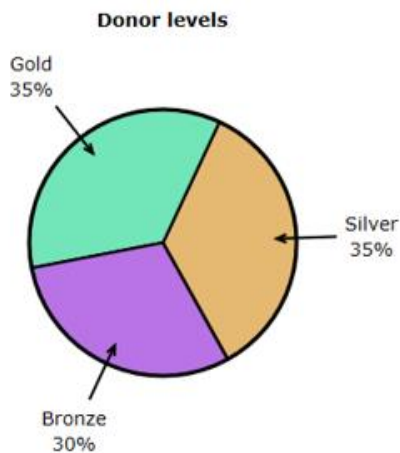
21. Which point is in Quadrant IV?

- (a) (-1,-2) (b) (5,2) (c) (-4,1) (d) (3,-2)

22. When preparing the cheese for their pizzas, the cooks at Jeff's pizza restaurant mix 6 kilograms of Parmesan cheese and 14 kilograms of mozzarella. At Jacob's pizza restaurant, the cooks mix 3 kilograms of Parmesan cheese and 9 kilograms of mozzarella. At Angie's pizza restaurant, the cooks mix 4 kilograms of Parmesan cheese and 16 kilograms of mozzarella. Which restaurant uses a higher ratio of Parmesan to mozzarella?






- (a) Jeff's (b) Jacob's (c) Angie's (d) all are equivalent

23. The Springtown Symphony categorizes its donors as gold, silver, or bronze depending on the amount donated.



- If there are 40 donors in all, how many of them are gold level?
- (a) 12 (b) 14 (c) 16 (d) 35
24. Ansel would like to buy a PhotoFresh camera with an original price of \$90. Which coupon should he use to create the lowest possible sale price?
- (a) \$50 off any PhotoFresh camera! (b) 60% off any PhotoFresh camera!
(c) PhotoFresh camera for half-price! (d) 40% off any PhotoFresh camera!
25. The supermarket has 40 aisles. 75% are empty, without any shoppers. How many aisles are not empty in the supermarket?
- (a) 30 (b) 25 (c) 75 (d) 10
26. Emilia has a yellow ribbon and a green ribbon. The yellow ribbon is $5\frac{1}{4}$ inches long and the green ribbon is $9\frac{1}{3}$ inches long. How much longer is the green ribbon than the yellow ribbon?
- (a) $4\frac{1}{4}$ inches (b) $4\frac{1}{12}$ inches (c) $4\frac{1}{3}$ inches (d) $14\frac{7}{12}$ inches

27. Look at this pictograph:

Weekly allowances	
Kimika	
Lacey	
Feivel	
Hildegard	
Alec	

Each  = \$10

What is the range of the weekly allowances of the five children?

- (a) \$4 (b) \$20 (c) \$40 (d) \$50

28. What time is it 1111 minutes after 11:11 AM ?

- (a) 5:42 AM (b) 6:42 AM (c) 5:12 AM (d) 6:02 AM

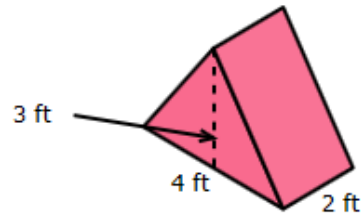
29. In a trivia competition, Marshall had a score of -200 points. Then he answered a few questions from the US history category and ended up with a grand total of 700 points. How many points did Marshall score on the US history questions?

- (a) -900 points (b) 900 points (c) -500 points (d) 500 points

30. The average of Sue's three tests is 85. Each test is worth 100 points. What score does she have to make on her fourth test to get an average of 87?

- (a) 87 (b) 90 (c) 93 (d) 95

31. What is the volume?



- (a) 24 ft^2 (b) 12 ft^2 (c) 24 ft^3 (d) 12 ft^3

32. Find the value of d as a decimal number.



- (a) 0.7 (b) 0.8 (c) 1.7 (d) 1.8

33. Slacks and shirts are on sale. The \$25 slacks can be purchased at a 20% discount and the \$18 shirts can be purchased at a 25% discount. What is the total cost, in dollars, of three pairs of slacks and 4 shirts at the sale price including 5% sales tax on the sale price?

- (a) \$119.70 (b) \$114.00 (c) \$108.30 (d) \$112.70

34. Write an equation that represents how the number of crayons left, c , depends on the number of crayons in each box, b .

“A child bought 15 boxes of crayons, but 19 of the crayons melted in the sun.”

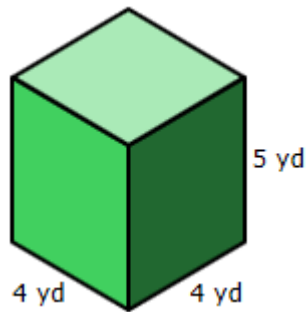
- (a) $c = 19b - 15$ (b) $c = 15b - 19$ (c) $c = 15b + 19$ (d) $b = 15c + 19$

35. I sell 3 tickets every 10 minutes. You sell 4 tickets every 12 minutes. If we sell at these rates and work together,

then we sell a total of ? tickets every ? minutes.

- (a) 19, 30 (b) 12, 20 (c) 11, 15 (d) 7, 9

36. What is the surface area of the figure below?



- (a) 112 yd (b) 112 yd² (c) 80 yd² (d) 80 yd³

37. Blanca took a total of 12 quizzes over the course of 6 weeks. After attending 9 weeks of school this quarter, how many quizzes will Blanca have taken total? Assume the relationship is directly proportional.

- (a) 24 (b) 20 (c) 18 (d) 16

38. To estimate the number of bison in an area, researchers put marks on 49 bison. Later, on a flight over the area, the researchers noted 28 marked bison out of the 480 bison they counted. To the nearest whole number, what is the best estimate for the bison population?

- (a) 840 (b) 820 (c) 274 (d) 235

39. Mr. Graham, a track coach, recorded the sizes of all the nearby track teams.

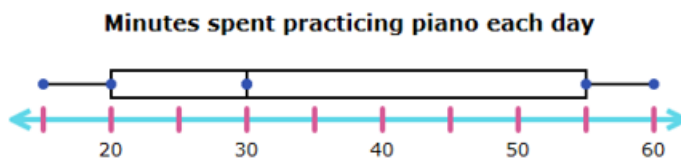
Track team sizes (number of members)

Stem	Leaf
4	1 4
5	
6	0 2 9
7	2 8
8	1
9	0

How many teams have at least 60 members but fewer than 85 members?

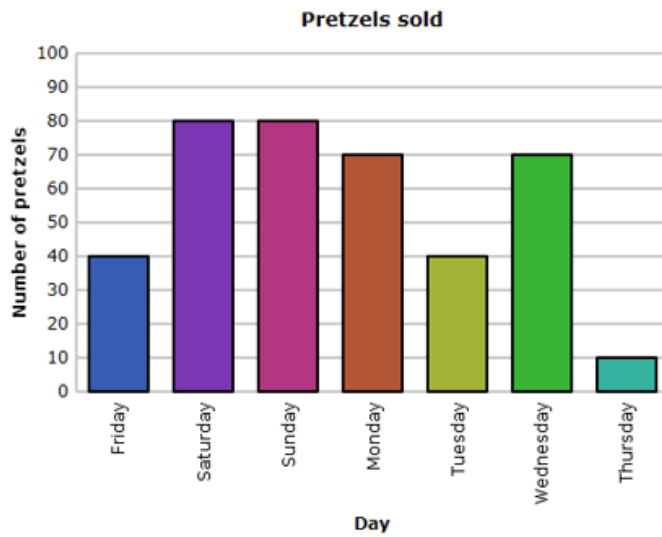
- (a) 9 (b) 7 (c) 6 (d) 5
40. Ms. Vaughn's students kept track of how much time they spent practicing piano each day. This box-and-whisker plot shows the results.

What percent of the students practice 30 minutes or less each day?



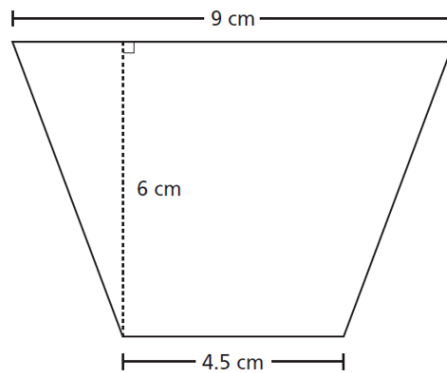
- (a) 0% (b) 25% (c) $33 \frac{1}{3}\%$ (d) 50%
41. Evaluate: $6^3 + 7 \times 4$
- (a) 46 (b) 244 (c) 757 (d) 892
42. A store manager is marking down surfboards from \$505 to \$303. What is the percent of discount?
- (a) 40% (b) 60% (c) 202% (d) $33 \frac{1}{3}\%$

43. A pretzel stand owner kept track of the number of pretzels sold during the past 7 days.



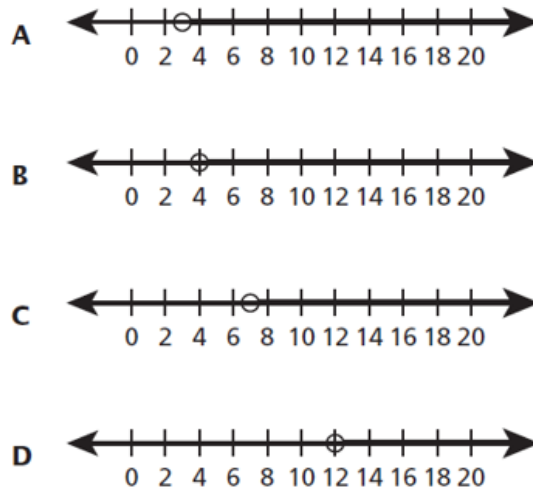
What is the median of the numbers?

- (a) 10 (b) 40 (c) 70 (d) 80
44. What is the area of the isosceles trapezoid shown?



- (a) 27 cm^2 (b) 54 cm^2 (c) 81 cm^2 (d) 40.5 cm^2

45. A printer makes more than 3 copies of a book every hour. Which graph represents the number of books made in 4 hours?



46. Tamara has the following data:

16 7 6 2 w

If the median is 6, which number could **w** NOT be?

- (a) 2 (b) 5 (c) 6 (d) 20

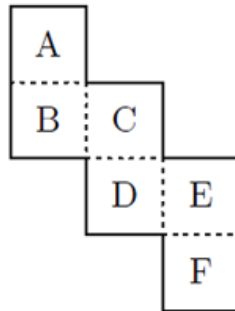
47. If a square has two of its vertices at (2,2) and (2,-2), how many such squares are possible?

- (a) 1 (b) 2 (c) 3 (d) 4

48. There are thirty students on a school bus. Ten students wear hats. Ten students wear eye glasses. Five students wear both eye glasses and hats. How many students wear neither hats nor eye glasses?

- (a) 5 (b) 10 (c) 15 (d) 25

49. When the diagram shown below is folded to form a cube, what letter is opposite of the face marked E?



- (a) B (b) C (c) D (d) F
50. A bag contains candies. One-fourth of the candies are blue, one-eighth are green, one-fourth are yellow, and the rest are red. What portion of the candies are red?

- (a) $\frac{3}{8}$ (b) $\frac{1}{4}$ (c) $\frac{1}{3}$ (d) $\frac{1}{2}$

2016 6th Grade Test Answers

- | | | | | |
|-------|-------|-------|-------|-------|
| 1. C | 2. D | 3. A | 4. C | 5. B |
| 6. B | 7. D | 8. A | 9. A | 10. C |
| 11. B | 12. B | 13. C | 14. D | 15. B |
| 16. C | 17. A | 18. D | 19. D | 20. C |
| 21. D | 22. A | 23. B | 24. B | 25. D |
| 26. B | 27. C | 28. A | 29. B | 30. C |
| 31. D | 32. B | 33. A | 34. B | 35. A |
| 36. B | 37. C | 38. A | 39. C | 40. D |
| 41. B | 42. A | 43. C | 44. D | 45. D |
| 46. D | 47. C | 48. C | 49. A | 50. A |