

Penny Sikes 5th and 6th Grade Mathematics Tournament

Sponsored by Farmers and Merchants Bank

2017 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.

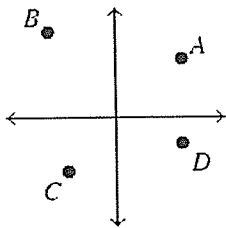
1. Which ratio compares the value of a nickel to a quarter?

- (a) $5/75$ (b) $5 : 4$ (c) $5 : 10$ (d) $1/5$

2. How many $2 \frac{1}{2}$ hour movies can be shown consecutively in a 20 hour period?

- (a) 7 (b) $7 \frac{1}{2}$ (c) 8 (d) 9

3. What point on the graph meets the condition $x > 0$ and $y < 0$?

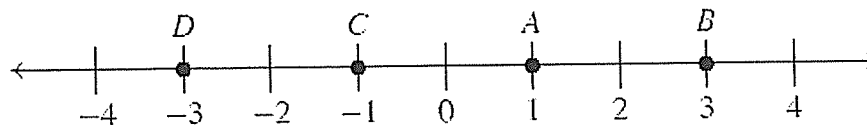


- (a) A (b) B (c) C (d) D

4. Which of the ordered pairs indicates a reflection across the y-axis?

- (a) $(-2, 3)$ and $(3, -2)$ (b) $(-4, 1)$ and $(4, -4)$ (c) $(-7, 3)$ and $(-7, -3)$ (d) $(-5, 2)$ and $(5, 2)$

5. This number line satisfies which of the following conditions?



- (a) $D > 0$ (b) $C > -A$ (c) $C > -B$ (d) $D > B$

6. During Tina's 8-hour work shift, she sold \$400 worth of merchandise. At this same rate, how can you figure out how much merchandise she would sell in 2 hours?

(a) $(8 \times 400) \div 2$ (b) $(2 \times 8) \div 400$ (c) $400 \div (2 \times 8)$ (d) $(400 \div 8) \times 2$

7. In the expression below, which operation is performed first?

$$-\frac{3}{4} + \frac{4}{5} \div \frac{1}{3} \times \frac{2}{5} - \frac{1}{4}$$

(a) $\frac{4}{5} \div \frac{1}{3}$ (b) $\frac{1}{3} \times \frac{2}{5}$ (c) $\frac{2}{5} - \frac{1}{4}$ (d) $-\frac{3}{4} + \frac{4}{5}$

8. Which of the following is *not* true of the commutative property?

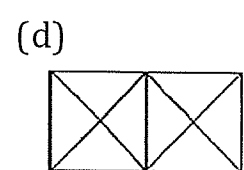
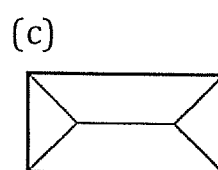
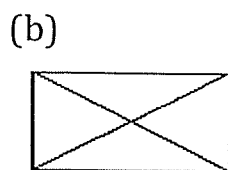
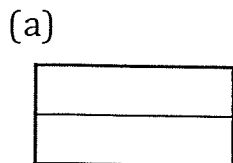
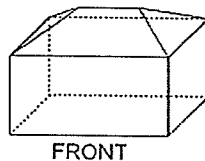
(a) $c + d = d + c$ (c) $c \div d = d \div c$

(b) $a \times b = b \times a$ (d) $a \div b = \frac{1}{b} \times a$

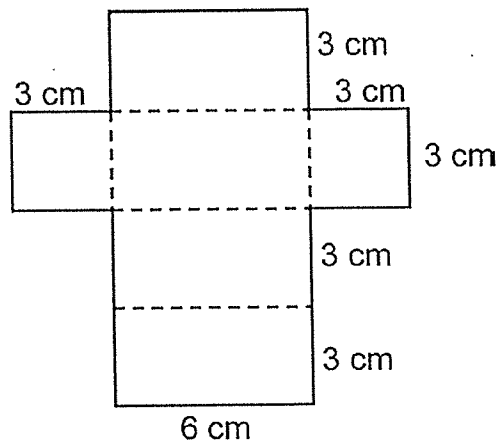
9. If $5 + v = 11$, then what does $v - 3$ equal?

(a) 6 (b) 3 (c) 13 (d) 16

10. The sketch represents a rectangular house with a hip roof. Which diagram best represents the top of the house?



11. What is the surface area of the box formed by the pattern below?



- (a) 27 cm^2 (b) 48 cm^2 (c) 72 cm^2 (d) 90 cm^2

12. If 3 students averaged 68 on a test and 4 other students averaged 75, what is the average of all 7 students?

- (a) 70 (b) 71 (c) 72 (d) 74

13. A high school auditorium contains 208 students. The ratio of boys to girls is 7 : 6. How many boys are in the auditorium?

- (a) 96 (b) 66 (c) 108 (d) 112

14. The table shows the toothbrush production rate of one machine.

Toothbrush Production

Minutes	2	4	6	8	10
Toothbrushes	140	280	420	560	700

Which of these describes the production rate per minute?

- (a) 30 toothbrushes (c) 70 toothbrushes
(b) 50 toothbrushes (d) 140 toothbrushes

15. Which is closest to 0?

(a) $-\frac{1}{4}$

(b) $\frac{3}{6}$

(c) $-\frac{1}{8}$

(d) $\frac{2}{5}$

16. Amanda has a \$50 gift certificate for her favorite clothing store. Each item of clothing that she buys is \$8.50. Which table best describes y , the balance remaining on the gift certificate, after Amanda buys x items of clothing?

(a)

x	y
0	\$50.00
1	\$41.50
3	\$33.00
4	\$16.00

(b)

x	y
0	\$50.00
1	\$41.50
2	\$33.00
3	\$16.00

(c)

x	y
0	\$50.00
1	\$41.50
2	\$33.00
4	\$16.00

(d)

x	y
1	\$50.00
2	\$41.50
3	\$33.00
4	\$16.00

17. Tarian was about $\frac{3}{8}$ of the way through a bag of popcorn when he decided to split the rest with a friend. About how much of the bag did Tarian's friend get?

(a) $\frac{1}{2}$

(b) $\frac{5}{16}$

(c) $\frac{1}{4}$

(d) $\frac{5}{8}$

18. Compare $|9|$ and $|-4|$.

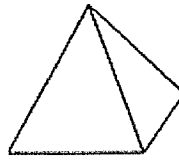
(a) $|9| > |-4|$ because a distance of 9 units from zero is greater than 4 units from zero.

(b) $|9| > |-4|$ because 9 is positive and -4 is negative.

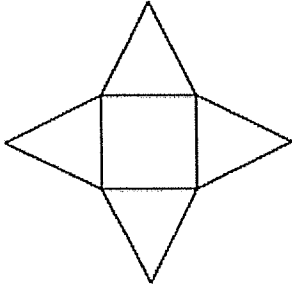
(c) $|9| = |-4|$ because all absolute values are equal.

(d) $|9| < |-4|$ because 9 is to the left of -4 on the number line.

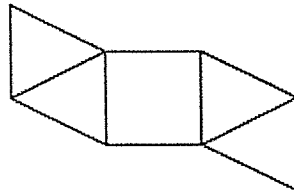
19. Which of the following nets could NOT be folded into the figure shown?



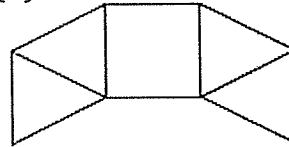
(a)



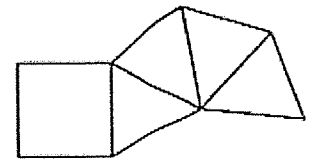
(b)



(c)



(d)



20. Which problem could NOT be solved using this equation: $x + 17 = 60$?

- (a) Bob has 60 baseball cards. He buys 17 more. How many cards does he have now?
(b) Latoya found 60 seashells at the beach, but broke 17 of them. How many unbroken shells does she have?
(c) Kalief won 17 tokens at a video arcade. He now has 60 tokens altogether. How many tokens did he originally have?
(d) Gayle rode 60 miles in a cross-country bike race. She rode 17 miles in the mountains. How many miles of the race were not in the mountains?

21.

Read the questions.

- How old is Keira?
- How old is Keira's grandmother?
- How old are the people on Keira's block?
- How old are the people in Keira's school?

Which of the above are statistical questions?

- (a) a only (b) a and b only (c) c only (d) c and d only

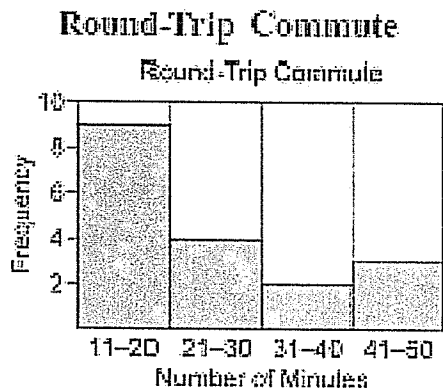
22. Given the relation $\{ (0, 0), (1, 2), (2, 3) \}$, which of the following is formed when the points are connected?
- (a) a triangle (b) a line segment (c) a kite (d) none of these

23. Use the data to answer the following question(s).

Nuncio manages a local restaurant. He collected information about the worker round-trip commute times in a frequency table and displayed the data in a histogram.

Round-Trip Commute Time (minutes)

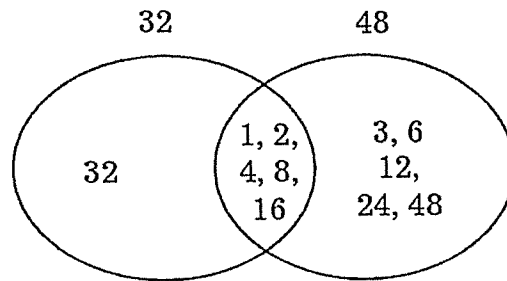
25	32	16	17	19	43
16	26	18	37	47	18
26	17	19	13	43	29



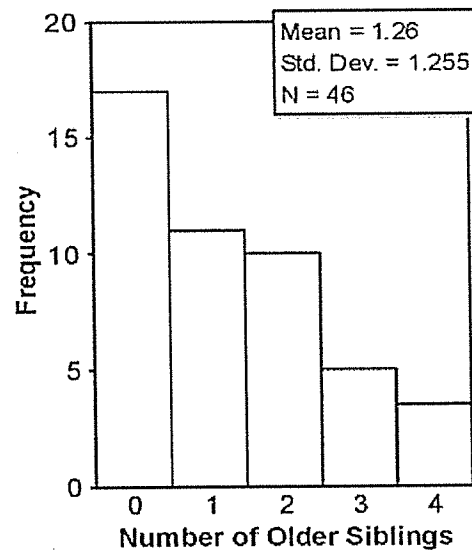
Which of these describes the data?

- (a) Exactly 50% of the workers have a round-trip commute of 20 minutes or less.
- (b) More than 25% of the workers have a round-trip commute over 50 minutes.
- (c) One-fourth of the workers have a 41-50 minute round-trip commute.
- (d) There are 4 workers who have a 20 minute round-trip commute.

24. The factors of 32 and 48 are shown below in a Venn diagram. Which of the following statements is *not* true?



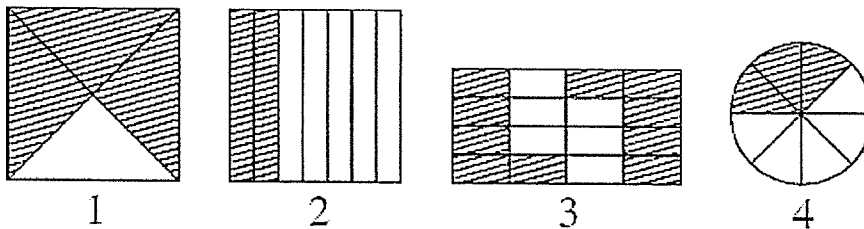
- (a) The number 32 has only one factor.
- (b) 8 and 16 are common factors of 32 and 48.
- (c) 48 has more factors than 32.
- (d) The numbers 32 and 48 have 5 common factors.
25. Students in a middle school were asked the question: "How many older siblings do you have?" The results of this survey are displayed in the frequency diagram below:



Which statement is *not* supported by the data in the diagram?

- (a) Less than 50% of the children surveyed are the oldest in their family.
- (b) The number of middle school students who have older siblings decreases as the number of older siblings increase
- (c) The total number of children surveyed is more than 50.
- (d) The number of students who have 1 or 2 older siblings is greater than the number of students with no older siblings.

26. Which figures show more than 60% shaded?



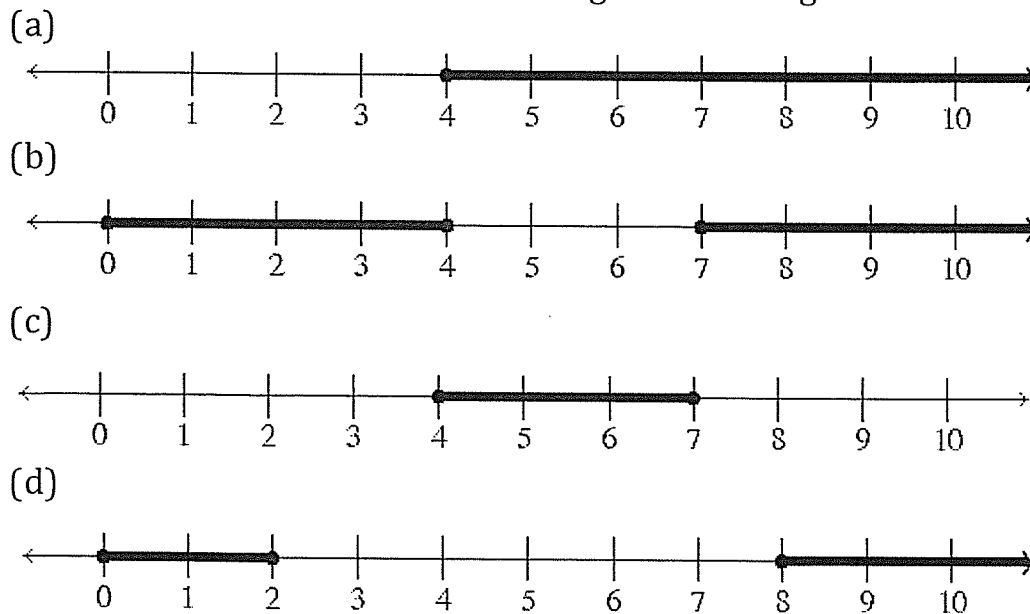
- (a) 1 and 3 (b) 1 and 2 (c) 3 and 4 (d) 2 and 3

27. A photo is 16 in. long and 126 cm. wide. What is the approximate area of the picture in square feet? (1 in \approx 2.54 cm).

- (a) 2.54 ft² (b) 5.51ft² (c) 8.23ft² (d) 14ft²

28. Ta'Wanda was looking for kids to play with in her neighborhood. She found out there are kids younger than 4 and older than 7, but no kids in between those two ages.

Which number line best shows the ages of the neighborhood children?



29. The Pitzer family consists of two parents, Ruby, age 13, and Martin, age 8. The family bought movie tickets.

Movie Tickets

Age	Price
Adult	\$10.75
Child 12 and under	\$8.50

How much did the family pay altogether for the tickets?

- (a) \$19.25 (b) \$38.50 (c) \$40.75 (d) \$39.00
30. A teacher is preparing materials for a group project. She has a package of 36 sheets of red paper and a package of 50 sheets of yellow paper. Each group will need 4 sheets of the red paper and 5 sheets of the yellow paper. What is the largest number of groups that she can make and still have enough paper?
- (a) 5 groups (b) 6 groups (c) 9 groups (d) 10 groups

31. Look at the number in the box.

6

- I. the opposite of 6
- II. negative 6
- III. positive 6
- IV. the opposite of the opposite of 6

Which of the following describes the number?

- (a) I only (b) I and II only (c) I, III, and IV only (d) III and IV only

32. Aunt Deena enjoys gardening. She wants to spend the least amount of money to purchase three different seed packets and one gardening tool.

Seed Packets

Item	Price (dollars)
sunflower	4.25
chrysanthemum	5.75
daisy	2.75
zinnia	3.00

Tools

Item	Price (dollars)
trowel	4.25
cultivator	4.50
transplanter	5.75

How much money will Aunt Deena spend?

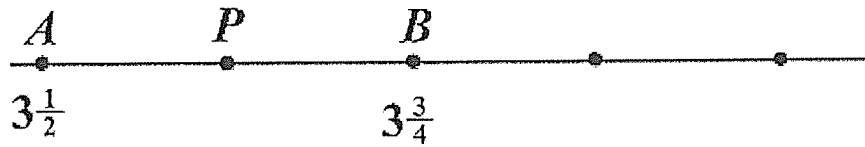
- (a) \$12.50 (b) \$14.25 (c) \$14.50 (d) \$ 7.00
33. At the circus, the ratio of men to women to children was 20 : 26 : 52. In lowest terms, what was the ratio of children to women?
- (a) 2 : 1 (b) 13 : 2 (c) 1 : 2 (d) 13 : 4
34. The lowest daily temperatures in Stockholm, Sweden during the last week of December are listed in the chart:

Monday	-5° F
Tuesday	-7° F
Wednesday	0° F
Thursday	-2° F
Friday	-4° F
Saturday	-6° F
Sunday	-9° F

Which two days recorded the lowest temperatures?

- (a) Tuesday & Sunday (b) Saturday & Sunday (c) Wednesday & Thursday (d) Thursday & Friday

35. On a number line, P is halfway between A and B.



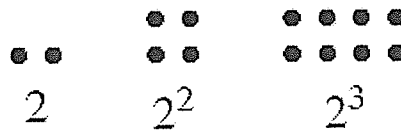
What number can be used to name point P?

- (a) $3\frac{1}{4}$ (b) $3\frac{2}{3}$ (c) $3\frac{5}{8}$ (d) $3\frac{7}{8}$

36. If $\square\square\bigcirc = 2x + 1$, then what would $\square\bigcirc\bigcirc$ equal?

- (a) $x + 2$ (b) $2x + 2$ (c) $3x$ (d) 3

37. How many dots will there be at 2^7 ?



- (a) 14 (b) 25 (c) 128 (d) 243

38. Which set of operators in the blanks would make the following statement true?

$$10 \underline{\quad} 5 \underline{\quad} 4 \underline{\quad} 6 = 26$$

- (a) $+, \times, +$ (b) $\div, \times, +$ (c) $\times, -, +$ (d) $\times, -, \times$

39. Look at the expression.

$$5(3 - 2)$$

What are the factors of the expression?

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

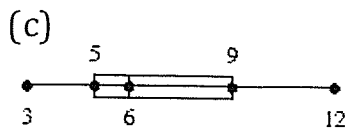
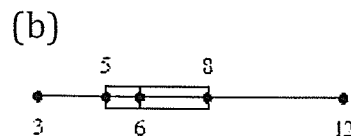
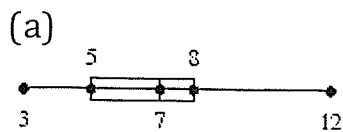
40. Hector caught two bass that measured a total of 22 inches. One bass was 2 inches longer than the other. Which equation expresses the relationship of the lengths of the two bass if ℓ represents the length of the longer bass?

- (a) $\ell + \ell - 2 = 22$ (b) $\ell + 2 = 22$
 (c) $\ell - 2 = 22$ (d) $\ell + 2 = 22 - \ell$

41. The following table gives the number of days the students in Mr. Fletcher's class are absent in the year.

Days Absent	Number of Students
3	1
5	2
6	2
7	3
8	2
12	1

Which of the following is the correct boxplot for this data?



42. Look at the pairs of terms.

A. $-8y^2$ $8y^2$

B. 5 m

C. 6 3.9

D. $2n$ $9n$

Which of the pairs are unlike terms?

(a) A

(b) B

(c) C

(d) D

43. The time $\underline{\quad}$ is 6 hours before 6 minutes after noon?

(a) 6:06 A.M.

(b) 6:06 P.M.

(c) 5:54 A.M.

(d) 5:54 P.M.

44. Ten years ago, the sum of the ages of Ted and his twin brother Todd was 22. How old is Ted now?

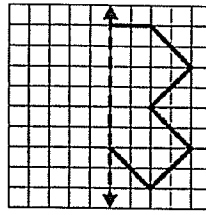
(a) 16

(b) 21

(c) 32

(d) 42

45. The dotted line is a line of symmetry. What is the *area* of the completed figure?

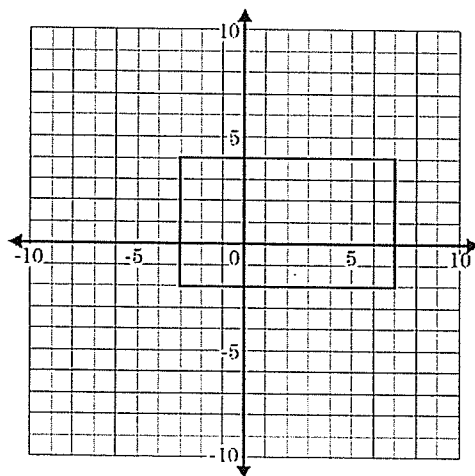


- (a) 17 sq units (b) 34 sq units (c) 44 sq units (d) 48 sq units

46. A data set consists of the numbers 16, 7, 3, 6, and 3. Which statement is true for this data?

- (a) median = mean (b) mode = median
 (c) median < mode (d) mean > median

47. What fraction of the area of the rectangle is in the Quadrant IV?



- (a) $\frac{7}{15}$ (c) $\frac{7}{30}$
 (b) $\frac{1}{5}$ (d) $\frac{1}{10}$

48. One hundred million divided by ten thousand equals

- (a) 10
- (b) 100
- (c) 1000
- (d) 10000

49. A pharmaceutical company must ensure the new hay fever medication is safe for human consumption.

Which of these is a reliable data collection method?

- (a) Trials on humans for about six weeks
- (b) Trials on humans for six months
- (c) Trials of a similar drug on humans for a ten-year period.
- (d) Trials on humans over a five-year period.

50. $3 \div \frac{1}{6} = 9 \div \underline{\quad}$

- (a) $\frac{1}{18}$
- (b) $\frac{1}{12}$
- (c) $\frac{1}{2}$
- (d) $\frac{9}{2}$

Answer Key

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

