

# Penny Sikes 5<sup>th</sup> and 6<sup>th</sup> Grade Mathematics Tournament

Sponsored by Farmers and Merchants Bank

## 2012 6<sup>th</sup> Grade Individual Test

- 1) Make sure your name, the full name of your school, and your grade are written on the Scantron.
- 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 Scantron.
- 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.

## 2012 Penny Sikes Math Tournament

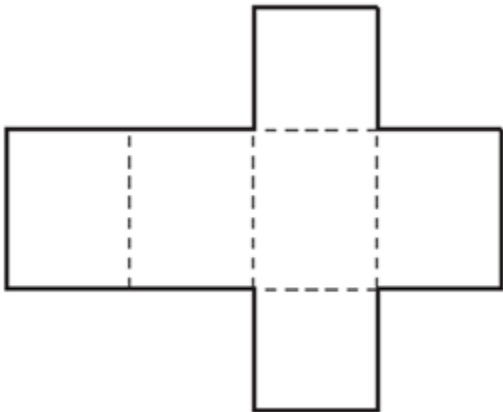
### 6<sup>th</sup> Grade Test

1. Every week Sam saves \$1.00 on Monday and \$2.50 on Friday. If this is his total weekly savings, how many weeks would it take him to save enough to buy a \$49 wireless phone?  
(a) 10 weeks   (b) 14 weeks   (c) 16 weeks   (d) 19 weeks

2. Simplify the expression below.

$$5^2 - 2^3$$

- (a) 3   (b) 4   (c) 17   (d) 19
3. What three dimensional object will be formed when the figure below is folded on the dashed lines?



- (a) Cube   (b) Cylinder   (c) Square pyramid   (d) rectangular prism
4. Which of the following fractions is closest to 0?  
(a)  $-\frac{5}{12}$    (b)  $-\frac{2}{3}$    (c)  $\frac{5}{6}$    (d)  $\frac{3}{4}$
5. Which word does not apply to every rectangle?  
(a) Parallelogram   (b) Quadrilateral   (c) Polygon   (d) Rhombus

6. How many different positive factors are common to 36 and 48?

- (a) 4 (b) 5 (c) 6 (d) 8

7. A clerk recorded the number of pairs of jeans sold each day at a store. The data are displayed on the stem-and-leaf plot.

Stem	Leaf
0	9
1	2 5 5 6 8 9
2	0 0 1 1 1 5 5 5 5
3	2 5 6
4	
5	8

Key
1 5 = 15

Which of the following statements is *true* according to the data in the stem-and-leaf plot?

- (a) The number of pairs of jeans sold each day was between 0 and 8.  
(b) The stem-and-leaf plot displays 26 days of sales  
(c) The median for the data is 25  
(d) The mode for the data is 25

8. After Sam spent 35% of his money on a gift, he had \$13 left. How much did the gift cost?

- (a) \$ 6 (b) \$7 (c) \$20 (d) \$23

9. Of the following, which has the greatest value?

- (a) 20% of 80 (b) 25% of 65 (c) 30% of 50 (d) 35% of 35

10. Which statement is true about both a pyramid and a cone?

- (a) Both have at least one vertex.  
(b) Both have a circular base.  
(c) Both have a rectangular base.  
(d) Both have at least one triangular face.

11. Sandra wants to buy 2 gallons of detergent. The table shows the sale price of four different brands of detergent.

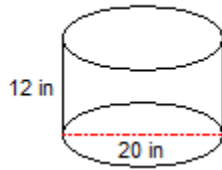
### Detergent Sale Prices

Detergent	Quantity	Sale Price
Ultra Clean	1 gallon	\$6.50
Fresh All	$\frac{1}{2}$ gallon	\$2.00
Mega Wash	$\frac{1}{2}$ gallon	\$3.10
No More Stains	2 gallons	\$12.00

Which of the following is the least expensive way for Sandra to buy 2 gallons of detergent?

- (a) Buying 2 bottles of Fresh All and 2 bottles of Mega Wash
- (b) Buying 1 bottle of Ultra Clean and 2 bottles of Fresh All
- (c) Buying 2 bottles of Ultra Clean
- (d) Buying 1 bottle of No More Stains
12. The smallest composite number without 2,3, or 5 as a factor is
- (a) 41      (b) 49      (c) 67      (d) 77
13. If the radius of one circle with an area of  $16\pi \text{ cm}^2$  is used as a diameter of a second circle, how far apart are the centers of the two circles?
- (a) 2 cm   (b) 4 cm   (c) 6 cm   (d) 8 cm
14. The largest whole number,  $x$ , which satisfies  $\frac{x}{7} < \frac{7}{16}$  is:
- (a) 2      (b) 3      (c) 4      (d) 5
15. What is the name of the only regular polygon which has as many diagonals as it has sides?
- (a) square   (b) pentagon   (c) hexagon   (d) octagon

16. Find the volume of the cylinder below.



- (a)  $1200 \pi \text{ in}^3$  (b)  $4800 \pi \text{ in}^3$  (c)  $1085 \pi \text{ in}^3$  (d)  $1398 \pi \text{ in}^3$

17. Sam's uncle is three times older than Sam plus  $\frac{1}{4}$  of Sam's age. Sam's dad is three years younger than Sam's uncle. If Sam is sixteen years old, how old is his dad?

- (a) 52 (b) 49 (c) 48 (d) 45

18. 32% of what number is 272?

- (a) 8.5 (b) 87.04 (c) 850 (d) 750

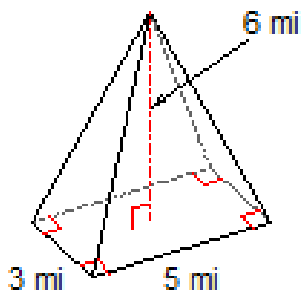
19. A farmer harvested 14,000 pounds of almonds from an 8 acre orchard. Which proportion could be solved to find  $x$ , the expected harvest from a 30 acre orchard?

- (a)  $\frac{8}{14,000} = \frac{x}{30}$  (b)  $\frac{8}{14,000} = \frac{30}{x}$  (c)  $\frac{30}{14,000} = \frac{x}{8}$  (d)  $\frac{30}{14,000} = \frac{8}{x}$

20. If 2 gulps = 5 slurps, and 3 slurps = 7 sips, then 35 sips =

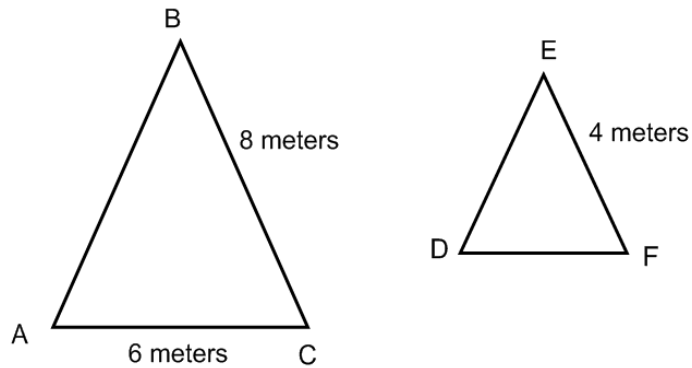
- (a) 3 gulps (b) 4 gulps (c) 5 gulps (d) 6 gulps

21. Find the volume of the pyramid below.



- (a)  $30 \text{ mi}^3$  (b)  $32 \text{ mi}^3$  (c)  $41 \text{ mi}^3$  (d)  $90 \text{ mi}^3$

22.  $\triangle ABC$  is similar to  $\triangle DEF$ . What is the length of  $\overline{DF}$  ?

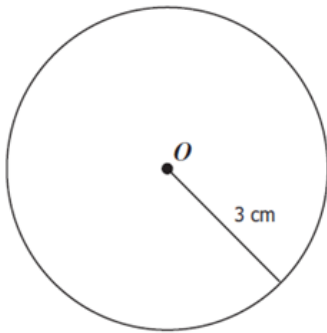


- (a) 2 meters (b) 3 meters (c) 5 meters (d) 10 meters

23. Lisa is having a meeting at her house. There are 48 members at the meeting. She estimates that each member will drink 32 ounces of punch. Each bottle of punch contains 64 ounces. Which is the best estimate for the number of bottles of punch Lisa needs to buy?

- (a) 5 (b) 15 (c) 25 (d) 35

24. Which is closest to the circumference of the circle O shown below?

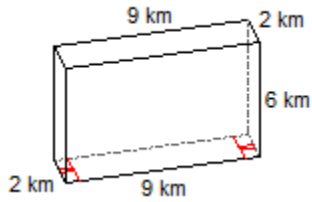


- (a) 113.04 cm (b) 75.36 cm (c) 37.68 cm (d) 18.84 cm

25. The distinct prime factors of 2012 are:

- (a) 2, 503 (b) 2, 17, 19 (c) 2, 11, 23 (d) 2, 11, 13

26. Find the surface area of the rectangular prism below.



- (a)  $222 \text{ km}^2$  (b)  $108 \text{ km}^2$  (c)  $168 \text{ km}^2$  (d)  $150 \text{ km}^2$

27. The ratio of boys to girls in Room B is 15 to 12. What is the ratio of girls to total students in Room B?

- (a) 4 to 9 (b) 4 to 5 (c) 5 to 9 (d) 5 to 4

28. Jeff multiplied each term in the pattern below by the same number.

1, 4, 16, 64

If the pattern continues, what will be the 6<sup>th</sup> term?

- (a) 384 (b) 112 (c) 256 (d) 1,024

29. There is an advertisement in an auto parts store:

$$\text{Battery} + 2 \text{ Tires} = \$600$$

$$4 \text{ Tires} + 3 \text{ Batteries} = \$1300$$

How much is a tire?

- (a) \$100 (b) \$150 (c) \$175 (d) \$250

30. What is the median for this set of data:

{217, 243, 203, 206, 230, 195, 243}

- (a) 206 (b) 217 (c) 220 (d) 243

31. Write as a mixed fraction:

$$5\frac{2}{3} \times 7\frac{1}{2} - 4\frac{3}{4}$$

(a)  $47\frac{1}{4}$  (b)  $37\frac{3}{4}$  (c) 26 (d)  $16\frac{1}{2}$

32. The table below shows the number of minutes it takes to wash different vehicles at Jay Dee's Car Wash.

### Vehicle Washing Times

Type of Vehicle	Washing Time (minutes)
Car	8
Truck	10
Van	12

When the car wash machine has been in operation 2 hours, Jay must add one bottle of liquid soap to the machine. What is the number of trucks the machine can wash with each bottle of soap?

- (a) 10 (b) 12 (c) 15 (d) 20

33. Louis is climbing steps to the top of the monument. After climbing 15 steps, Louis stops to tie his shoe. If there is a total of 75 steps on the monument, what percent of the total number of steps does Louis have left to climb after he ties his shoe?

- (a) 20% (b) 15% (c) 75% (d) 80%

34. Look at Set V and Set W shown below.

$$\text{Set V} = \{1, 3, 5, 7, 9, 11, \dots\}$$

$$\text{Set W} = \{3, 6, 9, 12, 15, 18, \dots\}$$

Which of the following numbers could belong to both Set V and Set W?

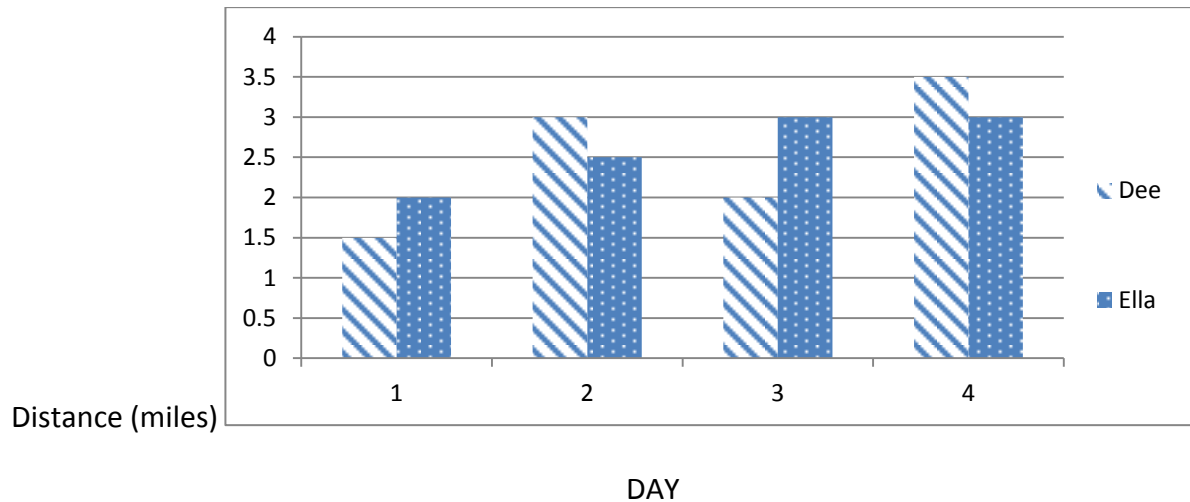
- (a) 35 (b) 25 (c) 21 (d) 31

35. At a community center there are a total of 11 tables in the dining room. Six of the tables seat 4 people each. Five of the tables seat 8 people each. What is the maximum number of people who can sit at the tables in the dining room?

- (a) 40 (b) 68 (c) 64 (d) 88

36. Dee and Ella kept track of the miles they hiked over 4 days, as shown in the graph below.

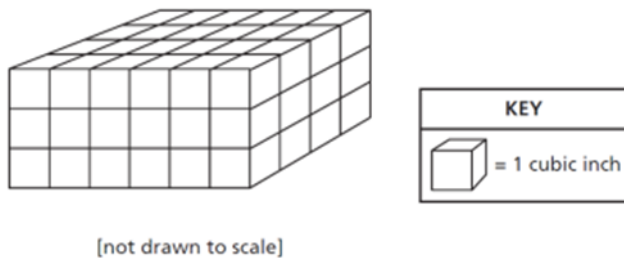
**Miles Hiked**



Which statement is best supported by the information in the graph?

- (a) Dee walked more miles each day than Ella did.
- (b) Ella walked more miles in all than Dee did on these 4 days.
- (c) Dee and Ella walked more than 15 miles each on these 4 days.
- (d) Ella walked 0.5 mile farther than Dee each day.

37. Max is building a rectangular prism out of wooden cubes.



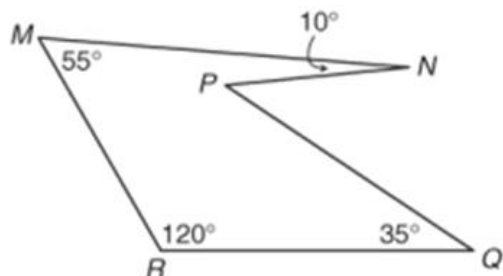
What is the volume of Max's rectangular prism?

- (a) 12 cubic inches
- (b) 34 cubic inches
- (c) 48 cubic inches
- (d) 72 cubic inches

38. In a town, the ratio of men to women is 2:1. If the number of women in the town is doubled, what will be the new ratio of men to women?

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

39. Look at the figure shown below.



Which of the following angles in the picture is obtuse?

- (a)  $\angle NMR$     (b)  $\angle MRQ$     (c)  $\angle PQR$     (d)  $\angle MNP$

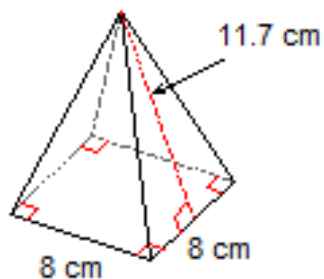
40. A woman weighing 250 pounds goes on a diet. During the first week, she loses 3% of her body weight. During the second week, she loses 2%. At the end of the second week, how many pounds has she lost?

- (a) 12.50            (b) 10            (c) 12.35            (d) 15

41. A man needed  $2\frac{1}{2}$  gallons of driveway topping to weather seal  $\frac{1}{3}$  of his driveway. How many more gallons will he need to finish weather coating the driveway?

- (a)  $7\frac{1}{2}$  gallons    (b) 6 gallons            (c)  $6\frac{1}{2}$  gallons    (d) 5 gallons

42. Find the surface area of the pyramid below:



- (a)  $341.3 \text{ cm}^2$     (b)  $193.1 \text{ cm}^2$     (c)  $350.9 \text{ cm}^2$     (d)  $251.2 \text{ cm}^2$

43. Zane is reading a history book for a project. The graph below shows how many pages he read during a 5-day period.



Which statement is best supported by the information in the graph?

- (a) Zane read more pages on Monday and Wednesday than he did on Tuesday and Thursday because  $40 + 80 > 70 + 60$ .
- (b) Zane read fewer pages on Tuesday and Wednesday than he did on Thursday and Friday because  $70 + 80 < 60 + 90$ .
- (c) Zane read more pages on Thursday and Friday than he did on Tuesday and Wednesday because  $60 + 90 > 70 + 80$ .
- (d) Zane read fewer pages on Wednesday and Thursday than he did on Tuesday and Friday because  $80 + 60 < 70 + 90$ .

44. Zach attended a basketball camp for two weeks. His parents paid \$50.00, which was  $\frac{1}{3}$  the cost of attending the camp. Zach had saved money to pay the rest of the cost. Which equation can be used to find  $c$ , the entire cost of attending the camp?

- (a)  $c = 50 \times 3$
- (b)  $c = 50 \times \frac{2}{3}$
- (c)  $c = \frac{1}{50 \times 3}$
- (d)  $c = \frac{50}{3}$

45. How many  $\frac{1}{256}$  are there in  $\frac{1}{16}$ ?

- (a) 4
- (b) 8
- (c) 16
- (d) 64

46. Elm’s Carpeting Company sells carpet by the square yard. A salesperson at the company uses the table below to calculate the amount of carpet needed to cover floor areas of different sizes.

### Carpet Calculations

Area of floor (square feet)	Amount of Carpet (square yards)
25	2.78
50	5.56
100	11.11
150	16.67
200	22.22
250	27.78
300	33.33

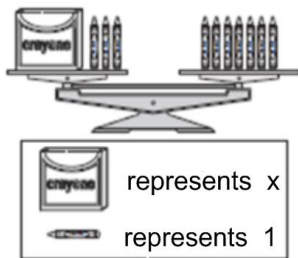
Which statement describes the calculation used to determine the amount of carpet needed for a given area of floor?

- (a) The area of the floor is divided by 12    (c) The area of the floor is divided by 10  
 (b) The area of the floor is divided by 9    (d) The area of the floor is divided by 3

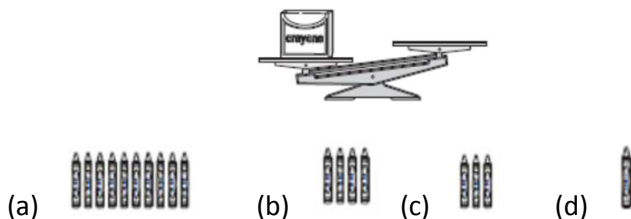
47. If a cabinet is deep enough to fit one textbook, is 3 feet long, and has 3 shelves, how many  $1\frac{1}{2}$  inch wide math books can fit in the cabinet (to the nearest whole number)?

- (a) 12    (b) 81    (c) 144    (d) 27

48. The scale below is balanced.



Using the representations and scale above, which could be placed on the right side of the scale below to make it balanced?



49. Look at the table.

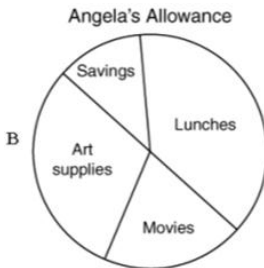
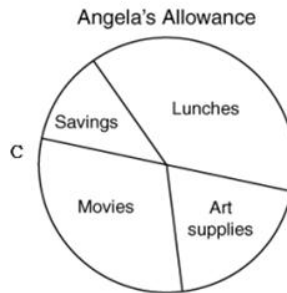
**Songs on Seth's CD Player**

Song Title	Artist
Goin' Fishin'	Tory Chambers
Let's Play That Again	Sound Off
Morning News	The Shipping Department
Everybody Here Yet?	185
Down on Oak Street	Tory Chambers
Words I Like to Hear	Fortune
No Surprise	185
That's My Game	Sound Off
Forget About It	Ellis Bell
Equal Time	Casey D
Address Book	Casey D
Checking In	Sound Off

The songs on Seth's CD player play randomly. What is the probability that the next song played will be by the artist Sound Off?

- (a)  $\frac{1}{12}$     (b)  $\frac{1}{6}$     (c)  $\frac{1}{4}$     (d)  $\frac{1}{3}$

50. Angela receives a \$20 allowance each week. She spends \$4.00 on art supplies, \$6.00 on movies, and \$7.50 on school lunches. She puts \$2.50 into savings. Which graph best represents Angela's allowance?



Sixth Grade Written Test Answers 2012:

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