Basic Math

1. An instrument store gives a 10% discount to all students off the original cost of an instrument. During a back to school sale an additional 15% is taken off the discounted price. Julie, a student at the local high school, purchases a flute for $306. How much did it originally cost?

A. $325

B. $375

C. $400

D. $408

E. $425

2. If y(x-1)=z then x=

A. y-z

B. z/y + 1

C. y(z-1)

D. z(y-1)

E. 1-zy

3. Which of the following values is NOT equal to 34(58+9)?

A. 34 x 67

B. 58(34+9)

C. 34 x 58 + 34 x 9

D. 1,972 + 306

E. (9 + 58) 34

4. Two angles of a triangle measure 15° and 85 °. What is the measure for the third angle?

A. 50°

B. 55°

C. 60°

D. 80°

E. 90°

5. If 5 ounces is equal to 140 grams, then 2 pounds of ground meat is equal to how many grams?

A. 863

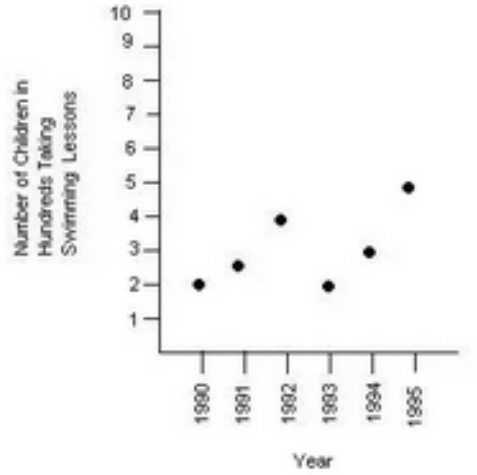
B. 878

C. 896

D. 915

E. 932

6. Which year did the most children take swimming lessons?



A. 1990

B. 1991

C. 1992

D. 1994

E. 1995

7. Between which year did the largest decrease in children taking swimming lessons occur?

A. 1990-1991

B. 1991-1992

C. 1992-1993

D. 1993-1994

E. 1994-1995

8. What was the average number of children taking swim lessons from 1990 to 1995?

A. 250

B. 308

C. 385

D. 450

E. 1,850

9. Which of the following is equal to 5.93 x 10-2?

A. 0.0593

B. 0.00593

C. 593

D. 5930

E. 59300

10. On a Map, 1 inch represents 20 miles. The distance between 2 towns is 6 1/5 inches. How many miles are actually between the two towns?

A. 65 miles

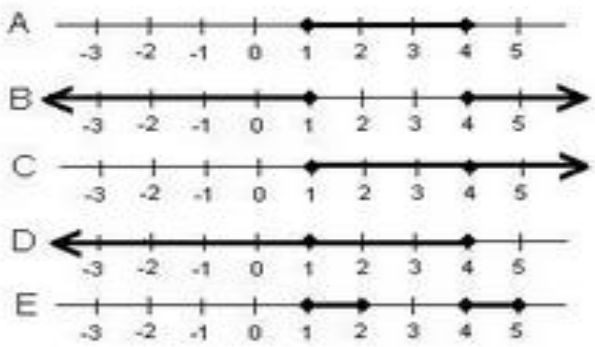
B. 84 miles

C. 124 miles

D. 138 miles

E. 145 miles

11. Which of the following is a correct graph of x>1, x<4 ?



A. Line A

B. Line B

C. Line C

D. Line D

E. Line E

12. How many cubed pieces of fudge that are 3 inches on an edge can be packed into a Christmas tin that is 9 inches deep by 12 inches wide by 8 inches high with the lid still being able to be closed?

A. 18

B. 24

C. 32

D. 36

E. 43

13. Sarah is twice as old as her youngest brother. If the difference between their ages is 15 years. How old is her youngest brother?

A. 10

B. 15

C. 20

D. 25

E. 30

14. Which of the following fractions is equal to 5/6?

A. 20/30

B. 15/24

C. 25/30

D. 40/54

E. 2/7

15. What will it cost to tile a kitchen floor that is 12 feet wide by 20 feet long if the tile cost $8.91 per square yard?

A. $224.51

B. $237.60

C. $246.55

D. $271.38

E. $282.32

16. In a writing competition, the first place winner receives ½ of the prize money. The second runner up receives ¼ of what the winner won. What was the total amount of prize money distributed if the winner receives $6,000?

A. $6,000

B. $8,500

C. $12,000

D. $15,000

E. $18,500

17. You are lying 120 ft away from a tree that is 50 feet tall. You look up at the top of the tree. Approximately how far is your hear from the top of the tree in a straight line?

A. 50 feet

B. 75 feet

C. 120 feet

D. 130 feet

E. 150 feet

18. A cyclist bikes x distance at 10 miles per hour and returns over the same path at 8 miles per hour. What is the cyclist's average rate for the round trip in miles per hour?

A. 8.1

B. 8.3

C. 8.6

D. 8.9

E. 9.0

19. If edging cost $2.32 per 12-inch stone, and you want a double layer of edging around your flower bed that is 6 yards by 1 yard. How much will edging you flower bed cost?

A. $32.48

B. $64.96

C. $97.44

D. $129.92

E. $194.88

20. If 3x=6x-15 then x + 8=

A. 5

B. 10

C. 11

D. 12

E. 13

21. The number of milliliters in 1 liter is

A. 10,000

B. 1,000

C. 0.1

D. 0.01

E. 0.001

22. The cost to ride on a ferry is $5.00 per vehicle and driver with an additional cost of 50 cents per passenger. If the charge to get on the ferry is $6.50, how many people were in the vehicle?

A. 1

B. 2

C. 3

D. 4

E. 5

23. What is 1/9 of 9?

A. 1/9

B. 0

C. 1

D. 2

E. 3

24. In his pocket, a boy has 3 red marbles, 4 blue marbles, and 4 green marbles. How many will he have to take out of his pocket to ensure that he has taken out at least one of each color?

A. 3

B. 7

C. 8

D. 9

E. 11

25. Which fraction is equal to 0.20%?

A. 1/20

B. 1/40

C. 1/50

D. 1/400

E. 1/500

26. Find the missing term in the following sequence: 4, 9, 19, __, 79

A. 36

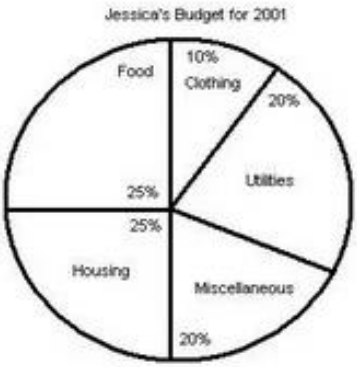
B. 37

C. 38

D. 39

E. 40

27. How much money did Jessica's budget allow for housing in April of 2001?



Jessica's Monthly Earnings from January 2001 to June 2001

January	$2578
February	$2432
March	$2668
April	$2490
May	$2622
June	$2555

A. $617.80

B. $620.92

C. $622.50

D. $626.38

E. $633.20

28. What was the average amount of money that Jessica's budget allowed for clothing the first six months of 2001?

A. $249.90

B. $250.40

C. $251.32

D. $253.33

E. $255.75

29. If Jessica only spent 20% instead of the 25% allotment for food in May of 2001, how much did she save?

A. $131.10

B. $144.30

C. $148.32

D. $152.22

E. $153.33

30. Jonathan can type a 20 page document in 40 minutes, Susan can type it in 30 minutes, and Jack can type it in 24 minutes. Working together, how much time will it take them to type the same document?

A. 5 minutes

B. 10 minutes

C. 15 minutes

D. 18 minutes

E. 20 minutes

31. Of the following fractions, which is less than 2/3?

A. 7/8

B. 5/6

C. 3/4

D. 3/5

E. 5/7

32. A hockey team won 6 games and lost 8. What is the ratio of wins to number of games?

A. 6/8

B. 8/6

C. 3/7

D. 8/14

E. 6/7

33. Sue receives a base salary of $90 weekly plus a 12% commission on all sales. Sue had $3,000 in sales this week. How much did she make total?

A. $375

B. $450

C. $480

D. $510

E. $525

34. If the perimeter of a rectangular house is 25 1/3 yards, and the length is 22 feet. What is the width?

A. 16 feet

B. 35 feet

C. 37 feet

D. 40 feet

E. 42 feet

35. Jimmy made a 15% profit on the sale of a custom designed boat, and the original cost of the boat was $15,000. The boat sold for how much?

A. $17,250.00

B. $16,540.44

C. $16,230.34

D. $15,980.55

E. $15,870.88

36. A recent study showed that an increase in body weight by 10 kilograms resulted in a 0.15% increase in heart disease. What fraction is equal to 0.15%?

A. 3/2000

B. 2/750

C. 7/4000

D. 5/3462

E. 1/500

37. 6.334 x 104 =

A. 0.0006334

B. 0.06334

C. 6334

D. 63340

E. 633400

38. If 3x + 5x = -8, then x + 1 =

A. -2

B. -1

C. 0

D. 1

E. 2

39. Two angle in a triangle equal 120°. What is the measure of the third angle?

A. 60°

B. 70°

C. 80°

D. 90°

E. 120°

40. Which of the following would be an appropriate unit to measure sugar for a cookie recipe?

A. liters

B. cups

C. quarts

D. kilograms

E. pounds

Answers & Explanations

1. C: The equation, x-0.10x-0.15(x-0.10x)=306, may be used to solve the problem. Solving for x gives 0.90x - 0.15x + 0.015x = 306, where x = 400. Thus, the original price was $400.

2. B: The equation may be solved by first distributing the y across the expression, x - 1, on the left side of the equation. Doing so gives: xy - y = Z. Adding y to both sides of the equation gives: xy = Z + y. Finally, division of both sides of the equation by y gives: x=(Z+y)/y or x=Z/y+1.

3. B: This problem illustrates the distributive property of multiplication over addition. The factor being distributed may not change.

4. D: The measure of the third angle of the triangle is equal to 180°-(15° + 85°), or 80°.

5. C: Since there are 32 ounces in 2 pounds (16 ounces = 1 pound), the following proportion may be written: 5/140=32/x . Solving for x gives x = 896. Thus, there are 896 grams in 2 pounds of meat.

6. E: The largest number of children taking swimming lessons, in one year, was 500, in 1995.

7. C: The only decrease in number of children taking swimming lessons was from 1992 to 1993, with a decrease of 200 children.

8. B: The average may be written as (200+250+400+200+300+500)/6, which is approximately 308.

9. A: Movement of the decimal point two places to the left gives 0.0593.

10. C: The following proportion may be used to solve the problem: 1/20=6.2/x. Solving for x gives x = 124, so there are actually 124 miles between the two towns.

11. A: The correct graph should show a line segment between 1 and 4, including the points, 1 and 4.

12. C: The volume of the tin is 864 in". The volume of each piece of fudge is 27 in". Thus, 32 pieces will fit inside the tin.

13. B: The following system of equations may be used to solve the problem: (s=2b@s-b=15). Substituting 2b for s, in the second equation, gives: 2b - b = 15, where b = 15. The younger brother is 15 years old.

14. C: Multiplying the numerator and denominator of the given fraction by 5 gives the fraction, 25/30, which is equivalent.

15. B: Converting feet to yards, the dimensions may be rewritten as 4 yards by 6 2/3 yards. Thus, the area of the floor is 26 2/3 yd'. Multiplication of this area by the cost per square yard gives the expression, 26 2/3?8.91, which equals 237.6. Thus, the cost is $237.60.

16. C: The following equation may be solved for x: 6000=1/2 x. Solving for x gives x = 12,000. Thus, the amount of prize money distributed equaled $12,000.

17. D: The distance may be determined by writing and solving the following equation for c: 502+1202=c2. c = 130, thus the distance is 130 feet.

18. D: The average rate for the round trip is the total distance traveled divided by the total travel time. Distance traveled=2x. Travel time=x/10+x/8=4x/40+5x/40=9x/40. Average Rate=2xx9x/40=(2xx40)/9x=80/9 = approximately 8.9 mph.

19. E: The length is equal to 216 inches. The width is equal to 36 inches. So, the length may be covered by 18 12-inch stones, while the width may be covered by 3 12-inch stones. A total of 42 stones is needed for one layer, and 84 stones need for two layers. Multiplication of 84 by $2.32 gives 194.88. Thus, the total cost is $194.88.

20. E: The equation may be solved for x by first subtracting 6x from both sides of the equation. Doing so gives -3x = -15, where x = 5. Substituting 5 for x into the second expression gives 5 + 8, which equals 13.

21. B: There are 1,000 milliliters in 1 liter.

22. D: The problem may be modeled with the equation, 6.50 = 5.00 + 0.50x, where x represents the number of passengers. Solving for x gives x = 3. Thus, there were 3 passengers, plus 1 driver, for a total of 4 people in the vehicle.

23. C: This problem may be represented as 1/9.9, which equals 1.

24. D: Taking out 3 of each color will ensure that he has 1 of each color. Thus, he needs to take out 9 marbles, in all.

25. E: 0.20% = 0.002, and 1/500=0.002.

26. D: The increase from term to term is twice the increase from the previous two terms. Thus, the increase from 19 to the missing term will be 20, or twice the increase of 10. Thus, the missing term is equal to 19 + 20, or 39.

27. C: The solution may be modeled by the expression, 0.25(2490). Thus, her budget allowed $622.50 for housing in April of 2001.

28. E: The average may be represented as (0.10(2578)+0.10(2432)+0.10(2668)+0.10(2490)+0.10(2622)+0.10(2555))/6, which simplifies as (257.80+243.20+266.80+249.00+262.20+255.50)/6, or 255.75. The average budget amount for clothing in the first six months of 2001 was $255.75.

29. A: The amount she saved may be represented by the expression, 0.25(2622) - 0.20(2622), which equals 131.10. Thus, she saved $131.10.

30. B: The problem may be modeled with the equation, 1/40+1/30+1/24=1/t. Solving for t gives t = 10. Thus, working together, they can type the same document in 10 minutes.

31. D: The fraction, 3/5, equals 0.6, which is less than 2/3.

32. C: The ratio may be written as 6/14, which reduces to 3/7.

33. B: The amount of money she made may be represented by the expression, 90 + 0.12x, where x represents the amount of sales. Substituting 3000 for x gives 90 + 0.12(3000), which equals 450. So, she made $450 this week.

34. A: First, the perimeter measurement may be converted to feet. Multiplying 25 1/3 yards by 3 gives an equivalent measurement of 76 feet. Thus, the following equation may be written: 76 = 2(22) + 2w, which simplifies to 76 = 44 + 2w, where w = 16. The width of the house is 16 ft.

35. A: The problem may be modeled with the expression, 15,000 + 0.15(15,000), which equals 17,250. Thus, he sold the boat for $17,250.

36. A: 3/2000=0.0015, which is equivalent to 0.15%.

37. D: Moving the decimal point 4 places to the right gives 63,340.

38. C: Solving the given equation for x gives x = -1. Substitution of -1 for x, in the second equation, gives -1 + 1 = 0.

39. A: The interior angle measures of a triangle sum to 180°. Thus, the measure of the third angle is equal to the difference of 180° and 120°, or 60°.

40. B: Cups is an appropriate measure of capacity for sugar.