Word Problems

**April 2015**

2. The table below shoes the income earned by 5 students from selling tickets for a school fund-raiser. Each student earned the same amount for each ticket sold.

|  |  |  |
| --- | --- | --- |
| Student | Number of tickets sold | Income Earned |
| Aida  Beth  Charles  Darius  Ellie | 13  5  22  16  8 | $55.25  $21.25  $93.50  $68.00  $34.00 |

Another student, Francis, also earned that same amount for each ticket sold, for an income earned of $123.25 from selling tickets. How many tickets did Francis sell?

F. 26

G. 29

H. 33

J. 35

K. 38

16. Marcie will paint the shaded region (1 pentagonal wall) of the outside of the playhouse shown below. All given dimensions are in feet. Each 1-quart container of paint will cover 50 square feet, and only 1 coat of paint will be applied. How many 1-quart containers of paint will Marcie need in order to cover the 1 pentagonal wall of the playhouse? **[PICTURE]**

F. 1

G. 2

H. 3

J. 4

K. 5

27. Sophia’s goal this past summer was to save an average of $5.00 per week for 10 weeks. She save an average of $4.00 per week for the first 9 weeks and saved $12.00 for the 10th week. On average, how much more should Sophia have saved each to reach her goal?

A. $0.10

B. $0.20

C. $0.30

D. $0.50

E. $0.90

46) Temperatures measured in degrees Fahrenheit (*F*) are related to temperatures measured in degrees Celsius (C) by the formula *F* = x + 32. There is 1 value of *x* for which *x* degrees Fahrenheit equals *x* degrees Celsius. What is that value?

**F.** -72

**G.** -40

**H.** -32

**J.**  0

**K.** 32

55. A storage facility is currently offering a special rate to customers who sign contracts for 6 months or more. According to this special rate, the first month’s rent is $1, and for each month after the first month, customer pay the regular monthly rental rate. The table below shows the storage unit sizes available, the floor dimensions, and the regular monthly rental rate. All the units have the same height.

|  |  |  |
| --- | --- | --- |
| Size | Floor dimensions, in meters | Regular monthly rental rate |
| 1  2  3  4  5 | 2 x 4  4 x 4  4 x 8  8 x 8  8 x 16 | $30  $60  $100  $150  $200 |

Size 5 units can be subdivided to form other sizes of units. What is the greatest number of Size 1 units that can be formed from a single Size 5 unit?

A. 2

B. 4

C. 8

D. 10

E. 16

**June 2015**

10) Joseph will have 200-foot-long fence installed around his yard. The A+ Fence Company charges a $500.00 fee, plus a set amount per foot of fence. The A+ Fence Company has given Joseph an estimate of $2,200.00 to install the fence around his yard. What is the set amount per foot of fence?

**F.** $4.00

**G.** $4.80

**H.** $8.50

**J.** $11.00

**K.** $13.50

12. Carrie’s Chocolate Shop and Tamika’s Treat Shop both sell candy in boxes. The table below lists the price (the total amount the customer pays) of each box of candy sold at the shops. For each shop, there is a linear relationship between the price of a box of candies and the number of candies in that box. These are the only numbers of candies that can be purchased at shops.

|  |  |  |
| --- | --- | --- |
| Candies per box (n) | Prices at Carrie’s Chocolate Shop (c) | Price at Tamika’s Treat Shop (t) |
| 5  10  15  20  25  30 | $1.50  $2.50  $3.50  $4.50  $5.50  $6.50 | $2.25  $2.75  $3.25  $3.75  $4.25  $4.75 |

Jeremy has $10.00 in quarters to spend on candy. What is the maximum number of quarter he would have left after paying for a box of 25 candies at Tamika’s Treat Shop? (Note: Each quarter is worth $0.25)

F. 10

G. 17

H. 22

J. 23

K. 30

15) Mr. Chang made the true statement “At least 1 student in this class is a section leader in the band.” Which of the following statement *must* be FALSE?

1. At most 1 student in this class is not a section leader in the band.
2. Most students in this class are section leaders in the band.
3. Every student in this class is a section leader in the band.
4. Some students in this class are not section leaders in the band.
5. No student in this class is a section leader in the band.

43. After visiting Florida State University during spring break, Francisco rents a car for 2 days to travel around Florida. He has $255 to spend on car rental for the 2 days. Sea Horse Car Rental charges $50 per day and $0.25 per mile. Ocean Blue Car Rental charges $60 per day and $0.20 per mile. Which company, if either, allows him to travel more miles for the 2 days, and how many miles more?

(Note: Taxes are already included in the rental charges.)

A. Sea Horse, 20

B. Ocean Blue, 55

C. Ocean Blue, 100

D. Sea Horse, 135

E. Francisco would get the same maximum number of miles from each company.

51) A teacher assigns each of her 18 students a different integer from 1 through 18. The teacher forms pairs of study partners by using the rule that the sum of the pair of numbers is a perfect square. Assuming the 9 pairs of students follow this rule, the student assigned which number *must* be paired with the student assigned the number 1?

1. 16
2. 15
3. 9
4. 8
5. 3

60) A right circular cone is intersected by a plane that is not parallel to the base and does not intersect the base or vertex, as shown in the figure below. One of the following figures shows the shape of the intersection. Which figure is it?

[PICTURE]

F. [PICTURE]

G. [PICTURE]

H. [PICTURE]

J. [PICTURE]

K. [PICTURE]

**December 2015**

14. Rajeev went on delivery trip that began and ended at his truck terminal. He used all of the time during the trip driving, unloading, or resting. Rajeev began his trip on Tuesday at 7:00 a.m, when he left the terminal. During his driving time, he drove 1,200 miles at an average speed of 50 miles per hour. His driving time was twice as long as his unloading time, and his resting time was 30 hours. When did Rajeev end his delivery trip?

F. Wednesday at 7:00 a.m.

G. Wednesday at 7:00 p.m.

H. Friday at 1:00 a.m.

J. Saturday at 1:00 a.m.

K. Saturday at 1:00 p.m.

19) The Tully family and the Quan family ate dinner together at Eugenio’s Pasta Restaurant. An *order of pasta* comes in 1 of 2 sizes, large or small, and consists of 1 of 6 types of pasta and 1 of 5 types of sauce. The table below gives the number of large and small orders of pasta bought by each family, and the price each family paid for their orders of pasta (without tax and tip).

|  |  |  |
| --- | --- | --- |
| Family | Number of Orders | Price |
| Tully  Quan | 6 | 4  2 | 4 | $26.00  $14.00 |

The Tully family also bought 5 salads priced at $2.00 per salad and 12 breadsticks priced at $1.50 for an order of 3 breadsticks. What was the total price of the pasta, salad, and breadsticks the Tully family bought, without tax and tip?

**A.** $29.50

**B.** $30.00

**C.** $42.00

**D.** $43.00

**E.** $54.00

28. A cash prize will be given to the winning group of the talent show at Aspen High School. The winning group will receive a cash prize that, when divided equally among the students in that group, gives each student in the group a whole-dollar share of the prize. Considering that a group of 2, 3, 4, or 5 students could win the show, what is the least possible amount that the cash prize can be?

A. $12

B. $15

C. $30

D. $60

E. $120

**April 2016**

6. Pablo recorded the noon temperature, in degrees Celsius, on 4 consecutive days as part of a science project. On the 1st day, the noon temperature was -4°C. On the 4th day, the noon temperature was 12°C. What was the change in the noon temperature from the 1st day to the 4th day?

F. -16°C

G. -4°C

H. 4°C

J. 8°C

K. 16°C

11) Marietta purchased a car that had a purchase price of $10,400, which included all other costs and tax. She paid $2,000 as a down payment and got a loan for the rest of the purchase price. Marietta paid off the loan by making 48 payments of $225 each. The total of all her payments, including the down payment, was how much more than the car’s purchase price?

**A.** $400

**B.** $2,400

**C.** $8,400

**D.** $10,800

**E.** $12,800

34. A family will rent a picnic shelter for $200 for a reunion. The cost of the shelter will be distributed equally among the people who plant to attend. The current cost per person will decrease by $1 if 10 more people plan to attend the reunion. How many people are currently planning to attend the reunion?

F. 10

G. 20

H. 40

J. 50

K. 63

55. Carrie and Manuel are side by side when they begin to run at the same time in the same direction around a track. Carrie runs at a constant rate of 30 seconds per lap, while Manuel runs at a constant rate of 50 seconds per lap. How many seconds after beginning to run will Carrie have run exactly 1 more lap than Manuel?

A. 20

B. 40

C. 75

D. 80

E. 125

**June 2016**

3) Louis earns his regular pay $10.00 per hour for up to 40 hours of work in a week. For each hour over 40 hours of work in a week, Louis is paid 1 times his regular pay. How much does Louis earn for a week in which he works 47 hours?

**A.** $470.00

**B.** $493.50

**C.** $505.00

**D.** $540.50

**E.** $705.00

14) For all positive integers *a*, let *E* represent sentence “*a* is even” and let *P* represent the sentence “*a* is prime.” When *a* = 22, which of the following statements is true?

F. Both *E* and *P* are true.

G. If *E* is true, then *P* is true.

H. *E* is true and *P* is false.

J. *P* is true and *E* is false.

K. Both *E*  and *P* are false.

47) Robert writes a check for $20. When he records the check in his check register, he accidentally *adds* $20 to his balance instead of subtracting $20, which causes a discrepancy between what Robert’s check register shows and what it should show. Because of his mistake, Robert’s check register shows:

1. $40 less than it should.
2. $20 less than it should.
3. $10 more than it should.
4. $20 more than it should.
5. $40 more than it should.

**December 2016**

4) A group of students was surveyed about what types of music each had listened to during the previous week. Students could choose 1, 2, or 3 types of music (Rap, Rock, or Country), or they could respond “none of these music types.” Only 10 students responded with “none of these music types,” and 18 students responded that they had listened to all 3 types. In the figure below, the 8 regions show the numbers of responses in each category.

[PICTURE]

One region had exactly 8 responses. What type(s) of music did those 8 students respond they had listened to during the previous week?

F. Rap only

G. Country and Rock only

H. Country and Rap only

J. Rap and Rock only

K. All 3 types of music

**June 2017**

4. Esteban and his family are making care package to send to children at summer camp. Each complete care package contains 5 pens, 2 notebooks, 3 envelopes, 12 cookies, and 5 candy bars. Esteban and his family have already made 7 complete care packages and the following materials remain:

3 boxes of pens (10 pens per box)

4 boxes of notebook (5 notebooks per box)

2 boxes of envelopes (12 envelopes per box)

84 cookies

4½ boxes of candy bars (10 candy bars per box)

How many additional complete care packages can Esteban and his family make the remaining materials?

F. 6

G. 7

H. 8

J. 10

K. 15

11. Samantha, Nyla, and Jerry own shares of stock in the Triumph Hotels company. The shares of stock that they own have a combined value of $6,880. Samantha owns 70 shares, Nyla owns 50 shares, and Jerry owns 40 shares. What is the value of the shares Samantha owns?

A. $98

B. $301

C. $3,010

D. $4,816

E. $5,351

40. The Harrisburg Recreation Center recently changed its hours to open be 1 hour later and close 3 hours later than it had previously. Residents of Harrisburg age 16 or older were given a survey, and 560 residents replied. The survey asked each resident his or her student status (high school, college, or nonstudent) and what he or she thought about the change in hours (approve, disapprove, or no opinion). The results are summarized in the table below.

|  |  |  |  |
| --- | --- | --- | --- |
| Student Status | Approve | Disapprove | No opinion |
| High School  College  Nonstudent | 30  14  85 | 4  10  353 | 11  6  47 |
| Total | 129 | 367 | 64 |

After constructing the table, it was discovered that the student status of 15 residents who replied that they approved had been incorrectly classified as nonstudents. After correcting the errors, exactly 60% of the college students had replied that they approved. To the nearest 1%, what percent of high school students replied that they approved?

F. 60%

G. 67%

H. 70%

J. 75%

K. 82%

54) Three copy machines-A, B, and C-copy at the same rate and will all be used to make copies of a report. At 8:00 a.m., all 3 machines begin copying. Machine B breaks down at 12:00 p.m. (noon) and begins copying again at 3:00 p.m. All 3 machines finish copying at 5:00 p.m. when the copying of the report is complete. One of the following graphs shows *n*, the number of copies made, as a function of *t*, the time at any given point during the copying. Which graph is it?

F. [PICTURE]

G. [PICTURE]

H. [PICTURE]

J. [PICTURE]

K. [PICTURE]

57. The art club designed and made banners of the school colors, blue and white, for their fund-raiser. Each banner required ¼ yard of blue material and 3/8 yard of white material. The club originally planned to purchase exactly enough material to make 500 banners, but found the material to be cheaper if purchased in full bolts – the blue material in 10 – yard bolts and the white material in 12 – yard bolts. How many extra banners was the club able to make if they purchased enough full bolts to make at least 500 banners?

A. 12

B. 13

C. 15

D. 16

E. 20

**April 2017**

6. The ABC Book Club charges a $40 monthly fee, plus $2 per book read in that month. The Easy Book Club charges a $35 monthly fee, plus $3 per book read in that month. For each club, how many books must be read in 1 month for the total charges from each club to be equal?

F. 1

G. 4

H. 5

J. 6

K. 75

24. Armin is trying to decide whether to buy a season pass to his college basketball team’s 20 home games this season. The cost of an individual ticket is $14, and the cost of a season pass is $175. The season pass will admit Armin to any home basketball game at no additional cost. What is the minimum number of home basketball games Armin must attend this season in order for the cost of a season pass to be les than the total cost of buying an individual ticket for each game he attends?

F. 8

G. 9

H. 12

J. 13

K. 20

29) The number *a* is located at -2.5 on the number line below.

[PICTURE]

One of the following number lines shows the location of *a2.* Which number line is it?

1. [PICTURE]
2. [PICTURE]
3. [PICTURE]
4. [PICTURE]
5. [PICTURE]