

Date Completed: \_\_\_\_\_  
Mentor Initials: \_\_\_\_\_

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## Translating English to Math

1. Dave collects trading cards, and he has started his younger siblings, Eddie and Francis, collecting cards as well. As of today, Francis owns 10 more cards than Eddie, and Dave owns twice as many cards as Eddie and Francis combined. Which of the following equations expresses the relationship between  $y$ , the number of cards Dave owns, and  $x$ , the number of cards Eddie owns?
  - A.  $y = 2x$
  - B.  $y = 2x + 10$
  - C.  $y = 2x + 20$
  - D.  $y = 4x + 10$
  - E.  $y = 4x + 20$
2. Phil had exactly 45 figurines to sell. After Day 1 of his sale, he had exactly 42 figurines left. After Day 2, Phil had exactly 39 figurines left. After Day 3, he has exactly 36 figurines left. Assuming Phil will continue to sell figurines at that daily rate, how many of these plants will he have left at the end of Day 9?
  - A. 24
  - B. 21
  - C. 18
  - D. 15
  - E. 12
3. Bill and Ted plan to attend a concert in Vegas. Bill will drive 525 km to Vegas at a constant speed of 75 km/hr, stopping one time for a 30-minute break. Ted will start 750 km from Vegas and will drive at a constant speed of 60 km/hr for 2 hours. He will take a 60-minute break and then drive to Vegas at a constant speed of 90 km/hr. Ted must leave how many hours before Bill in order for them to arrive in Vegas at the same time?
  - A. 2.2
  - B. 2.5
  - C. 3.1
  - D. 3.5
  - E. 4.0

4. A 100-liter solution that is 10% salt is mixed with an 80-liter solution that is 25% salt. The combined solution is what percent salt?
- A. 14%
  - B. 15%
  - C. 16.67%
  - D. 17.5%
  - E. 18%
5. A large theater complex surveyed 4,000 adults. Matinees (daytime movies) are \$8 and regular evening showings are \$10. Suppose all the adults surveyed happened to attend one movie each over the past month. The total amount spent on tickets by those surveyed during that month was \$34,000. How many adults attended matinees that week?
- A. 1,200
  - B. 1,600
  - C. 2,400
  - D. 3,000
  - E. 3,200
6. The sale price of a jacket is 20% off the original price. The clearance price of the jacket is 40% off the sale price. The clearance price is what percent off the original price?
- A. 36%
  - B. 48%
  - C. 52%
  - D. 60%
  - E. 80%
7. 30 students combined in Mr. Cho's and Ms. Smith's math classes earned a B on their most recent test. The students in Mr. Cho's class took the same test as those in Ms. Smith's class. The number of students in Mr. Cho's class with a score in the B range was 6 less than twice the number of students in Ms. Smith's class with a score in the B range. How many students in Mr. Cho's class scored a B on this test?
- A. 10
  - B. 12
  - C. 14
  - D. 16
  - E. 18

8. The perimeter of a particular rectangle is 74 centimeters. The longer sides of the rectangle are each 3 centimeters longer than each of the shorter sides of the rectangle. What is the length, in centimeters, of one of the longer sides of this rectangle?
- A. 16
  - B. 17
  - C. 18
  - D. 20
  - E. 22
9. Each of 100 distinct playing cards is 1 of 4 solid colors and is numbered with an integer. There are 25 each of orange, red, blue, and green cards. Each color has cards numbered 1 – 25. One of the 100 cards will be selected at random. What is the percent chance that the selected card will be orange OR a multiple of 5?
- A. 30%
  - B. 35%
  - C. 40%
  - D. 45%
  - E. 50%
10. A local recycling center pays \$0.05 for every can and \$0.10 for every bottle. In one shipment, the recycling center bought a total of 1,500 cans and bottles from XYZ Inc. for \$90. How many bottles were in the shipment?
- A. 300
  - B. 600
  - C. 900
  - D. 1,050
  - E. 1,200
11. If the same recycling center in Question 10 sells 1,100 cans for \$0.12 after buying them for \$0.05, to the nearest 1%, what percentage profit is the recycling center earning from cans alone?
- A. 24%
  - B. 42%
  - C. 80%
  - D. 140%
  - E. 240%

12. A chemist needs 1 ounce of element *A*. The only way that the chemist can get element *A* is to buy compound *B*, which contains 20% of element *A*. Compound *B* costs \$3.20 per pound (16 ounces). How much must the chemist pay for a certain amount of Compound *B* in order to ensure that she receives 1 ounce of element *A*?
- A. \$0.40
  - B. \$0.80
  - C. \$1.00
  - D. \$1.40
  - E. \$1.80
13. Lian has  $7\frac{2}{3}$  yards of ribbon that she will use to make bows. She will use  $\frac{4}{5}$  yard of ribbon to make each bow. After Lian has made all the bows possible with the ribbon, what length of ribbon, in yards, will not have been used to make bows?
- A.  $\frac{4}{15}$
  - B.  $\frac{1}{3}$
  - C.  $\frac{2}{5}$
  - D.  $\frac{7}{15}$
  - E.  $\frac{11}{15}$