Bergen Academies

Sample Test #1

This test resembles the math portion of the Bergen County Academies entrance exam which will be given in January. Applicants are given sixty minutes without a calculator to complete the 40-question test. In scoring, two points are given for each correct answer and one-half point is deducted for each incorrect answer. Unanswered questions are not counted.

The answers are:

01 - 10	A D B B A A A E D D
11 - 20	C E D A E C D E D B
21 - 30	D D B E B D C A B D
31 - 40	E A C C E C C B D B

1. Evaluate the following fraction:

$$\frac{4+\dfrac{1}{6}}{1+\dfrac{2}{3}}=$$

A 5/2   **B** 11/5   **C** 2/5   **D** 5/11   **E** 5

6. What percent of 20 is 66?

A 330   **B** 30.3   **C** 303   **D** 333   **E** 33.3

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2. What is the value of A?

$$\begin{array}{r} 3\,7\,4\,4 \\ -\,5\,A\,6 \\ \hline 3\,1\,7\,8 \end{array}$$

A 0 or 1   **B** 2 or 3   **C** 4 or 5
D 6 or 7   **E** 8 or 9

7. Calculate the value of:

$$\sqrt{15 \times 20 \times 12}$$

A 60   **B** 120   **C** 200   **D** 400   **E** 600

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3. Find the sum:

$$0.33 + 0.033 + 0.0033 =$$

A 0.3333   **B** 0.3663   **C** 0.6336
D 0.6666   **E** 0.3696

8 The reciprocal of a number is one divided by that number. What is the value of the reciprocal of (2/3 + 3/2)?

A 13/6   **B** 1/13   **C** 1/6   **D** 6   **E** 6/13

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4. How much is $\dfrac{1}{200}$ of 50%?

A 0.1%   **B** 0.25%   **C** 1%
D 2.5%   **E** 10%

9 Calculate the following to the nearest hundredth:

$$\frac{1}{2} + \frac{1}{30} =$$

A 0.50   **B** 0.51   **C** 0.52   **D** 0.53   **E** 0.54

5. Which of the following has the largest value?

A 7/9   **B** 2/3   **C** 8/11   **D** 9/12   **E** 7/10

10 If 2% of a number is 8, then that number is:

A 0.16   **B** 4   **C** 16   **D** 400   **E** 800

11 Find the smallest whole number which is larger than the sum:

$$2\frac{1}{2} + 3\frac{1}{3} + 4\frac{1}{4}$$

A 9   **B** 10   **C** 11   **D** 12   **E** 13

16 When I open my math book, two pages face me and the sum of their two page numbers is 317. What is the number of the very next page?

A 158   **B** 159   **C** 160   **D** 161   **E** 162

12 In what range does the value of the following expression occur?

$$\sqrt{6^2 + 7^2}$$

A < 6   **B** 6 to 7   **C** 7 to 8
D 8 to 9   **E** > 9

17 A factory runs nonstop for three 14-hour shifts. The first shift starts at 9:00 AM. At what times does their third shift end?

A 12:00 PM   **B** 1:00 AM   **C** 2:00 AM
D 3:00 AM   **E** 4:00 AM

13 Solve the following:

$$\left| 2 - (\text{-}2)^2 - (\text{-}2)^3 \right| =$$

A 0   **B** 2   **C** 4   **D** 6   **E** 8

18 Maria's Grocery Store buys grapefruit at a cost of 5 for a dollar. They sell them at a price of 5 for three dollars. How many must they sell in order to make a profit of ten dollars?

A 15   **B** 17   **C** 19   **D** 20   **E** 25

14 If A # B means the same thing as 2 A - B, then 1 # ((2 # 3) # 4) equals:

A 4   **B** 2   **C** 0   **D** -2   **E** -4

19 In hockey standings, a win counts for 2 points, a tie counts for 1 point and a loss counts for 0 points. In their first 10 games, the Devils won 5, lost 4 and tied 1 game. If they continue at that same rate, how many points will they have accumulated after they have played a total of 80 games?

A 48   **B** 78   **C** 80   **D** 88   **E** 96

15 What is the area, in cm², of the smallest square that will contain a circle of radius 4 cm?

A 4   **B** 8   **C** 16   **D** 32   **E** 64

20 What is the least number of colors needed to paint a cube so that no two adjacent faces have the same color?

A 2   **B** 3   **C** 4   **D** 5   **E** 6

21 What fraction of 4 hours is 15 seconds?

A 1/16   **B** 1/64   **C** 1/760
D 1/960   **E** 1/9600

26 Homer Simpson left an estate of $2.4 million. He left 10% to Springfield University, 15% to the First Church of Springfield, $600,000 to his wife, Marge, and the remainder to be divided among his three children. How much did each child receive?

A $240,000   **B** $300,000   **C** $360,000
D $400,000   **E** $440,000

22 Find the numerical   value of the fraction:

$$\frac{1}{1+\dfrac{1}{2+\dfrac{1}{3}}}=$$

A 1/6   **B** 3/10   **C** 5/6   **D** 7/10   **E** 2/3

27 It takes 7 tubes of glue to construct 15 model boats. How many whole tubes of glue must I purchase in order to make 10 model boats?

A 3   **B** 4   **C** 5   **D** 6   **E** 7

23 Estimate the numerical value of the following fraction:

$$\frac{\pi}{92.8}=$$

A <.025   **B** .025 - .050
C .051 - .075   **D** .076 - .100   **E** >.100

28 If January 28, 2001 is a Sunday, what day of the week is February 28, 2001? (January has 31 days.)

A Wednesday   **B** Tuesday   **C** Monday
D Friday   **E** Thursday

24 1/9 is the square root of what number?

A 1/3   **B** 2/9   **C** 1/18   **D** 1/27   **E** 1/81

29 What is the concentration of a sugar solution made by mixing 1 kilogram of 12% sugar solution with 2 kilograms of water.

A 3%   **B** 4%   **C** 6%   **D** 8%   **E** 9%

25 In a class of 30 students, 12 are boys. If 6 more boys are admitted, what fraction of the class is now boys?

A 1/3 **B** 1/2 **C** 2/5 **D** 3/5 **E** 1/5

30 An airplane leaves New York at 1:10 PM and arrives in Miami, 1125 miles away, at 3:40 PM. What is its average speed in miles per hour?

A 260 **B** 375 **C** 420 **D** 450 **E** 489

31 In the first five math quizzes, Patty had an average score of 8. She got a 7 and a 5 on the next two quizzes. After the eighth quiz, her average stood at 7.5. What was her score on the eighth quiz?

A 5 **B** 6 **C** 6.5 **D** 7.5 **E** 8

36 What is the least common multiple of 16 and 36?

A 72 **B** 108 **C** 144 **D** 288 **E** 576

32 There are 60 grains in a dram, 8 drams in an ounce and 3 scruples in a dram. How many grains are in a scruple?

A 20 **B** 22.5 **C** 40 **D** 160 **E** 180

37 Successive discounts of 10% and 20% are equal to what single discount? Give your answer to the nearest whole percent.

A 18% **B** 25% **C** 28% **D** 30% **E** 38%

33 The product of 3.37 × 4.13 is most nearly equal to:

A 12 **B** 13 **C** 14 **D** 15 **E** 16

38 Brooklyn Pizza sells pizza with a choice of 5 toppings. How many combinations of two different toppings can be bought at Brooklyn Pizza?

A 5 **B** 10 **C** 15 **D** 20 **E** 25

34 How many 2-digit, even number are greater than 40?

A <28 **B** 28 **C** 29 **D** 30 **E** >30

39 Two students can eat 4 doughnuts in 6 minutes. At this rate how many doughnuts will be eaten by 8 students in 9 minutes?

A 12 **B** 15 **C** 18 **D** 24 **E** 30

35 Multiplying by 3/4 and then dividing by 3/5 is the same as dividing by what?

A 5/4   **B** 1/3   **C** 4/3   **D** 1/5   **E** 4/5

40 In the next three days, 2000 people will move to New Jersey. How many people, on average, will move to New Jersey each hour? Express your answer to the nearest whole number.

A 27   **B** 28   **C** 29   **D** 30   **E** 32

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Practice Problems 7

1. Grace buys notebooks at a price of four for $5 and sells them at a price of three for $6. How many notebooks must she sell in order to make a profit of $120?

A 40   **B** 60   **C** 100   **D** 150   **E** 160

2. There are eight furlongs in a mile and two weeks in a fortnight. If I travel 2800 furlongs in a fortnight, how many miles per day, rounded to the nearest whole number, did I travel?

A 12   **B** 22   **C** 25   **D** 27   **E** 28

3. There are three boys for every five girls in the chamber choir. Which of the following
numbers is closest to the percentage of boys in the chamber choir?

A 32   **B** 34   **C** 36   **D** 38   **E** 40

4. Paving stones are 6 inches long × 4 inches wide × 1 inch thick. How many paving stones will be required to pave a rectangular space which is 2 feet × 3 feet?

A <25   **B** 25 to 30   **C** 31 to 35   **D** 36 to 40   **E** >40

5. After each round of a "sudden death" tournament, the winners play each other and the losers are eliminated. If there are 64 teams in a tournament and they keep playing until only one team is left, there will be six rounds. How many games will be played?

A 11   **B** 18   **C** 32   **D** 63   **E** 64

6. A yellow marble, a green marble, a red marble, a blue marble and a brown marble are dropped into an empty jar in the order given. The process is repeated until there are 88 marbles in the jar. How many of the marbles are red?

A 15   **B** 16   **C** 17   **D** 18   **E** 20

7. Six trees are equally spaced along one side of a straight road. The distance between the first tree and the fourth tree is 60 feet. What is the distance, in feet, between the first tree and the last tree?

A 70   **B** 75   **C** 80   **D** 90   **E** 100

8. Three people with different names line up single file. What is the probability that they are in alphabetical order from front to back?

A 1/2   **B** 1/3   **C** 1/6   **D** 1/9   **E** 1/16

9. If A $ B means the same thing as A - 2B, determine the value of (3 $ 2) $ (4 $ 1).

A -11   **B** -5   **C** -3   **D** 3   **E** 8

10. In the following multiplication problem, A and B are different digits. What is B?

$$\begin{array}{r} AB \\ \times\ \ A \\ \hline 114 \end{array}$$

A 0 or 1   **B** 2 or 3   **C** 4 or 5   **D** 6 or 7   **E** 8 or 9

11. Suppose you see a lightning flash and hear a thunder clap exactly 10 seconds later. The speed of sound is 1080 feet per second and there are 5280 feet in a mile. Estimate, to the nearest half mile, how many miles you are from the lightning flash. Assume the speed of light is infinite.

A 2.0   **B** 2.5   **C** 3.0   **D** 3.5   **E** 4.0

12. If a tube of lipstick costs 3/5 as much as a bottle of nail polish, how many lipsticks can be purchased for the price of 15 bottles of nail polish?

A 5   **B** 15   **C** 21   **D** 25   **E** 30

13. To make five cups of lemonade you mix three cups of water with two cups of lemon juice. If there are sixteen cups in a gallon, how many cups of lemon juice are needed to make ten gallons of lemonade?

A 16   **B** 32   **C** 40   **D** 48   **E** 64

14. How many whole numbers between 1 and 1991 are multiples of 5 and are even?

A 199   **B** 200   **C** 398   **D** 399   **E** 400

15. How many groups of three different numbers which add up to 10 can be made using the set {1, 2, 3, 4, 5, 6}? The order doesn't matter.

A 3   **B** 4   **C** 5   **D** 6   **E** 7

E C D D D   D E C B E   A D E A A

Practice Problems 6

1. Between 9 AM and 10 AM one hundred airplanes departed from Newark Airport. Ten of the airplanes were delayed by an hour each. Of the remaining airplanes, half left on time and half were delayed by an average of 20 minutes. To the nearest whole minute, how long was the average flight delay?

A 15   **B** 18   **C** 27   **D** 30   **E** 40

2. There are 75 people in a room. Of these people, 2/5 are from Germany. If 4/9 of the people who are not from Germany are from France, how many of the people in the room are from neither Germany nor France?

A 7   **B** 12   **C** 15   **D** 25   **E** 35

3. If 6 days ago was Wednesday, what day will it be 701 days from now?

A Wednesday   **B** Thursday   **C** Friday   **D** Saturday   **E** Sunday

4. A 20 ounce box of corn flakes costs $2.50. If you cannot buy part of a box, how much will it cost to buy 6 pounds of corn flakes? There are 16 ounces in a pound.

A $5.00   **B** $10.00   **C** $12.00   **D** $12.50   **E** $15.00

5. After a 20% price increase, the new price of a jacket is $78. What was the jacket's original price?

A $60.00   **B** $62.00   **C** $62.40   **D** $63.60   **E** $65.00

6. One meter equals 100 centimeters. How many cubic centimeters are in one cubic meter?

A 100   **B** 1000   **C** 10,000   **D** 100,000   **E** 1,000,000

7. Evaluate the following:

$$\frac{1 + \frac{1}{4}}{1 + \frac{1}{1 - \frac{1}{4}}} =$$

A 19/16   **B** 35/12   **C** 1   **D** 12/35   **E** 15/28

8. How many integers between 1 and 1000 are multiples of 21?

A 46   **B** 47   **C** 48   **D** 49   **E** 50

9. When I was in Italy I wanted to exchange American money (dollars) for Italian money (lire). At that time the exchange rate was 3000 lire = $1.20. How many lire did I receive in exchange for $2.00?

A 3600   **B** 4400   **C** 4800   **D** 5000   **E** 5600

10. What is the smallest product one can obtain by multiplying together two numbers from the set:
{-7, -5, -1, 1, 3}

A -35   **B** -21   **C** -15   **D** -1   **E** 3

11. The Mud Hens won 40 of their first 50 games. How many of their remaining 30 games must they win so that they will have won 70% of their games for the season?

A 12   **B** 14   **C** 16   **D** 18   **E** 10

12. Calculate the value of the expression:

$$2\frac{1}{7} + 3\frac{1}{2} + 5\frac{1}{19} =$$

A $< 10\frac{1}{2}$ **B** $10\frac{1}{2}$ to 11   **C** 11 to $11\frac{1}{2}$ **D** $11\frac{1}{2}$ to 12   **E** > 12

13. What digit should replace A in this correct multiplication example?

```
  3 A 3
× 13
4849
```

A 0 or 1   **B** 2 or 3   **C** 4 or 5   **D** 6 or 7   **E** 8 or 9

14. An ordinary die has the numbers 1 through 6 on its faces. What is the probability that throwing a pair of dice will give you the same number on both?

A 1/6   **B** 1/12   **C** 1/24   **D** 1/30   **E** 1/36

15. The ratio of Caroline's age to Eve's age is 3:5.Eve is 30 years old. How many years difference is there between Eve's age and Caroline's age?

A 6   **B** 12   **C** 15   **D** 18   **E** 20

A D A D E   E E B D B   C B D A B

Practice Problems 5

1. How many pounds of chocolate chips must be added to 12 pounds of cookie dough in order to make chocolate chip cookies which contain 25% chocolate?

   A 2   **B** 3   **C** 4   **D** 6   **E** 8

2. Which of these numbers is not equivalent to 33%?

   A 1/3   **B** 0.33   **C** 66/200   **D** 33/100   **E** 99/300

3. At the wedding reception there were ten people sitting at each of twenty tables. Eighty of the people left. All but 25% of those remaining got up to dance. How many people were left sitting at the tables?

   A 20   **B** 25   **C** 30   **D** 90   **E** 120

4. Which is the largest?

   A $5 \times \dfrac{1}{3} \times \dfrac{1}{4}$ **B** $\left(\dfrac{1}{2} \times 3\right) + 2$

   C $2 \times \dfrac{3}{2} \div \dfrac{1}{2}$ **D** $\dfrac{2}{3} \times \dfrac{1}{2} \div \dfrac{1}{3}$

   E $0.2 \times 2 \times \dfrac{1}{2} \times \dfrac{3}{2}$

5. How many feet of fence does it require to surround a square field having an area of one million square feet?

   A 1000   **B** 2000   **C** 4000   **D** 8000   **E** 16,000

6. Apples cost \$2/lb but 15 apples cost \$4. How many pounds does an apple weigh?

   A 2/15   **B** 15/2   **C** 1/15   **D** 1/30   **E** 15

7. Beth reads 5 pages in 4 minutes. Al reads 1 page in 1 minute. In 7 hours how many more pages will Beth read than Al?

   A 84   **B** 105   **C** 120   **D** 125   **E** 140

8. A train travels 24 miles in 36 minutes. What is its speed in miles per hour?

   A 36   **B** 40   **C** 45   **D** 48   **E** 60

9. Calculate the following:

$$5 \times 11^2 - 55\left(\frac{2^4 - 4}{2 \times 3}\right)^2 =$$

A <101   **B** 101 to 200   **C** 201 to 400   **D** 401 to 600   **E** >600

10. A room is 1/2 full of people. After 20 people leave, the room is 1/3 full. How many people does the room hold when it is full?

A 60   **B** 75   **C** 80   **D** 90   **E** 120

11. A prime is a number with no whole number factors other than 1 and itself. How many primes are between 20 and 40?

A 3   **B** 4   **C** 5   **D** 6   **E** 7

12. A leap year exceeds 52 weeks by how many days?

A 1   **B** 2   **C** 3   **D** 4   **E** 5

13. I have a pile of socks which contains 12 white socks, 12 black socks, and 12 red socks. How many socks must I take from the pile to be certain that I have at least one matching pair?

A 3   **B** 4   **C** 13   **D** 14   **E** 25

14. There are 2 boys for every 3 girls in Mrs. Sorrentino's class. If there are 30 students in the class, what percentage are boys?

A 20   **B** 25   **C** 30   **D** 33   **E** 40

15. If bricks are each 3 inches $\times$ 4 inches $\times$ 8 inches, how many bricks can be fit into a space which is 1 foot $\times$ 4 feet $\times$ 8 feet?

A 1 to 250   **B** 251 to 500   **C** 501 to 750   **D** 751 to 1000   **E** >1000

| C | A | C | C | C | | A | B | B | C | E | | B | B | B | E | C |

Practice Problems 4

1.   Which one of these five expressions has a different value from the others?

A 1 - (2 × 3) + 4   **B** -1 × (2 - 3) × (- 4) – 5   **C** ((1 × 2 - 3) - 4) ÷ 5
D (1 × 2) – 3   **E** ((1 - 2) - 3) ÷ 4

2.   How many different three-digit numbers can be made using the digits 1, 2, and 3? Each digit can be used as often as you wish.

A 6   **B** 12   **C** 24   **D** 27   **E** 30

3.   There are 4.54 liters in a gallon. Roughly how many gallons are there in 100 liters?

A 454   **B** 105   **C** 20   **D** 22   **E** 25

4.   If the following numbers are arranged in order of size, which one is in the middle?

A 0.120   **B** 0.121   **C** 0.112   **D** 1/8   **E** 0.102

5. A boy and a half eats a pie and a half in a day and a half. At this rate how many days does it take one boy to eat one pie?

A 2/3   **B** 1   **C** 3/2   **D** 2   **E** 3

6. In the subtraction on the right, "B" and "C" each represent the same digit whenever they appear. What is the value of B?

```
  14BB
- CCC
  434
```

A 0 or 1   **B** 2 or 3   **C** 4 or 5   **D** 6 or 7   **E** 8 or 9

7. Calculate the following:

$$\frac{\frac{2}{3} - \frac{1}{4}}{\frac{1}{2} + \frac{5}{6}} \div \frac{\frac{3}{8}}{\frac{8}{3}}$$

A 20/9   **B** 5/2   **C** 5/16   **D** 5/9   **E** 20/3

8. In many different ways can you make 65¢ using quarters, dimes and nickels?

A 11   **B** 12   **C** 13   **D** 14   **E** 15

9. The average pay of the five workers in a restaurant is $240 per week. If the four waiters earn a weekly average of $200, how much per week is the cook paid?

A $160   **B** $250   **C** $280   **D** $360   **E** $400

10. What is the largest prime factor of 1998?

A 2   **B** 3   **C** 11   **D** 37   **E** 111

11. Which is the smallest prime number among the following?

A 147   **B** 157   **C** 167   **D** 177   **E** 187

12. What is the sum of the reciprocals of all the factors of 24. Both 1 and 24 are considered to be factors of 24.

A 59/24   **B** 5/2   **C** 65/24   **D** 53/24   **E** 41/24

13. Which one of these numbers is equal to the product of the other four numbers?
A -2   **B** 3/4   **C** 1/6   **D** -1/4   **E** 9

14. Which of the following is the largest?

A 62%   **B** 3/5   **C** 5/8   **D** $1.81 \div 3$ **E** 2/3

| B | D | D | A | C | | B | A | D | E | D | | B | B | B | E |

Practice Problems 3

1.   Calculate the value of:

$$((1 \times 2 \div (3 \times 4) - 5) \times 6) \div (8 \times (-9))$$

A 29/72   **B** 189/8   **C** 7/24   **D** 1/72   **E** 7/8

2. A prime is a number which is divisible by no integer other than 1 and itself. If 199 is a prime, what is the next prime number?

A 211   **B** 213   **C** 217   **D** 219   **E** 221

3. Four of the numbers below are equal to the others. Which number is the not?

A 0.4   **B** 40%   **C** $\frac{2}{5}$ **D** $\frac{1}{3} + \frac{1}{15}$ **E** $\frac{1}{2} - \frac{3}{8}$

4. The product of two numbers is 504. Although neither of the numbers is 6, both are divisible by 6. What is the larger of the two numbers?

A 12   **B** 24   **C** 30   **D** 36   **E** 42

5. Give the smallest number which is exactly divisible by 2, by 3, by 4, by 5 and by 6.

A 12   **B** 30   **C** 60   **D** 120   **E** 720

6. You have 324 coins and divide them into two piles, in the ratio of 1:2. The smaller of the two piles is then divided into two additional piles which are in the ratio of 3:1. How many coins are in the smallest of the piles?

A 27   **B** 54   **C** 81   **D** 108   **E** 216

7. A train which is 100 meters long is traveling at a speed of 90 km per hour. How many seconds will it take for this train to pass completely through a 300 meter tunnel?

A 4   **B** 8   **C** 12   **D** 16   **E** 20

8. Which of the following numbers is closest to the square root of two hundred million?

A 1400   **B** 4500   **C** 14,000   **D** 45,000   **E** 100,000,000

9. Which of the following is closest in value to 0.15×1.82?

A .0273   **B** .273   **C** 2.73   **D** 27.3   **E** 273

10. How many factors, including 1 and 189, does189 have?

A 4   **B** 6   **C** 7   **D** 8   **E** 10

11. What is one third of 299?

A 33   **B** $99\frac{1}{3}$ **C** $99\frac{2}{3}$ **D** $100\frac{2}{3}$ **E** 897

12. To the nearest whole number, what is the mean number of letters per word in this sentence?

A 2   **B** 3   **C** 4   **D** 5   **E** 6

13. If you write all the whole numbers from 1 to 500 in a row, what will be the 500th digit?

A 0 or 1   **B** 2 or 3   **C** 4 or 5   **D** 6 or 7   **E** 8 or 9

14. The average age of six children is 13 years and 5 months. A seventh child joins the group, increasing the average age by two months. How old is this seventh child?

A 13 yr 7 mo   **B** 13 yr 9 mo   **C** 14 yr 5 mo   **D** 14 yr 7 mo   **E** 14 yr 9 mo

15. What digit does B represent in the following subtraction?

```
 131B
-BB2
 A4A
```

A 0 or 1   **B** 2 or 3   **C** 4 or 5   **D** 6 or 7   **E** 8 or 9

A A E E C   A D C B D   C C A D D

Practice Problems 2

1.   How many days are there from March 15 to September 15 inclusive?

A 182   **B** 183   **C** 184   **D** 185   **E** 186

2. Bottle A is 4/5 full of water. Bottle B holds 16 ounces of water when full. When the contents of bottle A are poured into bottle B, bottle B is 3/4 full of water. How many ounces of water can bottle A hold when full?

A <8   **B** 9 to 11   **C** 12 to 15   **D** 16 to 18   **E** > 18

3. Bob and Bill live twelve miles apart. Bob walks at four miles per hour and Bill walks at three miles per hour. If they are going to meet at a point half way between Bob's and Bill's houses, how many minutes head start will Bill need?

A 10   **B** 20   **C** 30   **D** 40   **E** 50

4. Express the fraction 216/243 in its lowest terms.

A 216/243   **B** 72/81   **C** 24/27   **D** 16/43   **E** 8/9

5. Which of these is the smallest?

A π/10   **B** 333/1000   **C** 1/3   **D** 7/20   **E** 0.33

6. A test has 50 questions. Each right answer is worth 2 points; each wrong answer deducts 0.5 points; blank answers are not counted. A student got a score of 88.5. How many answers did he leave blank?

A 1   **B** 2   **C** 3   **D** 4   **E** 5

7. Using pennies, nickels, and dimes, how many ways can you make 16¢?

A 4   **B** 5   **C** 6   **D** 7   **E** 8

8. Dick and Jane are brother and sister. Dick has three times as many sisters as he has brothers. However, Jane has an equal number of brothers and sisters. How many children are in the family?

A 4   **B** 5   **C** 6   **D** 7   **E** 8

9. Write down all the even numbers from 30 to 300. How many times will the digit "6" appear?

A <51   **B** 51 to 54   **C** 55 to 58   **D** 58 to 61   **E** > 61

10. Two numbers have a sum of 30 and a product of 209. What is the positive difference between them?

A 2   **B** 4   **C** 8   **D** 12   **E** 16

11. A group of five friends has two tickets to the ball game. How many different combinations of these five friends can use the tickets?

A 5   **B** 10   **C** 12   **D** 16   **E** 20

12. What is the largest amount of postage that cannot be made if we have access to an unlimited number of 5¢ and 11¢ stamps?

A 17¢   **B** 39¢   **C** 43¢   **D** 48¢   **E** 53¢

13. Which one of these numbers is the average of the other four?

A 11   **B** 20   **C** 21   **D** 23   **E** 25

14. A train traveling 88 feet per second takes three seconds to enter a tunnel and another thirty seconds to pass completely through it. What is the length of the train in feet?

A < 100   **B** 100 to 300   **C** 301 to 700   **D** 701 to 1200   **E** >1200

15. How many different four-digit numbers can be made using the digits 1, 1, 9, and 9?

A 6   **B** 10   **C** 12   **D** 16   **E** 24

Answers:

D C C E A	B C B A C	B B B B A

Practice Problems 1

1. How many positive factors, including 1 and itself, does 72 have?

A 4   **B** 6   **C** 8   **D** 10   **E** 12

2. If the sides of a square are increased by 20%, by what percentage does the area of the square increase?

A 20%   **B** 30%   **C** 36%   **D** 40%   **E** 44%

3. Jeff answered all 25 questions on his chemistry test. For each right answer he got 4 points and for each wrong answer he lost 2 points. If he got a score of 70 points, how many questions did he get right?

A 18   **B** 19   **C** 20   **D** 21   **E** 22

4. A military clock has the numbers 1 through 24 evenly spaced around a circular face. What number is directly across from 19?

A 3 or 4   **B** 5 or 6   **C** 7 or 8   **D** 9 or 10   **E** 11 or 12

5. If a race began at 3:43 PM and ended at 5:27 PM, the race was half over at what time?

A 4:05   **B** 4:15   **C** 4:25   **D** 4:35   **E** 4:45

6. $\sqrt{\dfrac{1}{4}} =$

A 1/2   **B** 1/4   **C** 1/6   **D** 1/8   **E** 1/16

7. Which of the following fractions is equal to 1¼%?

A 5/4   **B** 5/40   **C** 1/80   **D** 4/500   **E** 4/50

8. Which of the following is closest to 0.25?

A 9/40   **B** 5/16   **C** 9/32   **D** 0.28   **E** 15/64

9. The advertisement read "Buy 3 tires at the regular price and get a fourth tire for only $3." Carol paid $240 for a set of four tires. What is the regular price of a tire?

A $64   **B** $70   **C** $74   **D** $79   **E** $80

10. Which of the following is closest to 19.9 times 199?

A 4000   **B** 3990   **C** 3980   **D** 3970   **E** 3960

11. The average of six numbers is 4. A seventh number is added and the new average is 5. What is the seventh number?

A 1   **B** 5   **C** 6   **D** 11   **E** 12

12. Suppose the Egyptian Pharaoh Khufu was born 4300 years ago. Approximately when did his twelfth birthday occur?

A 2300 BC   **B** 2700 BC   **C** 3000 BC   **D** 4300 BC   **E** 6300 BC

13. A clock loses 1 second every minute. It is set to the correct time at 10 AM on February 4. In which month is the next day on which it shows the correct time? (Note: A person can see whether it is AM or PM on this clock.)

A February   **B** March   **C** April   **D** May   **E** June

14. For approximately how many million seconds have you been alive?

A 4   **B** 40   **C** 400   **D** 4000   **E** 40000

15. I want to cut a piece of wood into five shorter pieces. The first cut takes 2 seconds and each subsequent cut takes twice as long as did the previous one. How many seconds will the job require?

A 8   **B** 12   **C** 114   **D** 30   **E** 62

E E C B D   A C E D E   D A C C D

Entrance Test: Essay Question

Students preparing to take the entrance test for the Bergen County Academies, Hackensack or Bergen County Technical Schools, Teterboro will read an article and write an essay response in forty minutes. The essay is scored using the following criteria: comprehension (shows understanding), insight (establishes a clear thesis), organization (paragraphs are structured properly and are in a logical sequence), support (supports the thesis with relevant facts from the passage), style (written in a clear, mature voice) and grammar/spelling. For suggestions on how to write a five paragraph essay, please use the following links:

http://homeworktips.about.com/od/essaywriting/a/fiveparagraph.htm

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Sample Essay Question

Read the following essay and answer the question, "Why do you believe Mrs. Price acted the way she did?" Your essay should be well-organized and should include support from the story for your main ideas.

Eleven

Sandra Cisneros

What they don't understand about birthdays and what they never tell you is that when you're eleven, you're also ten, and nine, and eight, and seven, and six, and five, and four, and three, and two, and one. And when you wake up on your eleventh birthday you expect to feel eleven, but you don't. You open your eyes and everything's just like yesterday, only it's today. And you don't feel eleven at all. You feel like you're still ten. And you are—underneath the year that makes you eleven.

Like some days you might say something stupid, and that's the part of you that's still ten. Or maybe some days you might need to sit on your mama's lap because you're scared, and that's the part of you that's five. And maybe one day when you're all grown up maybe you will need to cry like if you're three, and that's okay. That's what I tell Mama when she's sad and needs to cry. Maybe she's feeling three.

Because the way you grow old is kind of like an onion or like the rings inside a tree trunk or like my little wooden dolls that fit one inside the other, each year inside the next one. That's how being eleven years old is.

You don't feel eleven. Not right away. It takes a few days, weeks even, sometimes even months before you say Eleven when they ask you. And you don't feel smart eleven, not until you're almost twelve. That's the way it is.

Only today I wish I didn't have only eleven years rattling inside me like pennies in a tin Band-Aid box. Today I wish I was one hundred and two instead of eleven because if I was one hundred and two I'd have known what to say when Mrs. Price put the red sweater on my desk. I would've known how to tell her it wasn't mine instead of just sitting there with that look on my face and nothing coming out of my mouth.

"Whose is this?" Mrs. Price says, and she holds the red sweater up in the air for all the class to see. "Whose? It's been sitting in the coatroom for a month."

"Not mine," says everybody, "Not me."

"It has to belong to somebody," Mrs. Price keeps saying, but nobody can remember. It's an ugly sweater with red plastic buttons and a collar and sleeves all stretched out like you could use it for a jump rope. It's maybe a thousand years old and even if it belonged to me I wouldn't say so.

Maybe because I'm skinny, maybe because she doesn't like me, that stupid Sylvia Saldivar says, "I think it belongs to Rachel." An ugly sweater like that all raggedy and old, but Mrs. Price believes her. Mrs Price takes the sweater and puts it right on my desk, but when I open my mouth nothing comes out.

"That's not, I don't, you're not . . . Not mine." I finally say in a little voice that was maybe me when I was four.

"Of course it's yours," Mrs. Price says. "I remember you wearing it once." Because she's older and the teacher, she's right and I'm not.

Not mine, not mine, not mine, but Mrs. Price is already turning to page thirty-two, and math problem number four. I don't know why but all of a sudden I'm feeling sick inside, like the part of me that's three wants to come out of my eyes, only I squeeze them shut tight and bite down on my teeth real hard and try to remember today I am eleven, eleven. Mama is making a cake for me for tonight, and when Papa comes home everybody will sing Happy birthday, happy birthday to you.

But when the sick feeling goes away and I open my eyes, the red sweater's still sitting there like a big red mountain. I move the red sweater to the corner of my desk with my ruler. I move my pencil and books and eraser as far from it as possible. I even move my chair a little to the right. Not mine, not mine, not mine.

In my head I'm thinking how long till lunchtime, how long till I can take the red sweater and throw it over the schoolyard fence, or leave it hanging on a parking meter, or bunch it up into a little ball and toss it in the alley. Except when math period ends Mrs. Price says loud and in front of everybody, "Now, Rachel, that's enough," because she sees I've shoved the red sweater to the tippy-tip corner of my desk and it's hanging all over the edge like a waterfall, but I don't care.

"Rachel," Mrs. Price says. She says it like she's getting mad. "You put that sweater on right now and no more nonsense."

"But it's not—"

"Now!" Mrs. Price says.

This is when I wish I wasn't eleven because all the years inside of me—ten, nine, eight, seven, six, five, four, three, two, and one—are pushing at the back of my eyes when I put one arm through one sleeve of the sweater that smells like cottage cheese, and then the other arm through the other and stand there with my arms apart like if the sweater hurts me and it does, all itchy and full of germs that aren't even mine.

That's when everything I've been holding in since this morning, since when Mrs. Price put the sweater on my desk, finally lets go, and all of a sudden I'm crying in front of everybody. I wish I was invisible but I'm not. I'm eleven and it's my birthday today and I'm crying like I'm three in front of everybody. I put my head down on the desk and bury my face in my stupid clown-sweater arms. My face all hot and spit coming out of my mouth because I can't stop the little animal noises from coming out of me until there aren't any more tears left in my eyes, and it's just my body shaking like when you have the hiccups, and my whole head hurts like when you drink milk too fast.

But the worst part is right before the bell rings for lunch. That stupid Phyllis Lopez, who is even dumber than Sylvia Saldivar, says she remembers the red sweater is hers! I take it off right away and give it to her, only Mrs. Price pretends like everything's okay.

Today I'm eleven. There's a cake Mama's making for tonight and when Papa comes home from work we'll eat it. There'll be candles and presents and everybody will sing Happy birthday, happy birthday to you, Rachel, only it's too late.

I'm eleven today. I'm eleven, ten, nine, eight, seven, six, five, four, three, two, and one, but I wish I was one hundred and two. I wish I was anything but eleven, because I want today to be far away already, far away like a runaway balloon, like a tiny *o* in the sky, so tiny-tiny you have to close your eyes to see it.