**In Class Problems**

**Class 1**

**Easy**

1.Casey's shop class is making a golf trophy. He has to paint 300 dimples on a golf ball. If it takes him 2 seconds to paint one dimple, how many minutes will he need to do his job?

$\text{(A)}\ 4 \qquad \text{(B)}\ 6 \qquad \text{(C)}\ 8 \qquad \text{(D)}\ 10 \qquad \text{(E)}\ 12$

2.Granny Smith has $63. Elberta has $2 more than Anjou and Anjou has one-third as much as Granny Smith. How many dollars does Elberta have?

$\text{(A)}\ 17 \qquad \text{(B)}\ 18 \qquad \text{(C)}\ 19 \qquad \text{(D)}\ 21 \qquad \text{(E)}\ 23$

3.Genevieve puts bracing on her large kite in the form of a cross connecting opposite corners of the kite. How many inches of bracing material does she need?

$\text{(A)}\ 30 \qquad \text{(B)}\ 32 \qquad \text{(C)}\ 35 \qquad \text{(D)}\ 38 \qquad \text{(E)}\ 39$

4.A sign at the fish market says, "50% off, today only: half-pound packages for just $3 per package." What is the regular price for a full pound of fish, in dollars?

$\textbf{(A)}\ 6 \qquad \textbf{(B)}\ 9 \qquad \textbf{(C)}\ 10 \qquad \textbf{(D)}\ 12 \qquad \textbf{(E)}\ 15$

5.What is the value of $4 \cdot (-1+2-3+4-5+6-7+\cdots+1000)$?

$\textbf{(A)}\ -10 \qquad \textbf{(B)}\ 0 \qquad \textbf{(C)}\ 1 \qquad \textbf{(D)}\ 500 \qquad \textbf{(E)}\ 2000$

**Medium**

6.The Incredible Hulk can double the distance he jumps with each succeeding jump. If his first jump is 1 meter, the second jump is 2 meters, the third jump is 4 meters, and so on, then on which jump will he first be able to jump more than 1 kilometer?

$\textbf{(A)}\ 9^\text{th} \qquad \textbf{(B)}\ 10^\text{th} \qquad \textbf{(C)}\ 11^\text{th} \qquad \textbf{(D)}\ 12^\text{th} \qquad \textbf{(E)}\ 13^\text{th}$

7.When Clara totaled her scores, she inadvertently reversed the units digit and the tens digit of one score. By which of the following might her incorrect sum have differed from the correct one?

$\textbf{(A)}\ 45 \qquad \textbf{(B)}\ 46 \qquad \textbf{(C)}\ 47 \qquad \textbf{(D)}\ 48 \qquad \textbf{(E)}\ 49$

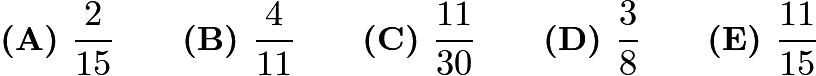
8.If $3^p + 3^4 = 90$, $2^r + 44 = 76$, and $5^3 + 6^s = 1421$, what is the product of $p$, $r$, and $s$?

$\textbf{(A)}\ 27 \qquad \textbf{(B)}\ 40 \qquad \textbf{(C)}\ 50 \qquad \textbf{(D)}\ 70 \qquad \textbf{(E)}\ 90$

9.The sum of six consecutive positive integers is 2013. What is the largest of these six integers?

$\textbf{(A)}\ 335 \qquad \textbf{(B)}\ 338 \qquad \textbf{(C)}\ 340 \qquad \textbf{(D)}\ 345 \qquad \textbf{(E)}\ 350$

10.In a middle-school mentoring program, a number of the sixth graders are paired with a ninth-grade student as a buddy. No ninth grader is assigned more than one sixth-grade buddy. If $\tfrac{1}{3}$ of all the ninth graders are paired with $\tfrac{2}{5}$ of all the sixth graders, what fraction of the total number of sixth and ninth graders have a buddy?



11.Jeremy's father drives him to school in rush hour traffic in $20$ minutes. One day there is no traffic, so his father can drive him $18$ miles per hour faster and gets him to school in $12$ minutes. How far in miles is it to school?

$\textbf{(A) } 4 \qquad \textbf{(B) } 6 \qquad \textbf{(C) } 8 \qquad \textbf{(D) } 9 \qquad \textbf{(E) } 12$

12.Ralph went to the store and bought $12$ pairs of socks for a total of $$24$. Some of the socks he bought cost $$1$ a pair, some of the socks he bought cost $$3$ a pair, and some of the socks he bought cost $$4$ a pair. If he bought at least one pair of each type, how many pairs of $$1$ socks did Ralph buy?

$\textbf{(A) } 4 \qquad \textbf{(B) } 5 \qquad \textbf{(C) } 6 \qquad \textbf{(D) } 7 \qquad \textbf{(E) } 8$

**Hard**

13.Gage skated 1 hr 15 min each day for 5 days and 1 hr 30 min each day for 3 days. How long would he have to skate the ninth day in order to average 85 minutes of skating each day for the entire time?

$\text{(A)}\ \text{1 hr} \qquad \text{(B)}\ \text{1 hr 10 min} \qquad \text{(C)}\ \text{1 hr 20 min} \qquad \text{(D)}\ \text{1 hr 40 min} \qquad \text{(E)}\ \text{2 hr}$

14.Miki has a dozen oranges of the same size and a dozen pears of the same size. Miki uses her juicer to extract 8 ounces of pear juice from 3 pears and 8 ounces of orange juice from 2 oranges. She makes a pear-orange juice blend from an equal number of pears and oranges. What percent of the blend is pear juice?

$\text{(A)}\ 30 \qquad \text{(B)}\ 40 \qquad \text{(C)}\ 50 \qquad \text{(D)}\ 60 \qquad \text{(E)}\ 70$

1. **D**
2. **E**
3. **E**
4. **D**
5. **E**
6. **C**
7. **A**
8. **B**
9. **B**
10. **B**
11. **D**
12. **D**
13. **E**
14. **B**

**Class 2**

**Easy**

1.Hammie is in the $6^\text{th}$ grade and weighs 106 pounds. His quadruplet sisters are tiny babies and weigh 5, 5, 6, and 8 pounds. Which is greater, the average (mean) weight of these five children or the median weight, and by how many pounds?

$\textbf{(A)}\ \text{median, by 60} \qquad \textbf{(B)}\ \text{median, by 20} \qquad \textbf{(C)}\ \text{average, by 5} \qquad \textbf{(D)}\ \text{average, by 15} \qquad \textbf{(E)}\ \text{average, by 20}$

2.Paul owes Paula 35 cents and has a pocket full of 5-cent coins, 10-cent coins, and 25-cent coins that he can use to pay her. What is the difference between the largest and the smallest number of coins he can use to pay her?

$\textbf{(A) }1\qquad\textbf{(B) }2\qquad\textbf{(C) }3\qquad\textbf{(D) }4\qquad \textbf{(E) }5$

3.Isabella had a week to read a book for a school assignment. She read an average of 36 pages per day for the first three days and an average of 44 pages per day for the next three days. She then finished the book by reading 10 pages on the last day. How many pages were in the book?

$\textbf{(A) }240\qquad\textbf{(B) }250\qquad\textbf{(C) }260\qquad\textbf{(D) }270\qquad \textbf{(E) }280$

4.Margie's car can go 32 miles on a gallon of gas, and gas currently costs $4 per gallon. How many miles can Margie drive on $20 worth of gas?

$\textbf{(A) }64\qquad\textbf{(B) }128\qquad\textbf{(C) }160\qquad\textbf{(D) }320\qquad\textbf{(E) }640$

5.What is the smallest possible average of four distinct positive even integers?

$\text{(A)}\ 3 \qquad \text{(B)}\ 4 \qquad \text{(C)}\ 5 \qquad \text{(D)}\ 6 \qquad \text{(E)}\ 7$

6.For his birthday, Bert gets a box that holds 125 jellybeans when filled to capacity. A few weeks later, Carrie gets a larger box full of jellybeans. Her box is twice as high, twice as wide and twice as long as Bert's. Approximately, how many jellybeans did Carrie get?

$\text{(A)}\ 250 \qquad \text{(B)}\ 500 \qquad \text{(C)}\ 625 \qquad \text{(D)}\ 750 \qquad \text{(E)}\ 1000$

**Medium**

7.George walks $1$ mile to school. He leaves home at the same time each day, walks at a steady speed of $3$ miles per hour, and arrives just as school begins. Today he was distracted by the pleasant weather and walked the first $\frac{1}{2}$ mile at a speed of only $2$ miles per hour. At how many miles per hour must George run the last $\frac{1}{2}$ mile in order to arrive just as school begins today?

$\textbf{(A) }4\qquad\textbf{(B) }6\qquad\textbf{(C) }8\qquad\textbf{(D) }10\qquad\textbf{(E) }12$

8.A merchant offers a large group of items at 30% off. Later, the merchant takes 20% off these sale prices and claims that the final price of these items is 50% off the original price. The total discount is

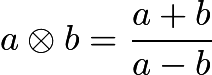
$\text{(A)}\ 35\% \qquad \text{(B)}\ 44\% \qquad \text{(C)}\ 50\% \qquad \text{(D)}\ 56\% \qquad \text{(E)}\ 60\%$

9.In a mathematics contest with ten problems, a student gains 5 points for a correct answer and loses 2 points for an incorrect answer. If Olivia answered every problem and her score was 29, how many correct answers did she have?

$\text{(A)}\ 5 \qquad \text{(B)}\ 6 \qquad \text{(C)}\ 7 \qquad \text{(D)}\ 8 \qquad \text{(E)}\ 9$

10.A collector offers to buy state quarters for 2000% of their face value. At that rate how much will Bryden get for his four state quarters?

$\text{(A)}\ 20\text{ dollars} \qquad \text{(B)}\ 50\text{ dollars} \qquad \text{(C)}\ 200\text{ dollars} \qquad \text{(D)}\ 500\text{ dollars} \qquad \text{(E)}\ 2000\text{ dollars}$

11.If , then $(6\otimes 4)\otimes 3 =$

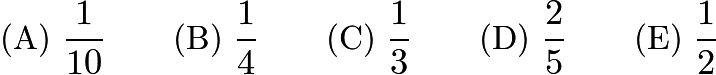
$\text{(A)}\ 4 \qquad \text{(B)}\ 13 \qquad \text{(C)}\ 15 \qquad \text{(D)}\ 30 \qquad \text{(E)}\ 72$

12. Homer began peeling a pile of 44 potatoes at the rate of 3 potatoes per minute. Four minutes later Christen joined him and peeled at the rate of 5 potatoes per minute. When they finished, how many potatoes had Christen peeled?

$\text{(A)}\ 20 \qquad \text{(B)}\ 24 \qquad \text{(C)}\ 32 \qquad \text{(D)}\ 33 \qquad \text{(E)}\ 40$

**Hard**

13.Loki, Moe, Nick and Ott are good friends. Ott had no money, but the others did. Moe gave Ott one-fifth of his money, Loki gave Ott one-fourth of his money and Nick gave Ott one-third of his money. Each gave Ott the same amount of money. What fractional part of the group's money does Ott now have?



14.The mean of a set of five different positive integers is 15. The median is 18. The maximum possible value of the largest of these five integers is

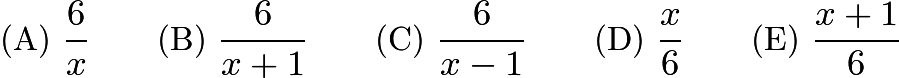
$\text{(A)}\ 19 \qquad \text{(B)}\ 24 \qquad \text{(C)}\ 32 \qquad \text{(D)}\ 35 \qquad \text{(E)}\ 40$

1. **E**
2. **E**
3. **B**
4. **C**
5. **C**
6. **E**
7. **B**
8. **B**
9. **C**
10. **A**
11. **A**
12. **A**
13. **B**
14. **D**

**Homework Problems**

**Easy**

For $x=7$, which of the following is the smallest?



B

A child's wading pool contains 200 gallons of water. If water evaporates at the rate of 0.5 gallons per day and no other water is added or removed, how many gallons of water will be in the pool after 30 days?

$\text{(A)}\ 140 \qquad \text{(B)}\ 170 \qquad \text{(C)}\ 185 \qquad \text{(D)}\ 198.5 \qquad \text{(E)}\ 199.85$

C

Ahn chooses a two-digit integer, subtracts it from 200, and doubles the result. What is the largest number Ahn can get?

$\text{(A)}\ 200 \qquad \text{(B)}\ 202 \qquad \text{(C)}\ 220 \qquad \text{(D)}\ 380 \qquad \text{(E)}\ 398$

D

Which of the following numbers is the largest?

$\text{(A)}\ 0.97 \qquad \text{(B)}\ 0.979 \qquad \text{(C)}\ 0.9709 \qquad \text{(D)}\ 0.907 \qquad \text{(E)}\ 0.9089$

B

Julie is preparing a speech for her class. Her speech must last between one-half hour and three-quarters of an hour. The ideal rate of speech is 150 words per minute. If Julie speaks at the ideal rate, which of the following number of words would be an appropriate length for her speech?

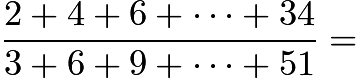
$\text{(A)}\ 2250 \qquad \text{(B)}\ 3000 \qquad \text{(C)}\ 4200 \qquad \text{(D)}\ 4350 \qquad \text{(E)}\ 5650$

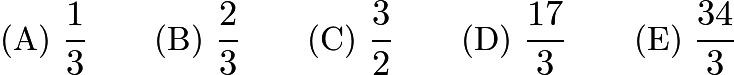
E

Three bags of jelly beans contain 26, 28, and 30 beans. The ratios of yellow beans to all beans in each of these bags are $50\%$, $25\%$, and $20\%$, respectively. All three bags of candy are dumped into one bowl. Which of the following is closest to the ratio of yellow jelly beans to all beans in the bowl?

$\text{(A)}\ 31\% \qquad \text{(B)}\ 32\% \qquad \text{(C)}\ 33\% \qquad \text{(D)}\ 35\% \qquad \text{(E)}\ 95\%$

A





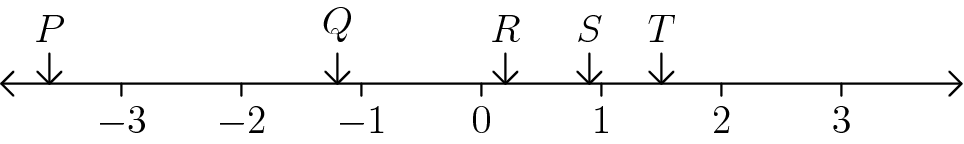
B

If 5 times a number is 2, then 100 times the reciprocal of the number is

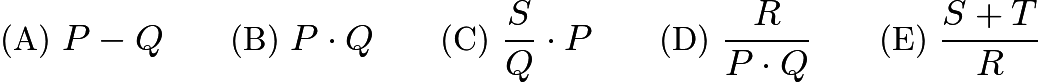
$\text{(A)}\ 2.5 \qquad \text{(B)}\ 40 \qquad \text{(C)}\ 50 \qquad \text{(D)}\ 250 \qquad \text{(E)}\ 500$

D

The letters $P$, $Q$, $R$, $S$, and $T$ represent numbers located on the number line as shown.



Which of the following expressions represents a negative number?



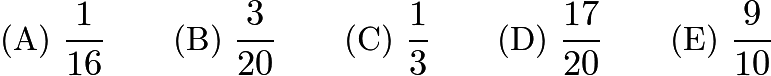
A

Brent has goldfish that quadruple (become four times as many) every month, and Gretel has goldfish that double every month. If Brent has 4 goldfish at the same time that Gretel has 128 goldfish, then in how many months from that time will they have the same number of goldfish?

$\text{(A)}\ 4 \qquad \text{(B)}\ 5 \qquad \text{(C)}\ 6 \qquad \text{(D)}\ 7 \qquad \text{(E)}\ 8$

B

At Clover View Junior High, one half of the students go home on the school bus. One fourth go home by automobile. One tenth go home on their bicycles. The rest walk home. What fractional part of the students walk home?



B

**Medium**

For a sale, a store owner reduces the price of a $$10 scarf by $20\%$. Later the price is lowered again, this time by one-half the reduced price. The price is now

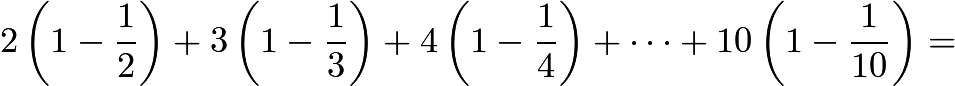
$\text{(A)}\ 2.00\text{ dollars} \qquad \text{(B)}\ 3.75\text{ dollars} \qquad \text{(C)}\ 4.00\text{ dollars} \qquad \text{(D)}\ 4.90\text{ dollars} \qquad \text{(E)}\ 6.40\text{ dollars}$

C

In the fall of 1996, a total of 800 students participated in an annual school clean-up day. The organizers of the event expect that in each of the years 1997, 1998, and 1999, participation will increase by 50% over the previous year. The number of participants the organizers will expect in the fall of 1999 is

$\text{(A)}\ 1200 \qquad \text{(B)}\ 1500 \qquad \text{(C)}\ 2000 \qquad \text{(D)}\ 2400 \qquad \text{(E)}\ 2700$

E



$\text{(A)}\ 45 \qquad \text{(B)}\ 49 \qquad \text{(C)}\ 50 \qquad \text{(D)}\ 54 \qquad \text{(E)}\ 55$

A

What number should be removed from the list\[1,2,3,4,5,6,7,8,9,10,11\]so that the average of the remaining numbers is $6.1$?

$\text{(A)}\ 4 \qquad \text{(B)}\ 5 \qquad \text{(C)}\ 6 \qquad \text{(D)}\ 7 \qquad \text{(E)}\ 8$

B

There is a set of five positive integers whose average (mean) is 5, whose median is 5, and whose only mode is 8. What is the difference between the largest and smallest integers in the set?

$\text{(A)}\ 3 \qquad \text{(B)}\ 5 \qquad \text{(C)}\ 6 \qquad \text{(D)}\ 7 \qquad \text{(E)}\ 8$

D

Let $x$ be the numberwhere there are 1996 zeros after the decimal point. Which of the following expressions represents the largest number?

$\text{(A)}\ 3+x \qquad \text{(B)}\ 3-x \qquad \text{(C)}\ 3\cdot x \qquad \text{(D)}\ 3/x \qquad \text{(E)}\ x/3$

D

When Walter drove up to the gasoline pump, he noticed that his gasoline tank was 1/8 full. He purchased 7.5 gallons of gasoline for $$10$. With this additional gasoline, his gasoline tank was then 5/8 full. The number of gallons of gasoline his tank holds when it is full is

$\text{(A)}\ 8.75 \qquad \text{(B)}\ 10 \qquad \text{(C)}\ 11.5 \qquad \text{(D)}\ 15 \qquad \text{(E)}\ 22.5$

D

$1-2-3+4+5-6-7+8+9-10-11+\cdots + 1992+1993-1994-1995+1996=$

$\text{(A)}\ -998 \qquad \text{(B)}\ -1 \qquad \text{(C)}\ 0 \qquad \text{(D)}\ 1 \qquad \text{(E)}\ 998$

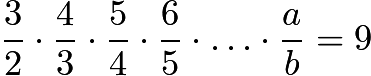
C

**Hard**

At the grocery store last week, small boxes of facial tissue were priced at 4 boxes for $5. This week they are on sale at 5 boxes for $4. The percent decrease in the price per box during the sale was closest to

$\text{(A)}\ 30\% \qquad \text{(B)}\ 35\% \qquad \text{(C)}\ 40\% \qquad \text{(D)}\ 45\% \qquad \text{(E)}\ 65\%$

B

If the product , what is the sum of $a$ and $b$?

$\text{(A)}\ 11 \qquad \text{(B)}\ 13 \qquad \text{(C)}\ 17 \qquad \text{(D)}\ 35 \qquad \text{(E)}\ 37$

D

Suppose there is a special key on a calculator that replaces the number $x$ currently displayed with the number given by the formula $1/(1-x)$. For example, if the calculator is displaying 2 and the special key is pressed, then the calculator will display -1 since $1/(1-2)=-1$. Now suppose that the calculator is displaying 5. After the special key is pressed 100 times in a row, the calculator will display

$\text{(A)}\ -0.25 \qquad \text{(B)}\ 0 \qquad \text{(C)}\ 0.8 \qquad \text{(D)}\ 1.25 \qquad \text{(E)}\ 5$

A

Ana's monthly salary was $2000 in May. In June she received a 20% raise. In July she received a 20% pay cut. After the two changes in June and July, Ana's monthly salary was

$\text{(A)}\ 1920\text{ dollars} \qquad \text{(B)}\ 1980\text{ dollars} \qquad \text{(C)}\ 2000\text{ dollars} \qquad \text{(D)}\ 2020\text{ dollars} \qquad \text{(E)}\ 2040\text{ dollars}$

A

The manager of a company planned to distribute a $$50$ bonus to each employee from the company fund, but the fund contained $$5$ less than what was needed. Instead the manager gave each employee a $$45$ bonus and kept the remaining $$95$ in the company fund. The amount of money in the company fund before any bonuses were paid was

$\text{(A)}\ 945\text{ dollars} \qquad \text{(B)}\ 950\text{ dollars} \qquad \text{(C)}\ 955\text{ dollars} \qquad \text{(D)}\ 990\text{ dollars} \qquad \text{(E)}\ 995\text{ dollars}$

E

1. **B**
2. **C**
3. **D**
4. **B**
5. **E**
6. **A**
7. **B**
8. **D**
9. **A**
10. **B**
11. **B**
12. **C**
13. **E**
14. **A**
15. **B**
16. **D**
17. **D**
18. **D**
19. **C**
20. **B**
21. **D**
22. **A**
23. **A**
24. **E**