

# The history of algebra and integers biology essay

[Science](#), [Biology](#)



If  $n$  is an integer, then which one of the following expressions must be even?

A)  $n$  B)  $2n$  C)  $3n$  D)  $4n$  E)  $5n$

When the product of  $(-4)$  and  $(+3)$  is divided by  $(-2)$ , the

quotient is: A)  $0.5$  B)  $3.5$  C)  $-0.5$  D)  $6$

The average of three numbers is  $V$ . If

one of them is  $Z$  and another is  $Y$ , what is the remaining number? A)  $ZY - V$  B)

$Z/V - 3 - Y$  C)  $Z/3 - V - Y$  D)  $3V - Z - Y$

How many digits are required for

numbering the pages of a book containing 301 pages? A) 301 B) 602 C)

593 D) 578

Solve for  $x$ : A) No values B)  $0.33$  C)  $-1/3$  D)  $-3$  E)  $1/0.33$

How many

passengers can be seated on a plane with  $r$  rows, if each row consists of  $d$

double seats, and  $t$  triple seats? A)  $rdt$  B)  $rd + rt$  C)  $2dr + 3tr$  D)  $3dr + 2tr$  E)  $rd$

+  $t$

What is the simplified value of A)  $97$  B)  $96$  C)  $95$  D)  $87$  E)  $85$

The square root

of 61504 is exactly? A) 245 B) 246 C) 247 D) 248 E) 249

If which of the following

is NOT an integer? A)  $\frac{1}{2}$  B)  $\frac{1}{3}$  C)  $\frac{1}{4}$  D)  $\frac{1}{5}$  E)  $\frac{1}{6}$

If, what does  $x$  equal? A) 2 B)  $0.5$  C)  $0.2$  D)

$20$  E) 5

Robert is 15 years older than his brother Stan. However,  $y$  years ago

Robert was twice as old as Stan. If Stan is now  $b$  years old and  $b > y$ , find the

value of  $b - y$ ? A) 13 B) 14 C) 15 D) 16 E) 17

The trinomial is exactly

divisible by: A)  $x - 5$  B)  $x + 4$  C)  $x - 10$  D)  $x - 4$  E)  $x - 2$

Richard has \$3.50

consisting of nickels and dimes. If he has 5 more dimes than nickels, how

many dimes does he have? A) 20 B) 24.5 C) 25 D) 26 E) 28

Michael was 12

years old  $y$  years ago. What will be his age  $b$  years from now? A)  $12 - b + y$

B)  $-(12 + b + y)$  C)  $12 - y + b$  D)  $b + y - 12$  E)  $-(-12 - y - b)$

Three times the first of

three consecutive odd integers is 3 more than twice the third. Find the third

integer? A) 9 B) 11 C) 13 D) 15 E) 17

If  $n$  is, both the cube and the square of an

integer and is between 2 and 200, what's the value of? A) 8 B) 16 C) 64 D)

125 E) 169

If  $x > 0$ ,  $y > 0$ , and  $x - y < 0$ , then A)  $x > y$  B)  $x < y$  C)  $x + y < 0$  D)

$y - x < 0$  E)  $x = -y$

If  $m$ ,  $n$ ,  $o$  and  $p$  are real numbers, each of the following

expressions equals  $m(nop)$  EXCEPT: A)  $(op)(mn)$  B)  $ponm$  C)  $p(onm)$  D)  $(mp)(no)$  E)  $(mn)(op)(mn)$

How many 20 of 20 are there in 300 of 300? A) 15 B) 30 C) 60 D) 150 E) 225

What is the simplified value of A) B) C) D) E) 1

The average marks, obtained by a group of 9 students is 41. If the marks of the new boy who scored 61 are also included, then the average will be: A) 39 B) 40 C) 43 D) 45 E) 41

The ratio of two numbers is 2: 3. If their sum is greater than their difference by 56, find the two numbers. A) 26, 39 B) 28, 42 C) 30, 45 D) 32, 48

If  $n$  is exactly divisible by 11, then  $n$  is A) odd number B) even number C) either odd or even D) None of these

Sum and difference of two numbers is in the ratio 5: 2. Find the ratio of the numbers. A) 7: 3 B) 4: 3 C) 5: 2 D) 6: 1

If the average of 7 consecutive odd numbers is 23, what is the value of the greatest integer in this series? A) 13 B) 17 C) 26 D) 27 E) 29

Half of a third of  $x$  equals a fourth of  $y$  plus a fifth of  $y$ . If  $x = 27$ , what is the value of  $y$ ?

For what value of  $n$  is:  $2n+3n+4n =$  If are both positive integers, then must be equal to A) B) C) D) E) Insufficient information given

What is the product of the digits of  $5!$ ? Find the difference of the largest and the smallest number that can be formed by using the digits 3, 0, 1, 5, 8. A) 83952 B) 74952 C) 76780 D) None of these E) 71341

Twelve halls in a hotel accommodate an average of 200 students per hall. If two of these halls are not used but the total number of students remains the same, what is the average number of students the remaining hall will accommodate now? A) 180 B) 240 C) 250 D) 300 E) 200

The average age of a class of 40 is 15 yrs. If the teacher is also included, the average increases by 2 yrs. What is the teacher's age? A) 15 B) 93 C) 55 D) 56 E) 97

If the average of 13 observations is 72. The average of first 6 is 70 and the average of last six is 71, then 7th

observation equals?  $v, w, x, y,$  and  $z$  are consecutive odd integers, not necessarily in that order. If  $x - 4 = z, y + 6 = x,$  and  $w > v,$  which of the following is the correct order for the integers  $v, w, x, y,$  and  $z$ ? A)  $y < z < v < x < w$  B)  $v < z < y < x < w$  C)  $z < v < x < w < y$  D)  $z < y < x < v < w$  E)  $v < w < z < y < x$

The prime factorization of 360 can be written in the form  $am^b n^c$ . What is the value of  $a + b + c - mn$ ? A) 4 B) 6 C) 10 D) 11 E) 24

The average daily temperature in a city during the month of April was  $8.0^\circ\text{C}$ . The average temperature in May of that year was  $9.5^\circ\text{C}$ . What is the average temperature in this city for the months of April and May? (There are 30 days in April and 31 days in May.)

If  $a, b$  and  $c$  are positive integers such that  $a + b = 9$  and  $ac - 2bc = 0,$  what is the value of  $a$ .

The denominator of a positive common fraction is 3 more than its numerator. If  $\frac{5}{28}$  is added to this fraction, the result is the same as the positive difference between the reciprocal of the original fraction and 1. What is this common fraction?

If  $x$  and  $y$  are real numbers such that  $x^2 = y^2$  and  $x \neq y,$  what is the value of  $x^2 + 2(x + y) - y^2 + 8$ ?

Four friends in the sixth grade were sharing a pizza. They decided that the oldest friend would get the extra piece. Randy is two months older than Greg, who is three months younger than Ned. Kent is one month older than Greg. Who should get the extra piece of pizza? A) Randy B) Greg C) Ned D) Kent E) Incomplete information

The number 0.127 is how much greater than  $\frac{1}{8}$ ? A)  $\frac{1}{2}$  B)  $\frac{2}{10}$  C)  $\frac{1}{50}$  D)  $\frac{1}{500}$  E)  $\frac{2}{500}$

## RATIO & PROPORTIONS

In a class there are 18 boys and 12 girls. What part of the class are girls? A)  $\frac{2}{3}$  B)  $\frac{3}{5}$  C)  $\frac{2}{5}$  D)  $\frac{1}{15}$  E)  $\frac{3}{2}$

What part of an hour elapses between 3:45 p.m. and 4:09 p.m.? A)  $\frac{6}{25}$  B)  $\frac{2}{5}$  C)  $\frac{5}{12}$  D)  $\frac{1}{24}$  E)  $\frac{24}{1}$

A camp employs 4

men, 6 women, 12 girls, and 8 boys. In the middle of the summer, 3 girls are fired and replaced by women. What part of the staff is then made up of women? A)  $\frac{1}{5}$  B)  $\frac{2}{9}$  C)  $\frac{1}{3}$  D)  $\frac{3}{10}$  E)  $0.5$

The value of a fraction is  $\frac{2}{5}$ . If the numerator is decreased by 2 and the denominator is increased by 1, the resultant fraction is equivalent to  $0.25$ . Find the numerator of the original fraction? A) 3 B) 4 C) 6 D) 10 E) 15

A team played 40 games and lost 6. What part of the games played did it win? A)  $\frac{3}{17}$  B)  $\frac{3}{20}$  C)  $\frac{14}{17}$  D)  $\frac{17}{20}$  E)  $\frac{7}{8}$

There are three times as many seniors as juniors at a high school Junior-Senior dance. What part of the students present are juniors? A)  $\frac{2}{5}$  B)  $\frac{3}{5}$  C)  $\frac{2}{3}$  D)  $\frac{3}{4}$  E)  $\frac{1}{4}$

Manorville High had a meeting of the Student Senate, which was attended by 10 freshmen, 8 sophomores, 15 juniors, and 7 seniors. What part of the students present at the meeting were sophomores? A)  $0.25$  B)  $\frac{5}{8}$  C)  $\frac{7}{40}$  D)  $\frac{1}{5}$  E)  $\frac{1}{3}$

A full bottle of isopropyl alcohol is left open in the school laboratory. If  $\frac{1}{3}$  of the isopropyl alcohol evaporates in the first 12 hours and  $\frac{2}{3}$  of the remainder evaporates in the second 12 hours, what part of the bottle is full at the end of 24 hours? A)  $\frac{4}{18}$  B)  $\frac{9}{2}$  C)  $\frac{3}{9}$  D)  $\frac{1}{9}$  E)  $\frac{4}{9}$

800 employees work for the Metropolitan Transportation Company.  $\frac{1}{4}$  of these are college graduates, while  $\frac{5}{6}$  of the remainder are high school graduates. What part of the employees never graduated from high school? A)  $\frac{1}{6}$  B)  $\frac{1}{8}$  C)  $\frac{7}{8}$  D)  $\frac{1}{12}$  E)  $\frac{3}{4}$

It takes Mr. Cohen  $X$  days to paint his house. If he works for  $D$  days, what part of his house must still be painted? A)  $\frac{X}{D}$  B)  $\frac{(D-X)}{D}$  C)  $\frac{(X-D)}{X}$  D)  $\frac{A-X}{E}$  E)  $\frac{D-D}{X}$

John spent  $\$X$  on the latest hit record album. This represents  $\frac{1}{M}$  of his weekly allowance. What is his weekly allowance? A)  $XM$  B)  $\frac{M}{X}$  C)  $\frac{X}{M}$  D)  $\frac{(M-X)}{ME}$  E) None of these

Of  $S$  students in Bryant High,  $\frac{1}{3}$  study French and  $\frac{1}{4}$  of the remainder study Italian. How

many of the students study Italian? A)  $\frac{5}{6}$  B)  $\frac{5}{4}$  C)  $\frac{25}{3}$  D)  $\frac{5}{12}$  E)  $\frac{35}{7}$

A residential city block contains R one-family homes, S two-family homes, and T apartment houses. What part of the buildings on this block is made up of one or two family houses? A gear with 20 teeth revolving at 200 revolutions per minute is meshed with a second gear turning at 250 revolutions per minute. How many teeth does this gear have? A) 16 B) 25 C) 15 D) 10 E) 24

At a party, the ratio of males to females is 3: 4. Which of the following could NOT be the total number of people at the party? A) 14 B) 35 C) 44 D) 63 E) 70

Jim has  $\frac{1}{3}$  as many goldfish as Hannah. Hannah has 5 times as many goldfish as Ping. If Ping has 18 goldfish, how many goldfish does Jim have?

## PERCENTAGES

How many sixteenths are there in  $87\frac{1}{2}\%$ ? A) 7 B) 2 C) 8 D) 12 E) 14

80 is 40% of what number? A) 3200 B) 320 C) 32 D) 20

What percent of 60 is 72? A) 105 B) 125 C) 120 D) 83. 33 E) 1100.

5 of 6 is what% of 0. 25 of 60 ? A) 5 B) 20 C) 10 D) 25 E) 15

A book dealer bought 100 books for \$1250. If she sold 30% of these at \$10 each and the rest at \$15 each, what was her total profit? A) 350 B) 1350 C) 300 D) 1050 E) 100

How much money is saved by buying an article priced at \$80 with a 40% discount, rather than buying an article marked at \$90 with a discount of 35% then 10%? A) 4. 65 B) 1. 50 C) 10. 50 D) 3. 15 E) 4. 25

A student invests \$ 4, 000, part at 6% and part at 7%. The income from these investments in one year is \$250. Find the amount invested at 7%

How much water must be added to 20 gallons of a solution that is 30% alcohol to dilute it to a solution that is only 25%? When paying her telephone bill, Lucy paid \$45 instead of \$ 40. What is the percentage error? A) 12. 5% B) 88. 88% C) 11. 11% D) 112. 5% E) 15%

If 6 students

representing  $16\frac{2}{3}\%$  of the class, failed algebra, how many students passed the course? A) 48 B) 36 C) 42 D) 30 E) 32

A candle 25 cm tall burns at the rate of 5 cm per hour. What percent of the original candle is left after it has burned for 2 hours? What percent of the first 50 positive integers contain no odd digits? What is the number of red balloons on a float containing 25 balloons, if 56% of the balloons are not red? The difference between two numbers is 20% of the larger number. If the smaller number is 40. The larger number is: A) 32 B) 48 C) 50 D) 60 E) 48

If the price of sugar is increased by 50%, by how much should a house wife decrease her consumption so that her expenditure on sugar is increased by 20% only A) 10% B) 12% C) 20% D) 25%

Price of admission ticket is reduced by 20%. As a result total collection amount is increased by 60%. Find percent increase in the number of tickets. A) 24% B) 40% C) 80% D) 100% E) 75%

Price of sugar having been fallen by 10%, a consumer can buy 10 kg more of the sugar as compared to what he used to buy originally. A) 80kg B) 90kg C) 50kg D) 85kg E) 75kg

A merchant buys oranges at a certain price per dozen and sells them charging 9 times that price for 100 oranges. Find his profit% A) 10% B) 8% C) 15% D) 25% E) 12%

A fruit seller buys oranges @ 8 for Rs. 10 and sells them @ 10 for Rs. 8. His loss percent is: A) 25% B) 35% C) 40% D) 36% E) 30%

Two hundred multiples of seven are chosen at random, and 300 multiples of eight are chosen at random. Approximately what percentage of the 500 selected numbers is odd? A. 20% B. 25% C. 40% D. 50% E. 80%

A set has exactly five consecutive positive integers starting with 1. What is the percentage decrease in the average of the numbers when the greatest one of the numbers is removed from the set? A) 5 B) 8.5 C) 12.5 D) 15.2 E) 16.6

If  $w$  is 10 percent less than

x, and y is 30 percent less than z, then wy is what percent less than xz? A. 10% B. 20% C. 37% D. 40% E. 100%

## PROFIT/LOSS

If a merchant makes a profit 20% based in the selling price of the article, what percent does the merchant make on the cost? If the tax rate in 'Anytown' is \$3.10 per \$100, what is the annual real estate tax on a house assessed at \$47,200? A store offers a television set marked at \$340 less discounts of 10% and 5%. Another store offers the same set with a single discount of 15%. How much does the buyer save by buying at the better price? A) 2B) 2.70C) 3.50 D) 1.70E) 4.3The net price of a certain article is 306 after successive discount of 15% and 10% off the marked price. What is the marked price? A) 234.09B) 400C) 382.5D) 408 E) None of theseAt a selling price of 273, a person yields 30% on the cost. At what price will he be able to earn a 10% profit on his costs? A person receives a salary of \$100 a week and a commission of 5% on all sales. What must be the amount sales for the week in which the sales person's total weekly income is 360? A) 6,200 B) 5,200 C) 2,600 D) 720 E) 560How much money is saved by buying an article priced at \$80 with a 40% discount, rather than buying an article marked at \$90 with a discount of 35% then 10%? A) 4.65B) 1.5C) 3.15D) 10.5E) 4.25In Central City, a property owner pays school taxes at the rate of 2% of the first \$1500 of assessed valuation, 3% of the next \$2000, 5% of the next \$3000, and 6% of the remainder. How much must Mr. Williams pay in school taxes each year if his home is assessed at \$8000? A) 300B) 230C)600D) 330E) 195During the pre-holiday rush, Martin's Department Store increased its sales staff from 150 to 200 persons. By what percent



must it now decrease its sales staff to return to the usual number of salespersons? A) 25 B) 33 C) 20 D) 40 E) 75

Johnson's Hardware Store is having a moving sale in which everything in the store is being marked down 20% with an additional 5% discount for paying cash. What will be the net cost of a toaster, paid with cash, marked at \$25? Radio House paid \$60 for a tape player. At what price should it be offered for sale if the store offers customers a 10% discount but still wants to make a profit of 20% of the cost? A) 64.8 B) 72 C) 79.2 D) 80 E) 84.2

A shopkeeper allows two successive discounts on an article whose marked price is Rs. 150 and selling price is Rs. 105. What is the first discount, if the second discount is 12.5%? A) 16.67% B) 17.7% C) 20% D) 25% E) 28%

The profit margin on a shirt increases by 10% if it is sold for 650 rather than 600. What is the cost price of the shirt? A bicycle is sold at 10% gain. Had it been sold for Rs. 10 less, the gain would have been 5%. Find the cost price

On selling an article for 900, a person loses 10% of the cost price. What is the cost price? If the cost price of an article is 1.5 times its selling price, the profit or loss percent is: A) 33.33% B) 33.33% C) 50% D) 50% E) 25%

By selling an article for 600 a person gains 20%. If he wants to earn a 25% profit on his costs and gives away a gift worth of \$20 with the article, then in terms of \$ what is his profit amount?

When a plot is sold for Rs. 18,700, the owner loses 15%. At what price must that plot be sold in order to gain 15%? A) Rs. 21,000 B) Rs. 22,500 C) Rs. 25,300 D) Rs. 25,800 E) Rs. 35,000

A trader mixes 26 kg of rice at Rs. 20 per kg with 30 kg of rice of other variety at Rs. 36 per kg and sells the mixture at Rs. 30 per kg. His profit percent is: A. No profit, no loss B. 5% C. 8% D. 10% E. None of these