Select EXACTLY 1 answer choice

Points 1 / 1

How many odd positive divisors does 540 have?

- 6
- 8
- 12
- 15
- 24

Explanation

To find the number of factors of a given number , we need to first prime factorise the number .

For example consider the number 24.

You can list all the factors of the number

Factors of 24 = {1,2,3,4,6,8,12,24} As you can see there are 8 factors for 24 out of which there are 2 odd factors ..Its easier to list and find the factors if its a small number .whatif its a large number ,This is when we use the formula .if n is a number that can be written as the product of prime factors

$n = p_1^{a_1} p_2^{a_2} p_3^{a_3} p_4^{a_4} \ldots \ldots .$

where $p_1, p_2, p_3, \ldots ..$ are all prime numbers , then the number of factors is given by

$(a_1 + 1)(a_2 + 1)(a_3 + 1) \ldots ..$

$24 = 2^3 \times 3$ .So its number of factors = $(3 + 1)(1 + 1) = 4(2) = 8$

Number of odd factors , look at only the odd prime numbers powers ..Here we just have one odd prime factor =3 and its power is 1

so number of odd factors = 1+1 =2 here.

Apply this logic to the question:

Prime factorize $540 = 2^2 \times 3^3 \times 5$

The odd positive divisors will be part of $3^3 \times 5$.

So we have to find the number of divisors of $3^3 \times 5$.

Hence the required number of odd divisors will be $(3 + 1)(1 + 1) = 8$.

So the right answer is option B.

A student took 5 papers in an examination, where the full marks were the same for each paper. His marks in these papers were in the proportion of $6:7:8:9:10$. In all papers together, the candidate obtained 60% of the total marks .Then, the number of papers in which he got more than 50% marks is:

- 1
- 3
- 4
- 5
- 2

Explanation

Lets assume that the total marks in each subject is 100.So for all 5 subjects put together the total marks is 500.

His marks in the subjects were $6x, 7x, 8x, 9x, 10x$

So HIS total marks = $6x + 7x + 8x + 9x + 10x = 40x$

Its given that ,

In all papers together, the candidate obtained 60%

$\implies 40x = 60\% \, of \, 500 = 300$

$\implies x = \frac{300}{40} = \frac{30}{4} = 7.5$

The marks in the papers will be

$6x, 7x, 8x, 9x, 10x = 45, 52.5, 60, 67.5, 75$

Representing these marks as percentages it will be the same as we have assumed the total marks in each subject as 100 and percentage means out of 100 .

So there are 4 subjects where he has got more than 50%

Note that there are two parameters here , one the max marks in each subject and secondly the total marks in all subjects .

ALTERNATE REASONING

Let the total mark in each subject be y .Then the total marks in all subjects =5y

Given that the candidate obtains 60% of the total marks in all papers together

$40x = 60\% \, of \, 5y$.

so you get $y = 13.33x$

Let the marks obtained in five subjects be $6x, 7x, 8x, 9x$ and $10x$.

Total marks obtained $= 40x$
$40x$ is 60% of total marks

$40x = \frac{60}{100} \times$ total marks

Total marks $= \frac{400x}{6}$

Hence, % of each subject $= \frac{6x \times 100}{13.33x} = 45.01\%$

Or, $\frac{7x \times 100}{13.33x} = 52.51$

In same way other percentage are $60.01\%, 67.52\%, 75.01\%$.

Hence, number of subjects in which he gets more than 50% marks $= 4$.

Option C is the right choice.

Which of the following must be greater than x, where $-1 < x < 0$?

Choose ALL that apply.

- [ ] x^3
- [x] $\sqrt[3]{x}$
- [x] $x^2 + x$
- [ ] $x^2 - x^3$
- [x] $1 + 2x$

Explanation

x is a negative fraction. We can substitute values for x and check. For example let $x = -\frac{1}{8}$

$x^3 = -\frac{1}{512}$

$\sqrt[3]{x} = -\frac{1}{2}$

$x^2 = \frac{1}{64}$

$x^2 + x = \frac{1}{64} - \frac{1}{8} = -\frac{7}{64}$

$x^2 - x^3 = \frac{1}{64} + \frac{1}{512} = \frac{9}{512}$

$1 + 2x = 1 - \frac{1}{4} = \frac{3}{4}$

Of these, except option B all other options are right.

Option B = -1/2
x = -1/8
Compare the two fractions -1/2 and -1/8 we know to compare them we could cross multiply or convert them into like fractions with the same denominator
-8/16 and -2/16 shd be compared now because -1/2 = -8/16 and -1/8 = -2/16
so now it reducec to comparing only -8 and -2 which is greater -2 is greater
=> -2/16 is greater
=> -1/8 is greater
=> x is greater

So except option B in all other options x < the given expressions

Select ONE or MORE answer choices

Points 0 / 1

Which of the following statements are NOT TRUE? Select all that apply.

- [x] Sum of any two irrational numbers is irrational
- [x] Sum of a rational number and an irrational number is irrational
- [x] Product of any two rational numbers is rational
- [x] Product of any two irrational numbers is irrational
- [x] Product of a rational and an irrational number is irrational

[Click here for the video explanation for this question]

Option A: This statement is NOT true, so it is a correct answer to the question asked.

Consider the two irrationals $\sqrt{2}$ and $-\sqrt{2}$.The sum is 0 which is rational.Hence option B is not true.

Notice that to disprove a statement, one counter-example is enough! But to prove it is true for infinitely many cases, examples are not good enough!

Option B: This statement is TRUE and is NOT a correct answer to the question. To prove that this statement is always true, considering a few cases is not sufficient. So the following is a proof that is commonly referred to as proof by contradiction:

Let $\frac{a}{b}$ be a rational and x be an irrational.

Let's assume that the sum is a rational number

$$\implies x + \frac{a}{b} = \frac{c}{d}$$
$$\implies x = \frac{c}{d} - \frac{a}{b}$$
$$\implies x = \frac{cb-ad}{bd}$$

Note that, in the right hand side of the equation, both numerator and denominator are integers and denominator is non-zero, i.e. the right hand side is a rational number.

So x must also be rational which is a contradiction to our original statement that x is irrational! So our assumption that sum of rational and irrational is rational must be wrong! So the sum has to be irrational.

Option C: This statement is also TRUE and is NOT a correct answer to the question. Again, to prove that this statement is always true, considering a few cases is not sufficient. Instead let's take a general case:

Let $\frac{a}{b}$ and $\frac{c}{d}$ be two rationals with $b, d \neq 0$

So the product is given by $\frac{a}{b} \times \frac{c}{d} = \frac{ac}{bd}$.Since $bd \neq 0$ and both numerator and denominator are integers the product is a rational.

Option D: This statement is FALSE and is a correct answer to the question. To prove that something is false, a counter-example is good enough. Consider two irrationals $\sqrt{2}$ and $-\sqrt{2}$. The product is -2 which is rational. So product of two irrationals is NOT always irrational

Option E: This statement is FALSE and is a correct answer to the question. To prove that something is false, a counter-example is good enough. But note that coming up with a counter-example may not always be easy! In this case remember that 0 is also a rational number!

Compare the two quantities

Points 0 / 1

Quantity A	Quantity B
$\frac{57}{1+3\times6}$	$4\times3\div2+2$

- Quantity A is greater
- Quantity B is greater
- Both the quantities are equal
- The relationship cannot be determined

Explanation

Click here for the video explanation for this question

Apply PEMDAS to follow the order of the operators

Qty A : $\frac{57}{1+3\times6}=\frac{57}{19}=3$

Qty B: $4\times3\div2+2=12\div2+2=6+2=8$

Hence Quantity B is greater

Ans:Option B

Tests of Divisibility

Divisibility by	Test of divisibility
2	If the units' digit of the number is divisible by 2, then the number is divisible by 2
3	If the sum of the digits of the number is divisible by 3, then the number is divisible by 3
4	If the last two digits, taken as a single number, is divisible by 4, then the number is divisible by 4
5	If the units' digit is a 0 or a 5, then the number is divisible by 5
6	If a number is divisible by 2 and 3, then the number is divisible by 6
7	This one is not straightforward! Separate the units' digit (say a_0) from the number and treat the remaining digits as a single number. From this number subtract $2a_0$ and check whether the resulting number is divisible by 7. If the resulting number is divisible by 7, then the original number is divisible by 7. For example, to check whether 392 is divisible by 7, do 39 – 2(2) = 35. Since 35 is divisible by 7, 392 is also divisible by 7.

Tests of Divisibility (contd.)

Divisibility by	Test of divisibility
8	If the last 3 digits, taken as single number, is divisible by 8 then the number is divisible by 8
9	If the sum of all the digits number is divisible by 9, then the number is divisible by 9
10	If the units' digit of the number is 0, then the number is divisible by 10
11	Take the sum of digits in the odd places and digits in the even places. If the difference between the sum is divisible by 11, then the number is divisible by 11. For example the number 10241 is divisible by 11, because 1 + 2 + 1 =4 and 0 + 4 = 4, and the difference between the sums is 0 which is divisible by 11.
12	If a number is divisible by 3 and 4, then the number is divisible by 12
13	The method is similar to test for divisibility by 7. Separate the units' digit (say a_0) from the number and treat the remaining digits as a single number. From this number subtract $9a_0$ and check whether the resulting number is divisible by 13. If the resulting number is divisible by 13, then the original number is divisible by 13. For example, to check whether 832 is divisible by 13, do 83 – 9(2) = 65. Since 65 is divisible by 13, 832 is also divisible by 13.

HOW TO FIND THE LCM and HCF

The following example demonstrates the method **To find the HCF**
For example if given numbers are 4, 6, 8, 12.
List each of their prime factors in the exponential form.
$Factors\ of\ 4\ -\ 2$
$Factors\ of\ 6\ -\ 2 \times 3$
$Factors\ of\ 8\ -\ 2^3$
$Factors\ of\ 12\ -\ 2^2 \times 3$
List the common factors from these factors .Here its 2.
The highest common factor out of these is 2.
So $HCF(4,6,8,12)\ =\ 2$

To find the LCM :
Use the relation be LCM and HCF or use the ladder method

$$\boldsymbol{LCM(a,b) \times HCF(a,b) = Product\ ab}$$

Number of prime factors:
https://www.quora.com/How-can-I-find-the-total-number-of-prime-factors-in-the-expression-4-11-x-7-5-x-11

Absolute Values Inequalities

- If $|x| \le a$, then $-a \le x \le a$
- If $|x| \ge a$, then $x \ge a$ and $x \le -a$

Example 1: $|x+1| \le 5 \Rightarrow -5 \le x+1 \le 5 \Rightarrow -6 \le x \le 4$

Example 2: $|2x-3| \ge 10 \Rightarrow 2x-3 \ge 10\ and\ 2x-3 \le -10$

$$\Rightarrow 2x \ge 13\ and\ 2x \le -7, \Rightarrow x \ge 6.5\ and\ x \le -3.5$$

Example 3:

$$|5-|x-1|| \le 5 \Rightarrow -5 \le 5-|x-1| \le 5 \Rightarrow -10 \le -|x-1| \le 0$$

=> $0 \le |x-1| \le 10$ (*Note that the inequlaity reverses when the sign is changed*)

$$\Rightarrow 0 \le |x-1|\ and\ |x-1| \le 10$$

Lets split these as 2 cases:

Case1: $0 \le |x-1|$. *This is always true for any real number x.*

Case 2: $|x-1| \le 10 \Rightarrow -10 \le x-1 \le 10 \Rightarrow -9 \le x \le 11$

So x can take any value from -9 to 11 for the inequality to hold good

Points 0 / 01

X is 80% more efficient than Y who is 60% more efficient than Z. X takes 40 days less than Y to complete the work. X starts the work and works for 25 days and then Y takes over. Y then works for the next thirty days and then stops. In how much more days can Z complete the remaining work ?

Your Answer	Correct Answer
50	24

Explanation

Lets use the "Divide and Conquer" Strategy for this problem .

But we should also be aware of two rules here :

If x men can do 1 work in 10 days , then y men can do the same work in lesser time if $y > x$

More men , less time , for the same amount of work . They are inversely proportional to each other .

Also Rate = $\frac{work\ done}{time\ taken}$

We assume that 1 whole unit of work is done , and the difference in completion of the work is 40 days

X is 80% more efficient than Y

So Efficiency of X = Efficiency of Y + 80% of efficiency of Y

=> Efficiency of X = $\frac{180Y}{100}$ Efficiency of Y

=>Efficiency of X = $\frac{9Y}{5}$ Efficiency of Y

=>Efficiency of X:efficiency of Y = 9:5

Let the efficiency of X = $9x$
Let the efficiency of Y = $5x$

=>The rate of work done by X is $9x = \frac{1}{t_1}$(where t_1 is the time taken for x to complete the work)
Rate = $\frac{Work\ Done}{Time\ Taken}$
$\implies t_1 = \frac{1}{9x}$
Similarly if t_2 is the time taken for Y to complete the work, then ,
$5x = \frac{1}{t_2}$

X takes 40 days less than Y to complete the work
$\implies t_1 = t_2 - 40$
$\implies t_2 - t_1 = 40$
$\implies \frac{1}{5x} - \frac{1}{9x} = 40$
$\implies \frac{4}{45x} = 40$
$\implies x = \frac{1}{450}$

The rate of X is $9x = \frac{9}{450} = \frac{1}{50}$
=> In 1 day X can complete $\frac{1}{50}$ of the work .
Its given that X works for 25 days.
=> In 25 days X can complete $\frac{25}{50} = \frac{1}{2}$ of the work.

Home | Entrayn × Assessment Result | Entrayn × moby - Google Search × My Drive - Google Drive × GALVANIZE QUANT IMPORTAN ×
Not Secure | entrayn.com/galvanize/node/2378/glu/36808/assessment/result
Galvanize Test Prep FAQ Abhilash

Rate of Y = $5x = 5 \times \frac{1}{450} = \frac{1}{90}$

Y works for 30 days

In 1 day Y can complete $\frac{1}{90}$ of the work

So in 30 days Y can complete $\frac{30}{90} = \frac{1}{3}$ of the work

So together X and Y would have completed $\frac{1}{2} + \frac{1}{3} = \frac{5}{6}$ of the work

This means that the remaining $1 - \frac{5}{6} = \frac{1}{6}$ of the work is allotted for Z to complete

But the rate of work of Z is $\frac{5Y}{8}$

So rate of Z is $\frac{5\times\frac{1}{90}}{8} = \frac{1}{144}$

=> Z takes 144 days to complete 1 unit of work

So Z can complete $\frac{1}{6}$ work in $144 \times \frac{1}{6} = 24\,days$

Discussion

Discuss this question with my classmates and coach only with my coach

Select EXACTLY 1 answer choice

Points 1 / 1

The difference of a four digit number and any number formed by permuting its digits would always be divisible by

- 18
- 9 (selected)
- 10
- 11
- 15

Explanation

The four digit number is of the form: $1000a + 100b + 10c + d$.

Home | Entrayn | Assessment Result | Entrayn | moby - Google Search | My Drive - Google Drive | GALVANIZE QUANT IMPORTAN
Not Secure | entrayn.com/galvanize/node/2378/glu/36808/assessment/result
Galvanize Test Prep FAQ Abhilash

Explanation

The four digit number is of the form: $1000a + 100b + 10c + d$.

This is because , lets take an example of a two digit number say 23

The expanded form of 23 = $2 \times 10 + 3 \times 1$

If x is the units digit and y is the tens digit , then the two digit number would be

$10y + x$

After permuting the digits, let the number formed is $bcda$

It can be written in the form: $1000b + 100c + 10d + a$.

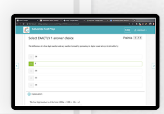
Now from the question: The difference of a four digit number and any number formed by permuting its digits be 'x'.

Therefore, $x = 1000a + 100b + 10c + d - (1000b + 100c + 10d + a)$

$$\Rightarrow x = 1000a - a + 100b - 1000b + 10c - 100c + d - 10d$$
$$\Rightarrow x = 999a - 900b - 90c - 9d$$
$$\Rightarrow x = 9(111a - 100b - 10c - d)$$

Therefore, The difference of a four digit number and any number formed by permuting its digits is divisible by 9.

Ans: 9



Discussion

Select EXACTLY 1 answer choice

Points 0 / 1

Which of the following numbers always divide $n^7 - n$?

- 13
- 9
- 7
- 5
- 10

Explanation

The idea is to factor the polynomial $n^7 - n$

. $n^7 - n = (n(n^6 - 1)) = (n - 1)n(n + 1)(n^2 - n + 1)(n^2 + n + 1)$

Home | Entrayn × Assessment Result | Entrayn × moby - Google Search × My Drive - Google Drive × GALVANIZE QUANT IMPORTAN ×
Not Secure | entrayn.com/galvanize/node/2378/glu/36808/assessment/result
Galvanize Test Prep FAQ Abhilash

We could solve this by inducting on n

Let $n = 1$

$\implies n^7 - n = 0$

0 is divisible by any number

Let $n = 2$

$2^7 - 2 = 2(3)(3)(7)$ is divisible by 7 (out of the options given in question)

Let $n = 3$

$3^7 - 3 = 2(3)(4)(7)(13)$ is divisible by 7 and 13

The number 13 can be ruled out because when $n = 2$, its divisible by 2 ,3 ,6 and 7 only .

This rules out all other possibilities also ,.

we could go ahead and verify if its divisible by 7 for all the numbers ..

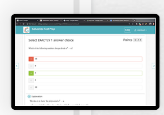
Let $n = 4$

$4^7 - 4 = 3(4)(5)(13)(21)$ hence this is also divisible by both 13 and 7

Let $n = 5$

$5^7 - 5 = (4)(5)(6)(21)(31)$ is divisinle by 7

Let $n = 6$



$6^7 - 6 = 5(6)(7)(31)(43)$ is divisible by 7

Note that after this 7 will be a factor of all the numbers of the form $n^7 - n$

Statistics

Time Taken by you to answer this question is : 3m 53s

Average Time Taken by other learners : 2m 33s

Percentage of learners who got it correct : 6%

Points 0 / 01

Find the greatest number which divides 83, 125 and 209 leaving the same remainder in each case

Your Answer	Correct Answer
14	42

Home | Entrayn × Assessment Result | Entrayn × moby - Google Search × My Drive - Google Drive × GALVANIZE QUANT IMPORTAN ×
Not Secure | entrayn.com/galvanize/node/2378/glu/36808/assessment/result
Galvanize Test Prep FAQ Abhilash

Your Answer	Correct Answer
14	42

Explanation

Let the largest number is x which yeilds same remainders when it divides 83,125,209.
83 = ax+r.....(1)
125=bx+r.. . (2)
209=cx+r......(3)
(2)-(1),(3)-(2) and (3)-(1)
=>42=px,84=qx and 126=rx
Where p=b-a,q=c-b and r=c-a
As you can see, x is the HCF of 42,84 and 126
Now x=H.C.F of 42,84,126
=42
Hence 42 is the required number.
Check
83= 1*42+41
125=2*42+41
209=4*42+41

Ans: 42

Enter the correct answer

Points 0 / 1

P is a three digit number. Upon reversing P, another three digit number Q is obtained. $Q > P$ and $Q - P$ is divisible by 5.

Quantity A	Quantity B
P	500

- Quantity A is greater.
- Quantity B is greater.
- The two quantities are equal.
- The relationship cannot be determined from the information given.

Home | Entrayn | Assessment Result | Entrayn | moby - Google Search | My Drive - Google Drive | GALVANIZE QUANT IMPORT | Passport Seva Kendra - Goo
Not Secure | entrayn.com/galvanize/node/2378/glu/36808/assessment/result
Galvanize Test Prep FAQ Abhilash

From the question: P is a three digit number.

Therefore, $P = 100a + 10b + c$

Upon reversing P, another three digit number Q.

So, $Q = 100c + 10b + a$

So, $Q - P = 100c + 10b + a - 100a - 10b - c$
$\Rightarrow Q - P = 99c - 99a$

Also, $Q - P$ is divisible by 5.

So, $99c - 99a$ should be divisible by 5.

Therefore, $c - a$ should be divisible by 5.

So, $c - a = 5$
$\Rightarrow c = a + 5$

The number P= abc

Since, $c - a = 5$,

Hence (a, c) can be $(1,6), (2,7), (3,8), (4,9)$.

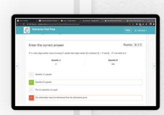
So, P can be $1b6, 2b7, 3b8, 4b9$

Therefore, the number P $= 4b9$ so, number is definitely less than 500.

And, Quantity B= 500.

Therefore, Quantity B is greater.

Ans: Quantity B is greater.



Select EXACTLY 1 answer choice

Points 1 / 1

In a jewellery shop, the shopkeeper every once in awhile raises his prices by certain percentage and a while later reduces the price by same percentage. After one such updown cycle of increasing and then decreasing the price by $x\%$, the price of the product decreases by $\$100$. In the next cycle, he increases and decreases his price by $\frac{x}{2}\%$ and then sells the jewel for $\$2376$. What is the initial price of the product?

- $\$2500$
- $\$2475$
- $\$2400$
- $\$2450$
- $\$2575$

Explanation

Galvanize Test Prep FAQ Abhilash

The MCQs in GRE are best solved by plugging in values from the answer options given .

Look at option A = \$2500

Suppose the initial price of the product is \$2500 .

The price increases by $x\%$ and then decreases by $x\%$ and hence the overall decrease is by \$100

Price increases by $x\%$

$\implies$

new price = $2500 + \frac{x}{100}(2500) = 2500 + 25x$

And then decreases by $x\%$

New price = $2500 + 25x - \frac{x}{100}(2500 + 25x) = 2500 + 25x - 25x - \frac{x^2}{4}$

$=2500 - \frac{x^2}{4}$

The price is 100\$ less than the initial price

$\implies 2500 - \frac{x^2}{4} = 2400$

$\implies x^2 = 400$

$x = 20$

Consider the second statement ,

In the next cycle he increases and decreases the product by $\frac{x}{2}\%$

$\implies 2400 + \frac{x}{2}(2400) = 2400 + 12x$

Then its decreased by $\frac{x}{2}\%$

new price = $2500 + \frac{x}{100}(2500) = 2500 + 25x$

And then decreases by $x\%$

New price = $2500 + 25x - \frac{x}{100}(2500 + 25x) = 2500 + 25x - 25x - \frac{x^2}{4}$

$= 2500 - \frac{x^2}{4}$

The price is 100$ less than the initial price

$\implies 2500 - \frac{x^2}{4} = 2400$

$\implies x^2 = 400$

$x = 20$

Consider the second statement ,

In the next cycle he increases and decreases the product by $\frac{x}{2}\%$

$\implies 2400 + \frac{x}{2}(2400) = 2400 + 12x$

Then its decreased by $\frac{x}{2}\%$

$\implies 2400 + 12x - \frac{x}{200}(2400 + 12x) = 2400 + 12x - 12x - \frac{3x^2}{50} = 2400 - \frac{3x^2}{50} = 2376$

$\implies x^2 = 400$

$\implies x = 20$

So for the initial price 2500$ we get all the conditions satisfied in the question .Since only one answer is correct in a MCQ , we dont have t check further for the other options

Equation of straight lines

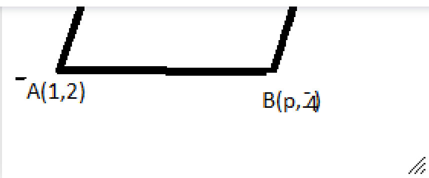
Sl.No	Straight line	Equation
1.	x-axis	$y = 0$
2.	y-axis	$x = 0$
3.	Parallel to x-axis	$y = k$
4.	Parallel to y-axis	$x = k$
5.	Parallel to $ax+by+c=0$	$ax+by+k = 0$
6.	Perpendicular to $ax+by+c=0$	$bx-ay+k = 0$
	Given	**Equation**
1.	Passing through the origin	$y = mx$
2.	Slope m, y-intercept c	$y = mx + c$
3.	Slope m, a point (x_1, y_1)	$y - y_1 = m(x - x_1)$
4.	Passing through two points (x_1, y_1), (x_2, y_2)	$\frac{y - y_1}{y_2 - y_1} = \frac{x - x_1}{x_2 - x_1}$
5.	x-intercept a , y-intercept b	$\frac{x}{a} + \frac{y}{b} = 1$

Compare the two quantities

Vertices of the parallelogram are $(1, 2)$, $(p, 4)$,$(-3, 5)$ and $(-1, q)$ in the same order.

Quantity A	**Quantity B**
p	q

- Quantity A is greater.
- Quantity B is greater.
- The two quantities are equal.
- The relationship cannot be determined from the information given.



Given that vertices of the parallelogram are $(1, 2)$, $(p, 4)$, $(-3, 5)$ and $(-1, q)$ in the same order.

The parallelogram is represented in below figure

The midpoints of both diagonals AC and BD are equal.

The mid point (x, y) of two points (x_1, y_1), (x_2, y_2) is $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

From the above formula,

$Midpoint\ of\ AC = \left(\frac{1-3}{2}, \frac{2+5}{2}\right)$

$Midpoint\ of\ AC = \left(-1, \frac{7}{2}\right)$

$Midpoint\ of\ BD = \left(\frac{p-1}{2}, \frac{4+q}{2}\right)$

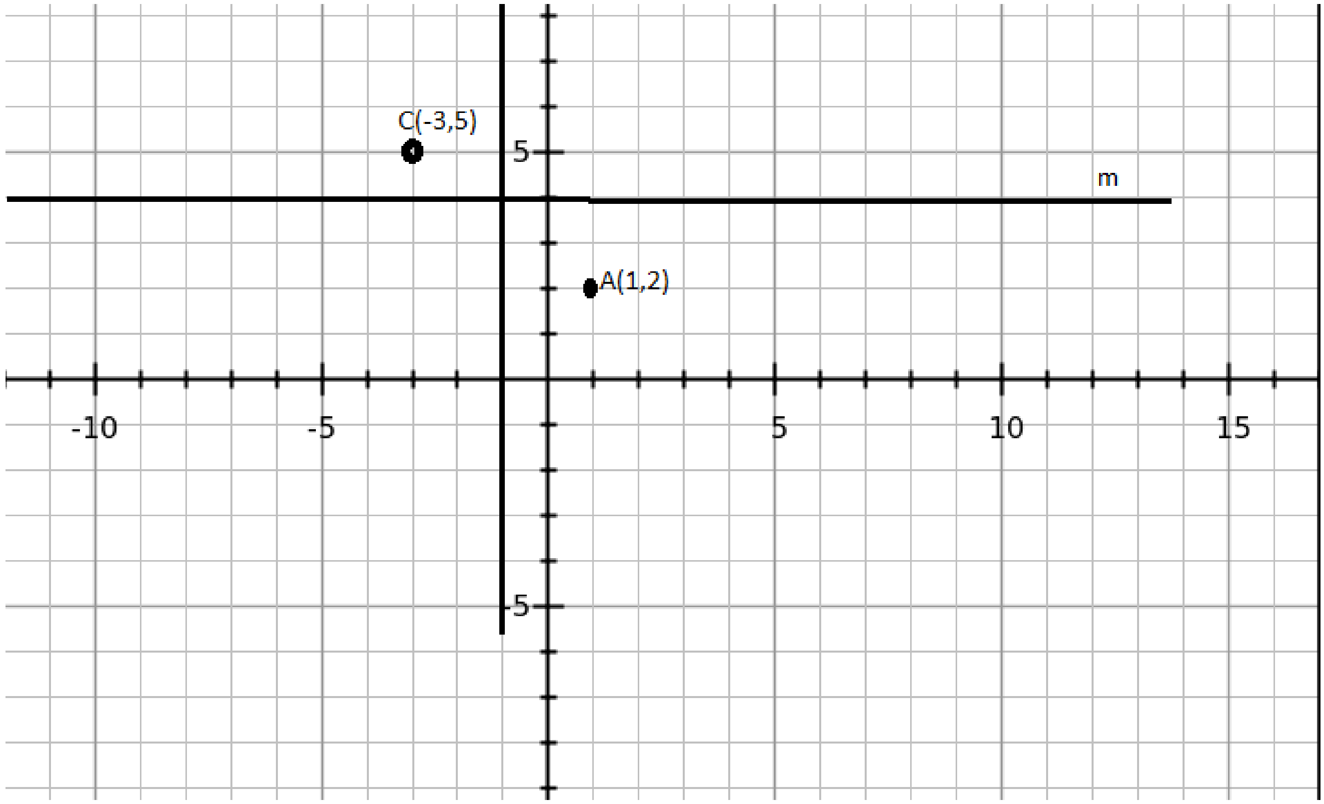
$\left(-1, \frac{7}{2}\right) = \left(\frac{p-1}{2}, \frac{4+q}{2}\right)$

$\frac{p-1}{2} = -1$ and $\frac{q+4}{2} = \frac{7}{2}$

$p = -1$ and $q = 3$

$\therefore p < q$

Answer: $Choice\ B$



But the question says ABCD are in order , B should be between A and C .

Hence its evident that

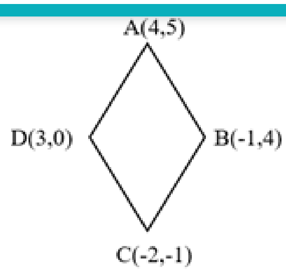
q which is the $y - coordinate$ of D is greater than p which is the $x - coordinate$ of B

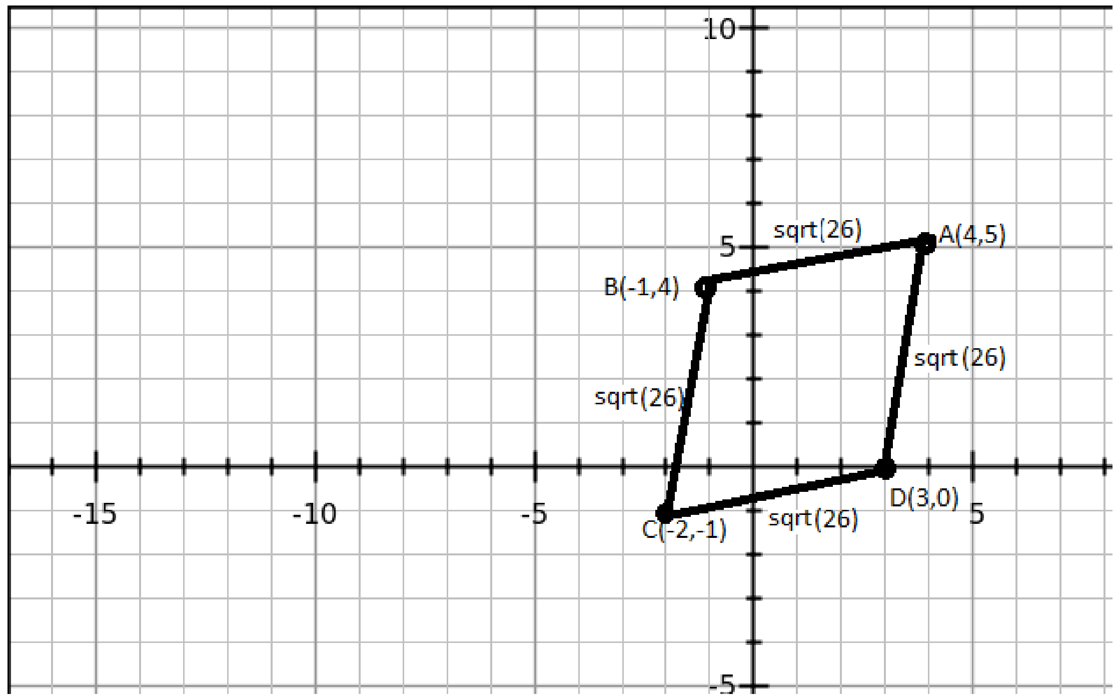
Compare the two quantities

Points 0 / 1

Quantity A	Quantity B
Area of the rhombus formed by the points in the order $(4, 5), (-1, 4), (-2, -1)$ and $(3, 0)$	24

- Quantity A is greater.
- Quantity B is greater.
- The two quantities are equal.
- The relationship cannot be determined from the information given.





$A = (4,5), B = (-1,4), C = (-2,-1)$ and $D = (3,0)$

The area of the rhombus of diagonals lengths d_1 and d_2 is $\frac{1}{2} \times d_1 \times d_2$.

In the figure, the diagonals are AC and BD.

$AC = d_1, BD = d_2$

Area of the given rhombus = $\frac{1}{2} \times AC \times BD$

The distance between the two points (x_1, y_1) and (x_2, y_2) is $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$.

From the given data,

AC = $\sqrt{(4-(-2))^2 + (5-(-1))^2}$

AC = $\sqrt{6^2 + 6^2} = \sqrt{72}$

$\therefore AC = 6\sqrt{2}$

BD = $\sqrt{(-1-3))^2 + (4-0)^2}$

BD = $\sqrt{4^2 + 4^2} = \sqrt{32}$

$\therefore BD = 4\sqrt{2}$

$\therefore$ Area of the given rhombus = $\frac{1}{2} \times 6\sqrt{2} \times 4\sqrt{2} = 24$

Answer: *Choice C*

Find the x coordinate of the point that divides the straight line joining the points $(3, 4)$ and $(-3, -2)$ in the ratio $1:2$ internally.

Your Answer	Correct Answer
1	1

Explanation

Given that a point that divides the straight line joining the points $(3, 4)$ and $(-3, -2$ in the ratio $1:2$ internally.

The point (x, y) which divides the line segment joining the points (x_1, y_1) and $x_2, y_2)$ in the ratio $m_1 : m_2$ is $(x = \frac{m_1x_2+m_2x_1}{m_1+m_2}, y = \frac{m_1y_2+m_2y_1}{m_1+m_2})$

From the given data,

$m_1 = 1, m_2 = 2, x_1 = 3, y_1 = 4, x_2 = -3$ and $y_2 = -2$

From the above formula,

$x = \frac{1\times(-3)+2\times3}{1+2}, y = \frac{1\times(-2)+2\times4}{1+2}$

$x = \frac{-3+6}{3}, y = \frac{-2+8}{3}$

$x = \frac{3}{3} = 1, y = \frac{6}{3} = 2$

$\therefore$ The point that divides the line segment joining the points $(3, 4)$ and $(-3, -2)$ internally in the ratio $1:2$ is $(1, 2)$.So the x-coordinate is 1

Find the ratio in which the point $(-1, 5)$ divides the line segment joining the points $(-3, 9)$ and $(6, -9)$ internally.

- 2 :7
- 7:2
- 1:1
- 3:4
- −2:7

Explanation

Given that point $(-1, 5)$ divides the line segment joining the points $(-3, 9$ and $(6, -9)$ internally.

The point (x, y) which divides the line segment joining the points (x_1, y_1) and $x_2, y_2)$ in the ratio $m_1 : m_2$ is $(x = \frac{m_1x_2+m_2x_1}{m_1+m_2}, y = \frac{m_1y_2+m_2y_1}{m_1+m_2})$

From the given data,

$x = -1, y = 5, x_1 = -3, y_1 = 9, x_2 = 6$ and $y_2 = -9$

From the above formula,

$-1 = \frac{m_1 \times 6 + m_2 \times (-3)}{m_1+m_2}$

$-1 = \frac{6m_1 - 3m_2}{m_1+m_2}$

$-m_1 - m_2 = 6m_1 - 3m_2$

$3m_2 - m_2 = 6m_1 + m_1$

$2m_2 = 7m_1$

$\frac{m_1}{m_2} = \frac{2}{7}$

$\therefore$ The ratio in which the point $(-1, 5)$ divides the line segment joining the points $(-3, 9$ and $(6, -9)$ internally is $m_1 : m_2 = 2 : 7$.

1. AB = 3, BC = 4 and AC = 5.
2. AB = 4, BC = 7 and AC = 3.
3. AB = 5, BC = 4 and AC = 6.

Check out these problems too.

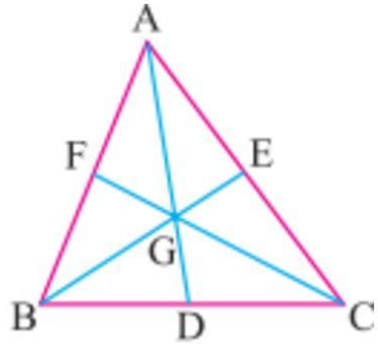
4. In a triangle ABC, angle A = 75° and angle B = 65°. Find angle C.

5. In a triangle ABC, angle A = 70° and AB = AC. Find angles B and C.

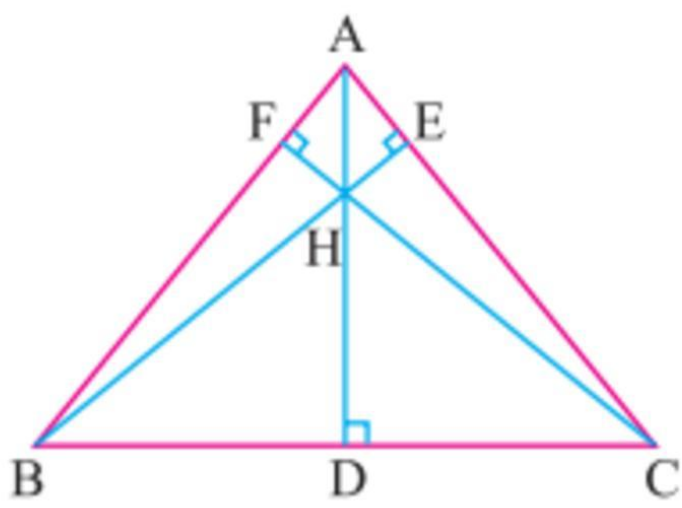
6. The measures of the angles of a triangle are in the ratio 5:4:3. Find the angles of the triangle.

Medians, Altitudes, Angle Bisectors and Perpendicular Bisectors of a Triangle

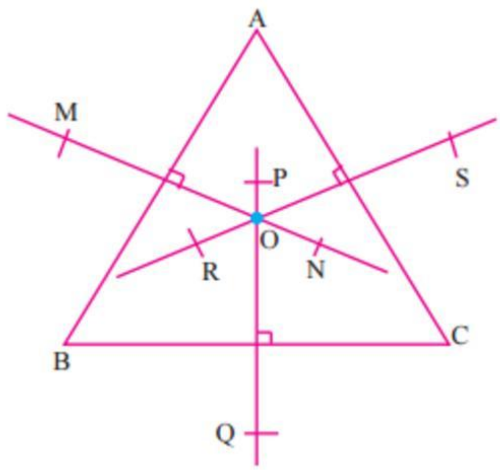
- A median is a line segment joining a vertex and midpoint of the opposite side. There are three medians in any triangle and they are concurrent.



- An altitude of a triangle is a perpendicular line segment drawn from the vertex to the opposite side. There are three altitudes of a triangle and they are concurrent.



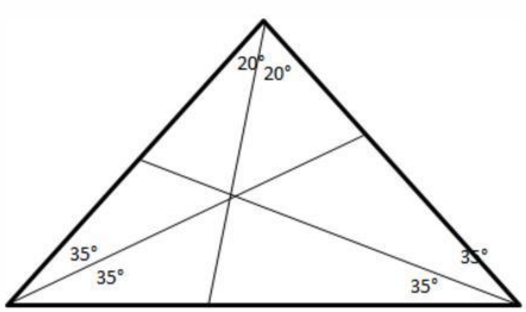
- A perpendicular bisector of a triangle is the line which bisects a side of a triangle and in addition is perpendicular to it. There are three perpendicular bisectors of a triangle and they are concurrent.



Centroid, Orthocentre, Incentre and Circumcentre of a Triangle

- Centroid : The point of intersection of the medians of a triangle is called the centroid.
- Orthocentre : The point of intersection of the altitudes of a triangle is called the orthocentre.
- Incentre : The point of intersection of the angle bisectors of a triangle is called the incentre.
- Circumcentre : The point of intersection of the perpendicular bisectors of the triangle is called the circumcentre.

An angle bisector of a triangle is a line segment drawn from the vertex to the opposite side such that it bisects the angle represented by the vertex or the vertical angle. There are three angle bisectors of a triangle and they are concurrent i.e., they intersect at a point called the Incenter.



Statistics

Time Taken by you to answer this question is : 2m 49s

Average Time Taken by other learners : 4m 2s

Percentage of learners who got it correct : 40%

Enter the correct answer

Points 1 / 1

It takes 8 hours for tap A to fill a swimming pool to its full capacity and 6 hours for tap B to do the same. If these two taps and another tap, tap C, are opened at the same time, then it will take only 2 hours to fill the pool. How long it take if tap C alone is used to fill the pool?

Your Answer	Correct Answer
4.8	4.8

Click here to watch the video explanation for this question

Tap A takes 8 hours to fill a tank

In 1 hour , tap A can fill $\frac{1}{8}^{th}$ of the tank

Tap B takes 6 hours fill the tank

In 1 hour , tap B can fill $\frac{1}{6}^{th}$ of the tank

Let tap C take x hours to fill a tank

So in 1 hour , tap C can fill $\frac{1}{x}^{th}$ of the tank

Together the three taps can fill in 2 hours

In 1 hour , together they can fill $\frac{1}{2}$ of the tank

$$\implies \frac{1}{8} + \frac{1}{6} + \frac{1}{x} = \frac{1}{2}$$

$$\implies \frac{1}{x} = \frac{5}{24} \text{ hours}$$

$$\implies x = 4.8$$

Enter the correct answer

In a race, the hare, which runs at a speed of 20 mph, is lagging behind the tortoise by 6 miles. If the tortoise runs at speed of 2 mph, then how long, in minutes, will it take for the hare to catch up with the tortoise?Round off to the nearest integer

Your Answer	Correct Answer
20	20

Prev

Explanation

Click here to watch the video explanation for this question

Next

The speed of the hare = 20mph .

Let the time taken by hare to reach the end point be t hours .Hence distance travelled by hare = $speed \times time = 20t$

Distance covered by tortoise = $2t$

Distance traveled by the hare = Initial distance between hare and tortoise + distance traveled further by the tortoise =

6 miles $+2t$miles

i.e. total distance traveled by the hare = $6 + 2t$. Hence we have,

$$20t = 6 + 2t$$
$$\implies 18t = 6$$
$$\implies t = \frac{1}{3}\, hours = 20\, minutes$$

Absolute Values Inequalities

- If $|x| \leq a$, then $-a \leq x \leq a$
- If $|x| \geq a$, then $x \geq a$ and $x \leq -a$

Example 1: $|x+1| \leq 5 \Rightarrow -5 \leq x+1 \leq 5 \Rightarrow -6 \leq x \leq 4$

Example 2: $|2x-3| \geq 10 \Rightarrow 2x-3 \geq 10\ and\ 2x-3 \leq -10$

$$\Rightarrow 2x \geq 13\ and\ 2x \leq -7, \Rightarrow x \geq 6.5\ and\ x \leq -3.5$$

Example 3:

$$|5-|x-1|| \leq 5 \Rightarrow -5 \leq 5-|x-1| \leq 5 \Rightarrow -10 \leq -|x-1| \leq 0$$

=>$0 \leq |x-1| \leq 10 (Note\ that\ the\ inequlaity\ reverses\ when\ the\ sign\ is\ changed)$

$$\Rightarrow 0 \leq |x-1| and\ |x-1| \leq 10$$

Lets split these as 2 cases:

Case1: $0 \leq |x-1|. This\ is\ always\ true\ for\ any\ real\ number\ x.$

Case 2: $|x-1| \leq 10 \Rightarrow -10 \leq x-1 \leq 10 \Rightarrow -9 \leq x \leq 11$

So x can take any value from -9 to 11 for the inequality to hold good

3.2.2 Angles Subtended by Arcs

Theorem 3

The angle subtended by an arc of a circle at the centre is double the angle subtended by it at any point on the remaining part of the circle.

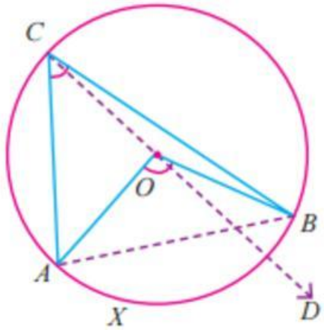


Fig. 3.10

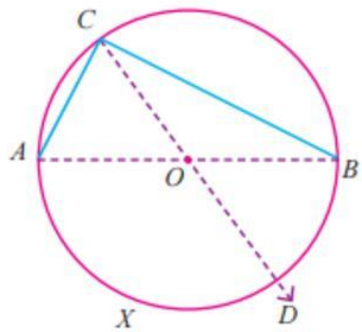


Fig. 3.11

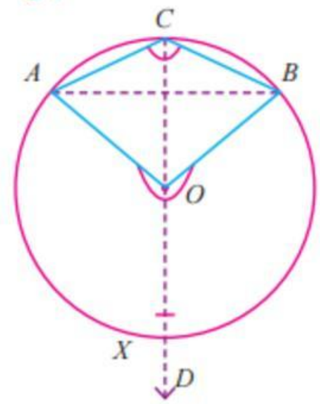


Fig. 3.12

Note

(i) An angle inscribed in a semicircle is a right angle.

(ii) Angles in the same segment of a circle are equal.

3.2.3 Cyclic Quadrilaterals

Theorem 4

Opposite angles of a cyclic quadrilateral are supplementary (or)
The sum of opposite angles of a cyclic quadrilateral is 180°

Converse of Theorem 4 : If a pair of opposite angles of a quadrilateral is supplementary, then the quadrilateral is cyclic.

Theorem 5 (Exterior - angle property of a cyclic quadrilateral)

If one side of a cyclic quadrilateral is produced then the exterior angle is equal to the interior opposite angle.

Given : A cyclic quadrilateral $ABCD$, whose side AB is produced to E.

To prove : $\angle CBE = \angle ADC$

Proof :

(i) $\angle ABC + \angle CBE = 180^\circ$ (linear pair)

(ii) $\angle ABC + \angle ADC = 180^\circ$ (Opposite angles of a cyclic quadrilateral)

from (i)and (ii)

(iii) $\angle ABC + \angle CBE = \angle ABC + \angle ADC$

(iv) $\therefore \angle CBE = \angle ADC$ ■

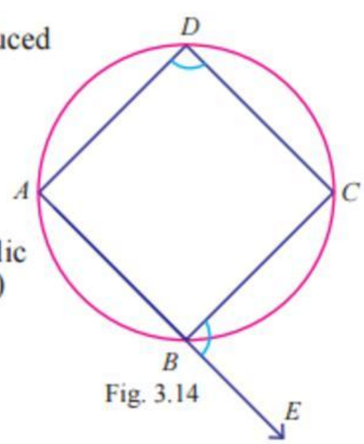


Fig. 3.14

n is a positive integer that is greater than 3 and has d positive divisors.

Quantity A	Quantity B
n	2^{d-1}

- Quantity A is greater.
- Quantity B is greater.
- The two quantities are equal.
- The relationship cannot be determined from the information given.

Explanation

If n = 4 then the divisors of n are 1, 2, 4. Here d = 3 and $2^{d-1} = 4$. Here the two quantities are equal. Eliminate choices (A) and (B).
If n = 5 then the divisors of n are 1, 5. Here d = 2 and $2^{d-1} = 2$. Here Quantity A is greater. So eliminate choice (C) also. Choice (D) is the correct option.

Quantity A	Quantity B
Number of integers between 1 and 2000 (both inclusive) that are perfect squares as well as perfect cubes.	Number of integers between 1 and 2000 (both inclusive) that are perfect fourth of powers.

- Quantity A is greater.
- Quantity B is greater.
- The two quantities are equal.
- The relationship cannot be determined from the information given.

Explanation

Given that number lies between 1 and 2000, hence maximum cube can be $12 \times 12 \times 12 = 1728$. The cubes of numbers before 12 are : $1331, 1000, 729, 512, 343, 216, 125, 64, 27, 8, 1$ out of which only $729, 64 \quad and \quad 1$ are perfect squares. Therefore numbers which are perfect squares as well as perfect between 1 and 2000 are 3. Now maximum number whose perfect fourth power is within 1 to 2000 is 6, as $6^4 = 1296$ and $7^4 = 2401$. Hence 6 numbers. Therefore quantity B is larger.

If $y^3 - y = 210$, where y is a positive integer, then what is the value $\frac{3y}{y+3}$?

- 1
- 2
- 3
- 4
- None of these

Explanation

Given that $y^3 - y = 210$. On further solving : $y \times (y^2 - 1) = 210$. We are aware of the identity that:

$$a^2 - b^2 = (a-b)(a+b)$$

Hence replacing same for $y^2 - 1$, we get:

$$y \times (y-1) \times (y+1) = 210$$

Therefore, product of three consecutive numbers is 210. On trial and error we find numbers to be $5, 6$ and 7. Hence, smallest $y - 1 = 5$; $y = 6$ and $y + 1 = 7$. Therefore $\frac{3y}{y+3} = \frac{3\times6}{6+3} = \frac{18}{9} = 2 \quad Ans.$

In a village of 100 houses, 80 have DVD players, 75 have mobile phones and 55 have an mp3 player. If x and y are respectively the highest and lowest number of households that have all the three items, then $(x - y)$ is

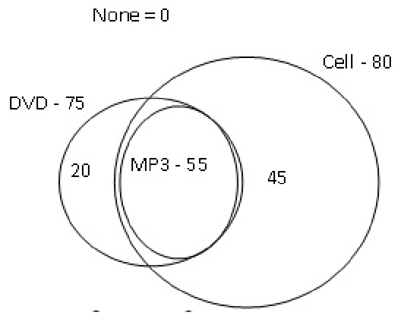
- 65
- 55
- 45
- 35
- 25

Explanation

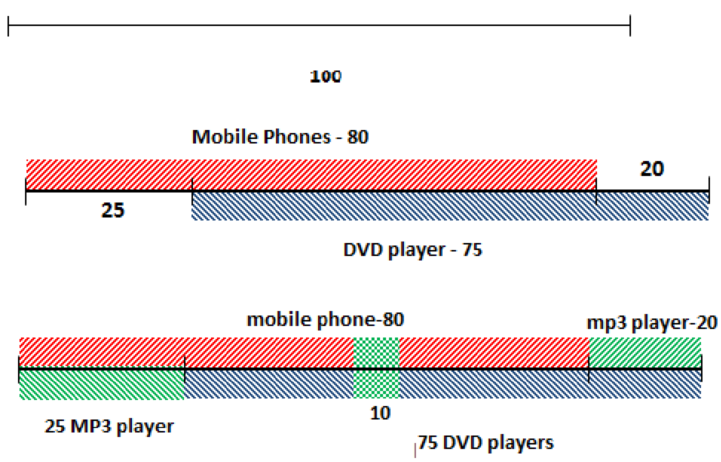
Lets represent

DVD , mobile phones and MP3 by three different circles.

For maximum number of households , we are looking at the maximum possible intersection ..Of all the three, this maximum CAN occur when mp3 circle is completely inside both DVD and mobile phone ..ie it completely lies in the intersection as follows :



So maximum of 55 households can have all the three.



there are 100 houses with atleast one of the three.

Then we place 80 cell phones and 75 DVD players so that there are as little units that have both as possible:

Then we add the MP3 players ..ie spread them in such a way that we spread these units into the houses that have only one unit ...as much as possible ..so that the houses that already have two deviced will get as little MP3 players as possible.

So the middle green portion gives $y = 10$ and hence $x - y = 55 - 10 = 45$

Gary sells two used-cars for an average price of \$4000. This increases the average selling price of all used-cars sold by him in the past 6 months by \$500. If the new average selling price is \$2000, then how many used-cars has Gary sold in the past 6 months, excluding the two recently sold?

Your Answer	Correct Answer
20	8

Explanation

Let the selling price of the two cars be SP_1 and SP_2

Lets split this word problem into parts and try to convert each statement into a numerical expression.

Gary sells two used-cars for an average price of \$4000

=> $SP_1 + SP_2 = 8000$

Let the total number of used cars excluding car 1 and 2 be n

So the total selling price of all used cars will be

$SP_1 + SP_2 + x_1 + x_2 + \ldots + x_n$

This increases the average selling price of all used-cars sold by him in the past 6 months by \$500

=>Final average selling price = Initial average selling price + 500

=> $\frac{SP_1+SP_2+x_1+....+x_n}{n+2} = \frac{x_1+x_2+...+x_n}{n} + 500$--------------------(1)

If the new average selling price is \$2000

=> $2000 = \frac{x_1+x_2+...+x_n}{n} + 500$

=> $\frac{x_1+x_2+...+x_n}{n} = 1500$

So from (1) we have ,

$$\frac{8000+1500n}{n+2} = 2000$$

$$\implies 8000 + 1500n = 2000n + 4000$$

$$\implies 500n = 4000$$

$$\implies n = 8$$

Set A contains n distinct positive integers, all greater than 1. The average (arithmetic mean) of set A is x, which is not a member of set A. Set B consists of all the elements in Set A and the number x.

Quantity A	**Quantity B**
Standard deviation of set A	Standard deviation of set B

- Quantity A is greater.
- Quantity B is greater.
- The two quantities are equal.
- The relationship cannot be determined from the information given.

Explanation

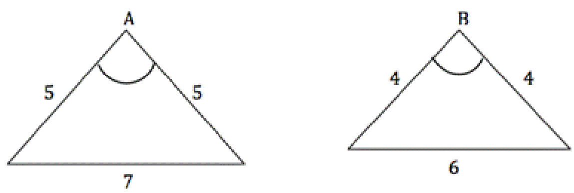
Let the arithmetic mean of given values in set A be μ. Hence standard deviation:

$$\sigma_A = \sqrt{\frac{\Sigma(x-\mu)^2}{n}}$$

Now set B contains one extra value, μ, hence standard deviation:

$$\sigma_B = \sqrt{\frac{\Sigma(x-\mu)^2}{n+1}} = \sqrt{\frac{\Sigma(x-\mu)^2 + (\mu-\mu)^2}{n+1}}$$

Hence clearly, the only difference in formulas got for standard deviation of sets A and B is in the denominator. We can see that $\sigma_A > \sigma_B \quad Ans.$



Quantity A	**Quantity B**
Angle A	Angle B

The two triangles are not similar as you can see since the sides are not proportional to each other .So the vertical angles A and B will not be equal to each other .This eliminates option C.

Let's compare the first triangle (5 - 5 - 7 triangle) with another triangle which looks "like" the 5 - 5 - 7 triangle.

Suppose that we have another a triangle with sides 5 and 5 and angle between them is 90°, then what would be the length of the hypotenuse for this triangle?

From Pythagoras theorem, we have the hypotenuse = $\sqrt{50}$.

Now compare this triangle with the first triangle. Since $\sqrt{50} > 7$, the angle opposite the side of length $\sqrt{50}$ must be greater than the angle opposite the side of length 7. i.e. $90° >$ angle A.

But for the second triangle , if $\angle B = 90^\circ$, then the hypotenuse should be $\sqrt{32} = 4\sqrt{2} < 6$

This means that the angle opposite to the side of length $4\sqrt{2}$ should be less than the angle opposite to the side of length 6 .i.e. $90^\circ < \angle B$

Therefore, Angle B > Angle A.

If $a+b=24$, then what is the maximum possible value of $\frac{(a^2+b^2+5ab)}{(2a-6+2b)}$?

- 20
- 24
- 36
- 42
- Cannot be determined

Explanation

$$(a+b)^2 = a^2+b^2+2ab$$
$$\implies 2ab = (a+b)^2-(a^2+b^2)$$
$$\implies 2ab < (a+b)^2$$
$$\implies 2ab < (24)^2 = 576$$
$$\implies ab < 288$$

Denominator = $2a+2b-6 = 2(a+b)-6 = 48-6 = 42$

Numerator = $a^2+b^2+5ab = (a+b)^2+3ab = 576+3ab$

So the fraction = $\frac{576+3ab}{42} = \frac{96}{7}+\frac{ab}{14} < \frac{96}{7}+\frac{288}{14} = \frac{96}{7}+\frac{144}{7} = \frac{240}{7} = 34.22...$

So the fraction is less than 34.22 appx

So from the given options , option B is the value that satisfies the conditions

Independent & Mutually Exclusive Events

- Two events A and B are said to be **independent** if the **outcome of one event does not affect the outcome of another**.
  - For such events, the **probability that both the events occur** is equal to the **product of the probabilities of the individual events**.
  - i.e. $P(A \cap B) = P(A) \times P(B)$
- Two events A and B are said to be **mutually exclusive**, if the events **A and B cannot occur simultaneously**.
  - For such events, the probability that both events occur is 0. i.e. $P(A \cap B) = 0$
  - The probability that either of the two events occur, i.e. the probability of union of the two events is equal to the sum of the probabilities of the individual events.
  - i.e. $P(A \cup B) = P(A) + P(B)$

Probability of Unions and Intersection

- For two events A and B, the probability that either one of them occurs is given by:

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

- For mutually exclusive events or independent events, the following table is useful to remember

	Independent Events	Exclusive Events
Union	$P(A \cup B) = P(A) + P(B) - P(A)P(B)$	$P(A \cup B) = P(A) + P(B)$
Intersection	$P(A \cap B) = P(A)P(B)$	$P(A \cap B) = 0$

Points 1 / 1

Judy plans to visit the National Gallery once each month in 2012 except in July and August when she plans to go three times each. A single admission costs \$3.50, a pass valid for unlimited visits in any 3-months period can be purchased for \$18, and an annual pass costs \$60.00. What is the least amount, in dollars, that Judy can spend for her intended number of visits?

Your Answer		Correct Answer	
49.5	dollars	49.50	dollars

Explanation

She has to go a total of 16 times to the gallery, once each month and thrice in July and August. Consider the three options Judy has.

a) If she buys a pass each time, as a single admission costs \$3.50, she spends

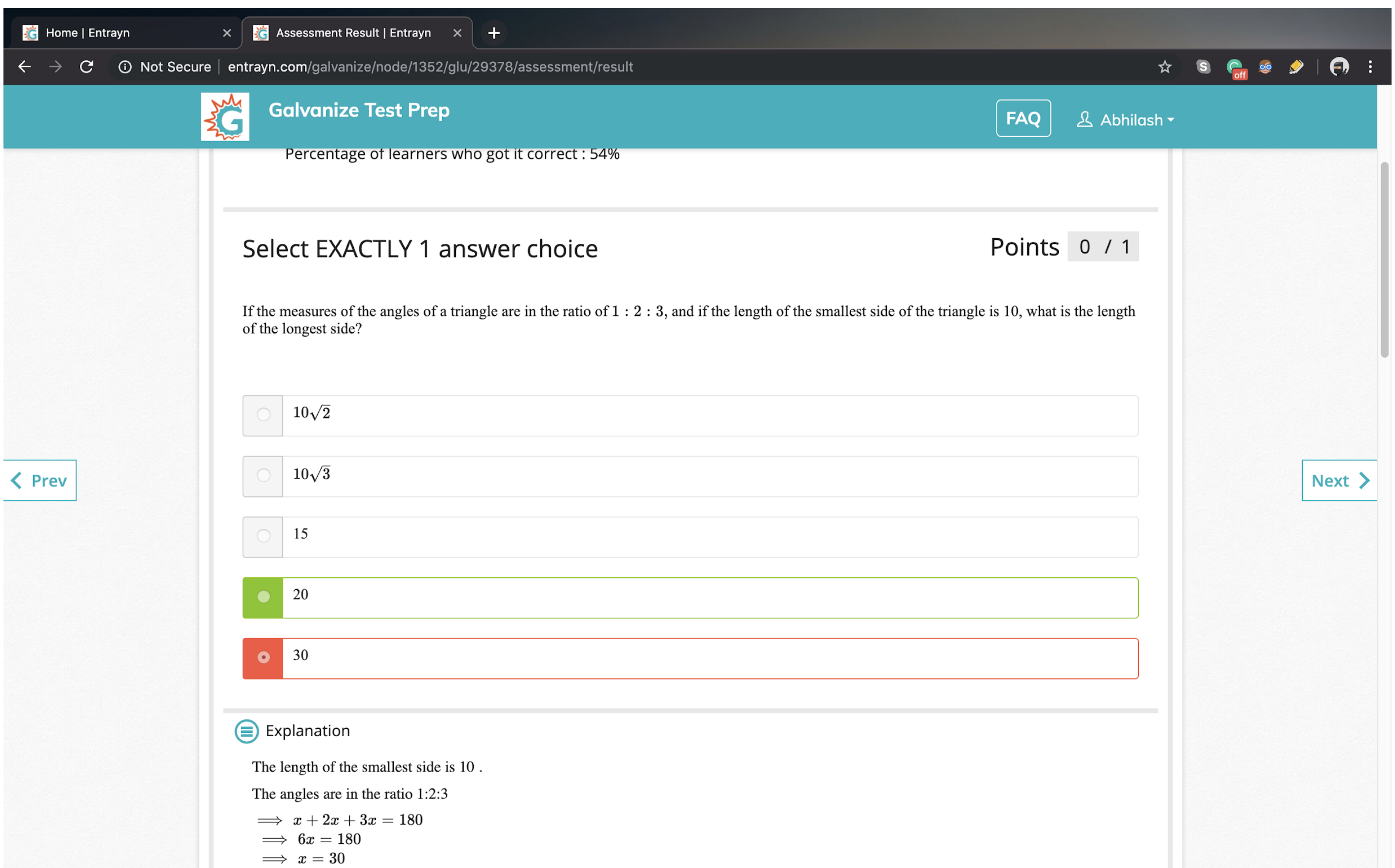
(10+2*3)* \$3.50 = \$56

b) If she buys an unlimited pass in the month of July, her visits in July(thrice), August (thrice) and September (once) are covered in it. She has to buy a single admission passes for the remaining 9 months. So she spends

9* \$3.50 + \$18 = \$49.5

c) The third option is to buy the annual pass costing \$60.

Comparing the 3, the least amount that Judy can spend for her intended number of visits is \$49.5. Hence \$49.5 is the right answer.



Home | Entrayn

Assessment Result | Entrayn

Not Secure | entrayn.com/galvanize/node/1352/glu/29378/assessment/result

Galvanize Test Prep

FAQ

Abhilash

Percentage of learners who got it correct : 54%

Select EXACTLY 1 answer choice

Points 0 / 1

If the measures of the angles of a triangle are in the ratio of 1 : 2 : 3, and if the length of the smallest side of the triangle is 10, what is the length of the longest side?

- $10\sqrt{2}$
- $10\sqrt{3}$
- 15
- 20
- 30

Prev

Next

Explanation

The length of the smallest side is 10 .

The angles are in the ratio 1:2:3

$$\implies x + 2x + 3x = 180$$
$$\implies 6x = 180$$
$$\implies x = 30$$

Home | Entrayn Assessment Result | Entrayn

Not Secure entrayn.com/galvanize/node/1352/glu/29378/assessment/result

Galvanize Test Prep FAQ Abhilash

- $10\sqrt{2}$
- $10\sqrt{3}$
- 15
- 20
- 30

Prev Next

Explanation

The length of the smallest side is 10 .

The angles are in the ratio 1:2:3

$\implies x + 2x + 3x = 180$
$\implies 6x = 180$
$\implies x = 30$

So the angles are 30, 60 and 90 degrees .

This is a 30-60-90 special triangle So the sides are in the ratio $1{:}\sqrt{3}{:}2$

So the sides are k , $\sqrt{3}$k , 2k

Smallest side is 10

$\implies k = 10$
$\implies \textit{largest side} = 2k = 20$

Home | Entrayn Assessment Result | Entrayn

Not Secure entrayn.com/galvanize/node/1352/glu/29408/assessment/result

Galvanize Test Prep FAQ Abhilash

Points 0 / 1

What is the measure, in degrees, of the angle formed by the minute and hours hands of a clock at 1:50?

Your Answer	Correct Answer
degrees 90	degrees 115

Explanation

Next

Angle between two adjacent number on the watch $= \frac{360^\circ}{12} = 30^\circ$

The positions of the needles are as shown in the diagram

Angle between position of 10 to 1 = $30^\circ + 30^\circ + 30^\circ = 90^\circ$

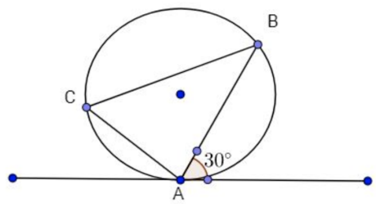
In 60 minutes hour needle moves 30°

In 50 minutes hour needle will move by $\frac{50}{60} \times 30^\circ = 25^\circ$

Total Angle between hour and minutes needles = $90^\circ + 25^\circ = 115^\circ$

Ans: 115°

Select EXACTLY 1 answer choice

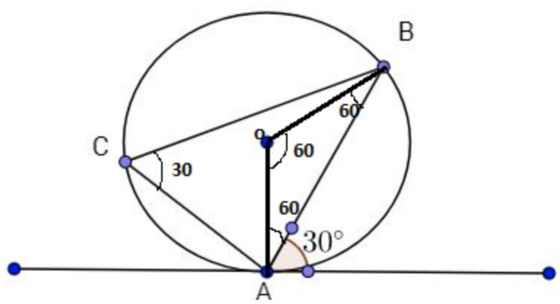


Prev
Next

In the figure O (not marked) is the centre of circle. A tangent is drawn to the circle at A.Find $\angle ACB$.

- 90°
- 60°
- 120°
- 30°
- 45°

Explanation



Join OA and OB ..OA is perpendicular to tangent at A by the theorem that radius is perpendicular to tangent.So we have <OAB = 60

But triangle OAB , OA=OB radius ..Hence triangle OAB is isosceles .So $\angle AOB = 60^\circ$ since the other two equal angles are 60. But angle at the centre is twice the angle at the circumference by theorem .

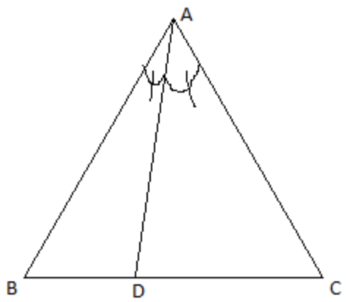
Hence $\angle ACB = \frac{1}{2}\angle AOB = 30^\circ$

AD is the angle bisector of $\angle A$ of triangle ABC. $\mathrm{BD} = 5\mathrm{cm}$, $\mathrm{DC} = 4$ cm and $\mathrm{AB} = 25$ cm

Quantity A	Quantity B
AC	AB

- Quantity A is greater.
- Quantity B is greater.
- The two quantities are equal.
- The relationship cannot be determined from the information given.

Explanation



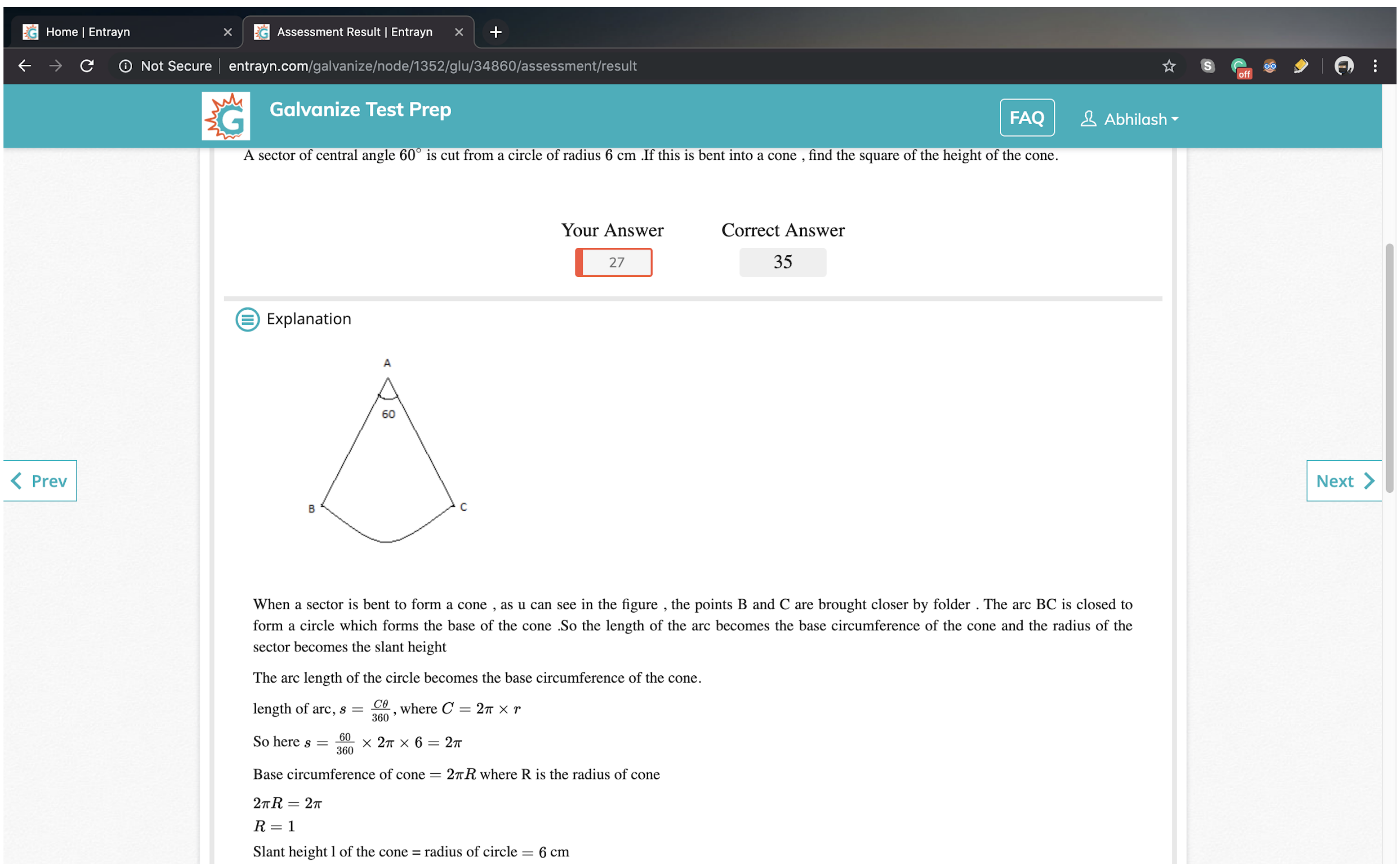
By angle bisector theorem, which states the the bisector of an angle of a triangle divides the opposite side in the ratio of the sides containing the angle

$\frac{AB}{AC} = \frac{BD}{DC}$

$\Rightarrow \frac{25}{AC} = \frac{5}{4}$

$\Rightarrow AC = 20cm < AB$

So quantity B is greater



A sector of central angle 60° is cut from a circle of radius 6 cm .If this is bent into a cone , find the square of the height of the cone.

Your Answer	Correct Answer
27	35

Explanation

When a sector is bent to form a cone , as u can see in the figure , the points B and C are brought closer by folder . The arc BC is closed to form a circle which forms the base of the cone .So the length of the arc becomes the base circumference of the cone and the radius of the sector becomes the slant height

The arc length of the circle becomes the base circumference of the cone.

length of arc, $s = \frac{C\theta}{360}$, where $C = 2\pi \times r$

So here $s = \frac{60}{360} \times 2\pi \times 6 = 2\pi$

Base circumference of cone $= 2\pi R$ where R is the radius of cone

$2\pi R = 2\pi$

$R = 1$

Slant height l of the cone = radius of circle $= 6$ cm

Arithmetic Sequence

- The example that we saw previously, is what we call as an Arithmetic Sequence or an Arithmetic Progression, usually abbreviated as A.P.
- In an A.P. **the difference between any two consecutive terms** is a constant (in the example it was 4). This constant is called the **Common Difference of the A.P.** and is usually denoted by d.
- The **first term of an A.P.** is usually denoted by a.
- So in general, an A.P. would look like:

$$a, a + d, a + 2d, a + 3d, a + 4d, \ldots$$

- The n^{th} term of an A.P. is given by $a_n = a + (n - 1)\, d$
- The sum of the first n terms of an A.P. is given by

$$S_n = \frac{n}{2}\left(2a + (n \quad 1)d\right)$$

Geometric Sequence

- A Geometric Sequence or a Geometric Progression (G.P.) is one in which the ratio of any term and its previous term is a constant.
- This ratio is called the Common Ratio of the G.P. and is usually represented by r.
- If the first term of the G.P. is g, then the G.P. would look like:

$$g, gr, gr^2, gr^3, gr^4, \ldots$$

- In general, the n^{th} term of the G.P. would be $g_n = g\, r^{n-1}$.
- The sum of the first n terms of a G.P. is given by

$$T_n = g\frac{(r^n \quad 1)}{(r \quad 1)}$$

20 chocolates have to be divided amongst 3 kids.

Quantity A	**Quantity B**
Number of ways of distributing these 20 chocolates so that each child gets atleast 1 chocolate	Number of ways of distributing these 20 chocolates so that a child need not get any chocolate.

- Quantity A is greater
- Quantity B is greater
- Both the quantities are equal
- The relationship cannot be determined

We need to figure out a way to distribute these 20 chocolates to 3 kids .Quantity A lays the condition that each kid must be given atleast one chocolate.

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Let '0' denote a chocolate and there are 20 chocolates in number.

(0 0 0 0 | 0 0 0 0 0 0 0 0 0 0 | 0 0 0 0 0 0)

As an example , lets say the first child gets 4 chocolates ,the second child gets 10 chocolates and the third child gets 6 chocolates .So there are 3 partitions done for this set of 20 chocolates .As you can see in the figure , the slashes are placed at point where the collection is partitioned .And there are 2 slashes placed .to partition it into 3 parts .

But the question now arises as to where these slashes have to be placed .As we can observe these slashes can be placed anywhere between two chocolates .How many such spaces are there ?Leaving the first space before the first chocolate and the last space after the last chocolate , the slash can be placed anywhere because there is a restriction here that each kid must get atleast one chocolate .

Note that ,|0 0 0 0 0 0 0 |0 0 0 0 0 0 0 0 0 0 0 0 0 ,this kind of partition where you place the slash in the front says that the 1st kid doesnt get any chocolate , the 2nd kid gets 7 chocolates and the 3rd kid gets 13 chocolates

Similarly it can be argued for the slash at the end also where the 3rd kid doesn't get any chocolate.So these two cases have to be avoided and slashes can be inserted anywhere between the balls.

So the question now can be framed as how many ways can you place the 2 slashes in 19 spaces(note that there are 19 gaps between the balls).Or the number of ways of choosing 2 slots out of the 19 slots = $19C_2 = \frac{19!}{2!17!} = \frac{19\times18}{2\times1} = 171$

But the quantity B doesn't lay any restriction on the number of chocolates for a kid .So a kid can get 0 chocolates or 1 chocolate or more than that may be all the 20 chocolates also.Again by the same logic as above , we have to place the two slashes and now there is no restriction .So the slashes could be placed before the first ball which means the kid gets no ball or after the last ball also or the slashes can be placed together .

|0 0 0 0 0 0 0 |0 0 0 0 0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 0 0 0 0 0 |

0 0 0 0 0 0 0 0 0 ||0 0 0 0 0 0 0 0 0 0 0

The above three cases consider the scenarios where a kid doesnt get any chocolate.

So now there are 22 spaces (2 slashes can be placed together also) and 2 slashes have to be placed in $22C_2 = \frac{22!}{2!20!} = 231$ ways.

So quantity B is greater.

Ans:Option B

Prev Next

Home | Entrayn × Assessment Result | Entrayn × Assessment View | Entrayn × +
Not Secure | entrayn.com/galvanize/node/1352/glu/32436/assessment/result
Galvanize Test Prep FAQ Abhilash

There are 7 consonants and 4 vowels,

Quantity A	Quantity B
Number of words that can be formed using 3 consonants and 2 vowels	2520

- Quantity A is greater
- Quantity B is greater
- Both the quantities are equal
- The relationship cannot be determined

Explanation

Click here to watch the video explanation

3 consonants can be chosen from 7 consonants in $7C_3$ ways = $\frac{7!}{3!4!} = 35$

We need to choose 2 vowels from 4 vowels which can be done in $4C_2$ ways = $\frac{4!}{2!2!} = 6$

But once chosen these 5 letters have to rearranged to form a word which is done in $5! = 120$ ways

So the total number of words = $35 \times 6 \times 120 = 25200$

So quantity A is greater.

Ans:Option A

Prev Next

Galvanize Test Prep

The correct answer is usually neither "too broad" nor "too specific"

Based on the above rule, can you suggest possible answers for the following question, without even looking at its passage?

What is the main idea of the passage?

A. The Native Americans of Wichita have a long and rich cultural history.

B. Native Americans have traditions.

C. Chief Running Horse of the Wichita Native Americans enjoys the traditional New Year's dance because he likes to watch his neighbor, Lone Tree, dance.

D. People have traditions.

E. The Native Americans of Wichita use dance in many of their traditions.

k appears twice as a digit in the decimal 1.3k5k1, and 1.3k5k1 is less than 1.3252.

Quantity A	Quantity B
k	1

- Quantity A is greater.
- Quantity B is greater.
- The two quantities are equal.
- The relationship cannot be determined from the information given.

k appears twice as a digit in the decimal 1.3k5k1, and 1.3k5k1 is less than 1.3252.
k has to be single digit positive integer .
Now lets start plugging some values .
Let k = 0
1.30501
note that 0 appears only twice in the decimal and 1.30501 < 1.32520(note that 1.3252 is same as 1.32520)
Let k =1
1.31511 .Note 1 appears more than twice ie 4 times in the decimal and hence dosent satify the condition that k appears only twice .So k =1 is ruled out .
Let k =2
1.32521 ..2 appears only twice but then 1.32521 > 1.32520 and hence doesnt satisfy the second condition .
any value of k >2 also follows the same protocol as k =2 and hence are ruled out

Quantity A	Quantity B
Mean of the first n natural numbers	Standard deviation of the first n natural numbers

- Quantity A is greater
- Quantity B is greater
- Both the quantities are equal
- The relationship cannot be determined

Mean $\bar{x} = \frac{sum\ of\ observations}{no.\ of\ observations}$

$\bar{x} = \frac{1+2+3+\ldots n}{n} = \frac{\frac{n(n+1)}{2}}{n} = \frac{n+1}{2}$

$\because$ the sum of first n natural numbers $1+2+3+\ldots+n = \frac{n(n+1)}{2}$

Standard deviation $\sigma = \sqrt{\frac{\Sigma(x-\bar{x})^2}{n}} = \sqrt{\frac{\Sigma x^2}{n} - (\bar{x})^2} = \sqrt{\frac{n(n+1)(2n+1)}{6n} - (\frac{n+1}{2})^2} = \sqrt{\frac{n^2-1}{12}}$

$\because$ sum of squares of first n natural numbers = $1^2+2^2+3^2+\ldots+n^2 = \frac{n(n+1)(2n+1)}{6}$

Quantity A is greater.

Ans:Option A

Percentage of learners who got it correct : 30%

Enter the correct answer

Points 0 / 1

There are 3500 people in group A and 5000 people in group B

$CarType$	$\%\ in\ groupA$	$\%\ in\ groupB$
$sedan$	35	25
$coupe$	3	6
$Duster$	4	9
$Sumo$	22	15
$Santro$	9	12

What is the median number of people in group B who own either a Duster, Sumo or Santro?

< Prev   Next >

Your Answer	Correct Answer
750	600

Explanation

The number of people in group B who own a duster = $9\%\ of\ 5000 = \frac{9}{100} \times 5000 = 450$

The number of people in group B who own a Sumo = $15\%\ of\ 5000 = \frac{15}{100} \times 5000 = 750$

The number of people in group B who own a duster = $12\%\ of\ 5000 = \frac{12}{100} \times 5000 = 600$

Median is got by arranging in ascending order and findng the middle value

$median = 600$

Discussion

The mean of a set of data with distinct positive integers is 25 and its median is 26 .Find its mode

Your Answer	Correct Answer
25	28

Explanation

$Mode = 3\,median - 2\,mean.$

The mean of a set of data is 25 and its median is 26

$\implies Mode = 3 \times 26 - 2 \times 25 = 78 - 50 = 28$

Which is the best average that we can use for the following ?

i)Average number of students in a class (a) Mode

ii)Average salary of employees in an organisation (b) Median

iii)Average number of goods manufactured by a company (c) Mean

- i-a, ii-b, iii-c
- i-b, ii-a, iii-c
- i-a, ii-c, iii-b
- i-c, ii-b, iii-a
- i-b, ii-c, iii-a

Average can be any measure of central tendency like mean , Median or mode depending on the question we consider .When we take the average number of students per class , we consider the total population divide by the number of classes .So it makes sense to consider the mean in this case.

On the other hand , if we consider the average salary of the employees, lets consider the following situation where there are outliers ie there are a few observations which are far away dispersed from the other data .

Let the salaries of 5 people be $\$10,000, \$15000, \$17000, \$12000, \$1,00,000$

The mean of the above dataset is $30,800 which is misleading .

So the best estimate of the average in this case will be the median which in this case is $15000.This just tells us that 50% of the employees have salaries less than 15000 and 50% above 15000 which makes sense in this case.

Also, looking at the average number of goods manufactured, goods are manufactured depending on the demand: supplu ratio .If the demand for a specific model is more , then that will be manufactured more.So the average number of goods manufactured in this case would be the mode in this case.

Ans: Option D

Compare the two quantities

Points 0 / 1

W is a random variable that is normally distributed with a mean of 5 and a standard deviation of 2.

Quantity A	Quantity B
$P(W > 5)$	$P(3 < W < 7)$

- Quantity A is greater
- Quantity B is greater
- Both the quantities are equal
- The relationship cannot be determined

Click here to watch the video explanation

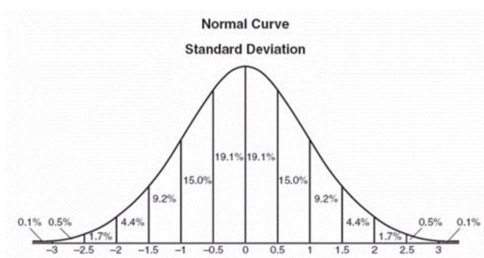
For a standard normal distribution, it helps to remember the values of probability for a few specific values.

Nearly 68% of the values in a normal distribution lies with one standard deviation from the mean. i.e. if mean is mu and standard deviation is σ, then

$P(\mu - \sigma < X < \mu + \sigma) = 0.68 \; or \; 68\%$.

Similarly, $P(\mu - 2\sigma < X < \mu + 2\sigma) = 0.95 \; and \; P(\mu - 3\sigma < X < \mu + 3\sigma) = 0.99$.

Look at this image for reference (the x axis is in terms of number of standard deviations away from the mean



Note that the distribution is symmetric about the mean. Using the above values, you can find the answers for the given distribution for which $\mu = 5 \; and \; \sigma = 2$:

Quantity A. $P(W > 5) = P(W > \mu) = 0.5$, since the graph is symmetric.

Quantity B. $P(3 < W < 7) = P(\mu - \sigma < W < \mu + \sigma) = 0.68$

So quantity B is greater.

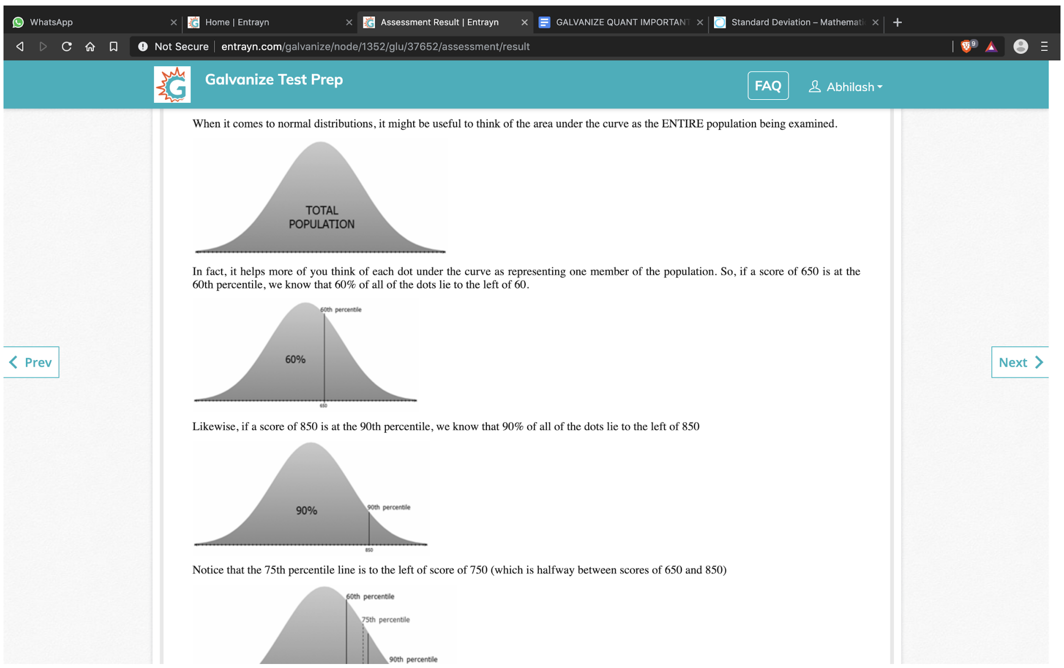
Ans:Option B

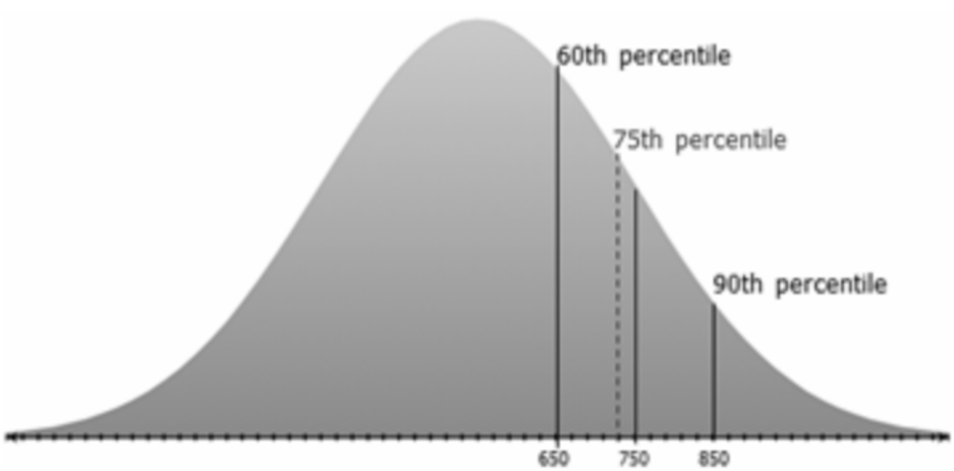
Next

The random variable X is normally distributed. The values 650 and 850 are at the 60th and 90th percentiles of the distribution of X, respectively.

Quantity A	Quantity B
The value at the 75^{th} percentile of the distribution of x	750

- Quantity A is greater
- Quantity B is greater
- Both the quantities are equal
- The relationship cannot be determined





So, the SCORE associated with the 75th percentile is LESS THAN 750