第八套

1. The diagram shows part of a number line with evenly spaced intervals between marks. What is the value of P ?

2. The average of a set of 10 numbers is 15. If one number is removed the average of the remaining numbers is 16. What is the value of the number removed?

3. A car traveling at an average rate of 54 kilometers per hour made a trip in 5 hours. If it had traveled at an average speed of 60 kilometers per hour, how many minutes less would the trip have taken?

$$\frac{3}{x+1} + \frac{x+1}{3} = \frac{3}{8} + \frac{8}{3}$$

4. If x is an integer what is the value of x?

5. The members of a class are standing in a line. Ravi is 32nd in line counting from one end and 12th in line counting from the other. How many students are in the class?

6. Participation in team sports in a certain college was up 25 percent at the end of last year, but participation in individual sports like tennis was down 25 percent. The ratio of students participating in team sports to students taking part in individual sports was how many times greater at the end of the year than the ratio at the beginning of the year?

7. If x ♠ y = (x + y)² for all positive integers, what is the value of (1 ♠ 2)♠3 ?

8. Three cubes of side 6 are glued together to make a rectangular box. The surface are of the rectangular box is how much less than the total surface area of the three separate cubes?

9. If the population of bacteria in a culture flask doubles every 20 minutes, the population after 3 hours 20 minutes will be how many times the population at the start?

10. In the x-y plane the distance between the point A (1,1) and B (5,x) is 5.
What is one possible value of x?

参考答案：

1.Correct Answer: .318

Explanation:

The difference between 0.326 and 0.312 is divided into 7 equal units. The size of each unit is therefore

(0.326 - 0.312)/7 = 0.002

P comes three units after 0.312 and so is at 0.312 + 3(0.002) = 0.318

(Do not grid in the lead zero)

2.Correct Answer: 6

Explanation:

If the average of ten numbers is 15, their total = 150

If the average after one hase been removed is 16, the total of 9 numbers is 16 x 9 =144

The number removed = 150 - 144 = 6

3.Correct Answer: 30

Explanation:

Speed = distance /time; 54 = distance / 5

Distance = 54 x 5km

At 60 km/hr

60 = 54 x 5/time in hours

Time in hours = 54 x 5/60 = 4.5 hours

The difference in the time = 0.5 hours = 30 minutes

4.Correct Answer: 7

Explanation:

Note that (x +1) on the left side occurs inexactly the same place as 8

So, x + 1 = 8; x = 7

5.Correct Answer: 43

Explanation:

If Ravi is 32nd in line, it means there are 31 people to one side of him.

Counting from the other end he is 12th in line so there are 11 people on the other side.

Number of students = 31 + 11 + 1 = 43

(Do not forget to count Ravi in!)

6.Correct Answer: 5/3

Explanation:

Let participation in team sports be t

Let participation in individual sports be I

At the beginning of the year they are in the ratio of t/I

At the end of the year t increases to 1.25 t, and I decreases to 0.75I

The new ratio is 1.25t/0.75I = 1.666t/I

Grid in most accurately as 1.67

7.Correct Answer: 144

Explanation:

The strange sign indicates the operation to be carried out on the numbers(i.e ad them then square the sum)

Carry out this operation fist on the numbers in the brackets; (1 + 2)² = 9

Now carry out the operation on the result and 3; (9 + 3)² + 144

参考答案：

8.Correct Answer: 144

Explanation:

If the side of one small cube is 6, the surface area = 6 x 6²

Since there are three of these cubes their total surface area = 3 x 6 x 6²

The rectangular box will have sides will lose surface area equivalent to the four faces that get glued together to form a line of cubes.

The 'lost' surface = 4 x 6², and so the rectangle is that much less in surface area = 144

9.Correct Answer: 1024

Explanation:

Let the initial population be n

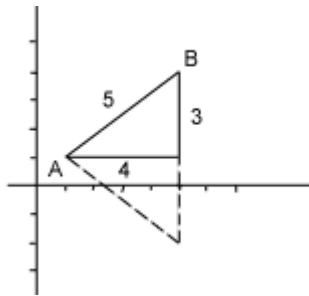After 20 minutes = 2n; after 40 minutes = 4n; after 60 minute = 8n

(You can simply continue counting like this...it will not take you long and will be accurate)

Or, realize that there will be 10 doubling periods, and after the first the population will be 2 times greater, after the second it will be 2^2 and after the third it will be 2^3 etc.

After the 10th it will be 2^{10} greater = 1024

10.Correct Answer: 4

Explanation:

The distance between A and B is the hypotenuse of a right triangle with legs 4 and 3. (We can see that the third side must be 3 because 3-4-5 triangles are one of the 'special triangles'). Therefore the coordinates of B can be (5, 4) or (5, -2). But we cannot enter negative numbers in the grid, and so we must enter 4.