Solution

ADMISSION TEST

Class 10 - Admission Test

1.

(c) 4851

Explanation:

Let the radius of the spherical ball be r

and side of the cube is a

According to the question,

No. of cubes = $\frac{\text{Volume of spherical ball}}{\text{Volume of a cube}}$

$= \frac{\frac{4}{3}\pi r^3}{a^3}$

No. of cubes = $\frac{4\times22\times21\times21\times21}{3\times7\times2\times2\times2\times(1)^3}$ = 4851

2.

(d) 0

Explanation:

The abscissa of any point on y-axis is always zero. This means that this point hasn't covered any distance on x-axis.

3.

(b) $\frac{4}{7}$

Explanation:

P(E) + P(not E) = 1

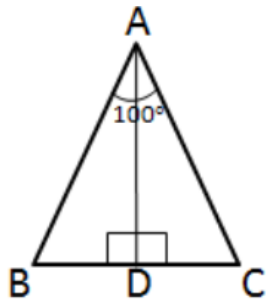
The probability of happening of an event = $\frac{3}{7}$

The probability of not happening of this event = 1 - $\frac{3}{7}$ = $\frac{4}{7}$

4.

(b) 40°

Explanation:



AD ⊥ BC an AD bisects ∠A

⇒ ∠BAD = ∠CAD = 50°

In Right △ADB

∠BAD = 50°, ∠ADB = 90°

Also sum of all interior angles = 180°

⇒ ∠BAD +∠ADB + ∠B = 180°

⇒ ∠B = 180° - 50° - 90°

⇒ ∠B = 40°

5.

(c) $\frac{3}{10}$

Explanation:

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No. of favourable outcomes = 12
Total outcomes = 40
Required Probability = 12 /40 = 3/10

6.

(c) $\frac{3}{10}$

Explanation:

The smallest rational number by which $\frac{1}{3}$ should be multiplied so that its decimal expansion terminates after one place of decimal, is $\frac{3}{10}$

Since, $\frac{1}{3} \times \frac{3}{10} = \frac{1}{10} = 0.1$

Since, among them $\frac{3}{10}$ is the only number which when multiplied, then its decimal expansion terminates after one place of decimal.

7.

(c) 216

Explanation:

Let the radius of the smaller sphere be r cm
and the radius of the bigger sphere is R cm.
Then according to question,

No. of spherical balls = $\frac{\text{Volume of a solid sphere}}{\text{Volume of a spherical ball}} = \frac{\frac{4}{3}\pi R^3}{\frac{4}{3}\pi r^3}$

$= \frac{R^3}{r^3}$

$= \frac{6^3}{1^3} = 216$

8.

(c) $\frac{1}{5}$

Explanation:

$(125)^{-1/3}$

$=(5^3)^{-1/3}$

$= 5^{-1}$

$\frac{1}{5}$

9.

(b) there are infinitely many rational numbers

Explanation:

Between two rational number, there infinitely many rational number.
e.g., $\frac{3}{5}$ and $\frac{4}{5}$ are two rational number, then $\frac{31}{50}, \frac{32}{50}, \frac{33}{50}, \frac{34}{50}, \frac{35}{50}$, ... are infinite rational numbers between them.

10. **(a)** $\frac{5}{7}$

Explanation:

The probability that a boy will get married to his girlfriend, P(E) = $\frac{2}{7}$

The probability that he will not get married to his girlfriend, P(not E) = 1 - P(E) = $1 - \frac{2}{7} = \frac{5}{7}$

11.

(c) $\sqrt{\frac{3}{8} \times \frac{5}{8}}$

Explanation:

An irrational number between $\frac{3}{8}$ and $\frac{5}{8}$ is $\sqrt{\frac{3}{8} \times \frac{5}{8}}$

12. **(a)** $6 : \pi$

Explanation:

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Let side of cube be a

Here, side of cube= diameter of sphere

so, radius of sphere = $\frac{a}{2}$

The volume of cube : volume of sphere

a³ : {tex}{4\over 3} π r^3{/tex}

a³ : {tex}{4\over 3} π ({a\over2})^3{/tex}

$3 \times 8 \times a^3 : 4\pi a^3$

$6 : \pi$

13. **(a)** $\frac{1}{4}$

Explanation:

$\left(3x + \frac{1}{2}\right)\left(3x - \frac{1}{2}\right)$ = $9x^2$ - p

$\Rightarrow (3x)^2 - \left(\frac{1}{2}\right)^2$ = $9x^2$ - p

$\Rightarrow 9x^2 - \frac{1}{4}$ = $9x^2$ - p

$\Rightarrow p = \frac{1}{4}$

14.

(b) quadrant I and II

Explanation:

Since,sign of point in 1st quadrant is (+,+),

And in second quadrant it is (—,+)

So,Ordinat of a point is +ve only in 1st and 2nd quadrant

15. **(a)** 4: 25

Explanation:

Let r_1, r_2 be the radii of the two cones respectively, then Required ratio,

$\frac{\frac{1}{3}\pi r_1^2 h}{\frac{1}{3}\pi r_2^2 h}$

= $\frac{r_1^2}{r_2^2}$

= $\left(\frac{r_1}{r_2}\right)^2$

= $\left(\frac{2}{5}\right)^2 = \frac{4}{25}$

= 4 : 25

16.

(c) x-axis

Explanation:

Since the ordinates of given points are 0. Therefore, points lie on x-axis.

17.

(d) 322

Explanation:

On cubing we get

$\left(x + \frac{1}{x}\right)^3 = x^3 + \left(\frac{1}{x^3}\right) + 3.x \cdot \frac{1}{x}\left(x + \frac{1}{x}\right)$

$\Rightarrow 27 = x^3 + \left(\frac{1}{x^3}\right) + 3.3$

$\Rightarrow x^3 + \left(\frac{1}{x^3}\right) = 27 - 9$

$\Rightarrow x^3 + \left(\frac{1}{x^3}\right) = 18$

Now, $\left(x^3 + \frac{1}{x^3}\right)^2 = x^6 + \left(\frac{1}{x^6}\right) + 2 \cdot x^3 \cdot \frac{1}{x^3}$

$\Rightarrow 18^2$ = x^6+ $\left(\frac{1}{x^6}\right) + 2$

$x^6 + \left(\frac{1}{x^6}\right)$ = 324 - 2 = 322

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18.

(d) $3\sqrt{3}$

Explanation:

$2\sqrt{3} + \sqrt{3} = \sqrt{3}(2 + 1) = 3\sqrt{3}$

19.

(b) -10

Explanation:

Since x = 2 is a zero. Put x = 2 in the equation

$(2)^2 + 3(2) + k = 0$

4 + 6 + k = 0

k = -10

20. **(a)** $\frac{29}{40}$

Explanation:

Total number of bulbs in the lot = 80

Number of bulbs with life time of more than 500 hours =

23 + 25 + 10 = 58

Let E be the event that the chosen bulb's life time is more than 500 hours.

∴ Required probability = P(E) = $\frac{58}{80}$ = $\frac{29}{40}$

21. **(a)** 16 years

Explanation:

Manick's present age = 12 years, Rahul's present age = 4 years.

Let Manick be twice as old as Rahul after x years from now.

Then, 12 + x = 2 (4 + x) ⇔ 12 + x = 8 + 2x ⇔ x = 4.

Hence, Manick's required age = 12 + x = 16 years.

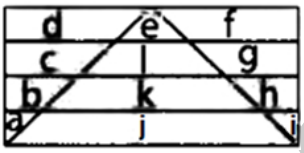
22.

(d) 12 triangles, 10 rectangles

Explanation:

Triangle formed are: a, ab, abc, adcd, e, el, elk, elkj, i, ih, ihg, ihgf, i.e. 12 in number

Rectangles formed are: def, clg, bkh, aji, defclg, clgbkh, bkhaji, defclgbkh, clgbkhaji and a big rectangle, i.e. 10 in number.



23.

(d) D and C

Explanation:

D and C

24.

(b) P ∅ Q # R - S + T

Explanation:

'P ∅ Q # R - S + T' means P is wife of Q who is father of R and R is sister of S, who is brother of T. Clearly, S is male and P is the mother of R, S and T.

25.

(d) NHOHTSFQ

Explanation:

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Logic: Every alphabet at odd place move forward by 1 and at even place move backward by 1.
TERMITE = UDSLJSF
So, MINISTER = NHOHTSFQ

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