



MATHS

Four different object 1, 2, 3, 4 are distributed at random in four places marked 1, 2, 3, 4. What is the probability that none of the objects occupy the place corresponding to its number?



$$\mathbf{B} \qquad \frac{3}{8}$$

$$c$$
 $\frac{1}{2}$

$$D = \frac{5}{8}$$

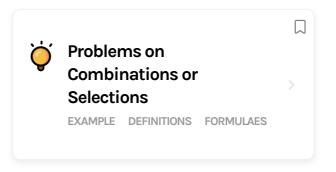
Study later \square

ANSWER

There are three different cases:

- (1) Three correspond
- (2) Two correspond
- (3) One corresponds
- (1) There is only 1 way for three objects to match. If 1, 2, 3 match, then 4 must

Revise with Concepts



be in its position too. Thus, all of them will be in their corresponding position. (2) There are ${}^4{
m C}_2=6$ ways for two to match. For each number pair, there is

exactly one way for the other two numbers not to match their position. For example, if 1 and 2 match their position, then 3 and 4 must be in wrong positions. I can choose 6 different pairs out of 4 numbers. (3) There are $4 \times 2 = 8$ ways for only

one number to match its position. For example, there are only two ways for number 1 to be on its position while the other three are not: 1, 3, 4, 2 and 1, 4, 2, 3.

Hence, there are overall 1+6+8=15different ways that at least one object corresponds to its number and 4 = 24ways to organize four objects. The probability that no number occupies the place corresponding to it's number is therefore

$$\therefore 1 - \frac{15}{24} = \frac{9}{24} = \frac{3}{8}$$

Answered By **1 toppr**

How satisfied are you with the answer?

This will help us to improve better







random using the digits $1\ {
m to}\ 9$ without repetition, then the probability that the number thus formed is divisible by 3 is

Study later ☐ **View Answer** ▶

VIEW MORE ✓

| CLASSES | BOARDS | | EXAMS | | | |
|--------------------------------------|----------------|---------------|--------------|----------------|-------|--|
| CLASS 5 | CBSE | TAMIL NADU | JEE MAIN | AP EAMCET | AILET | |
| CLASS 6 | ICSE | TELANGANA | JEE ADVANCED | COMEDK | ICO | |
| CLASS 7 | IGCSE | UTTAR PRADESH | UPSEE | JIPMER | ICSO | |
| CLASS 8 | ANDHRA PRADESH | | BITSAT | BCECE | NTSE | |
| CLASS 9 | BIHAR | | TS EAMCET | KCET | NSO | |
| CLASS 10 | GUJARAT | | WBJEE | KEAM | NSTSE | |
| CLASS 11 COMMERICHARKHAND | | | VITEEE | IMO KVPY | | |
| CLASS 11 ENGINEERAR CIATAKA | | | MHT-CET | IEO | | |
| CLASS 11 MEDICALKERALA | | | SAT | HBBVS | | |
| CLASS 12 COMMERMAEDHYA PRADESH | | | 1720 | CA FOUNDATION | | |
| CLASS 12 ENGINE BRANG RASHTRA | | | NDA | CS FOUNDATION | | |
| CLASS 12 MEDICAPUNJAB | | | NEET | CMA FOUNDATION | | |
| | RAJASTHAN | | AIIMS | CLAT | | |

| PLANS | MODULES | FEATURES | | SOCIAL | Stay upto |
|----------|-------------------|-----------------------|-----------------------|----------------|------------------------------|
| BASIC | ONLINE CLASSES | VIDEO CLASSES | LIVE CLASSES | f | date with our Newsletter! |
| ADVANCED | MOCK TESTS | ALL INDIA TEST SERIES | CREATE YOUR OWN TESTS | Stay informed, | |
| ULTIMATE | ADAPTIVE PRACTICE | STORIES | 24/7 HELP | | stay ahead. Be a topper |
| | LIVE DOUBTS | PREVIOUS PAPERS | EXPERT TUTORS | o | |
| | | | | M | Soutoserri be |
| | | | | y | |

in

About Us • Brand Resources • Press • Customer Stories • Jobs • Educators • Fellowship

• Learning Planet • Guides • Ask • Blog • Bytes • News

Terms Of Service • Privacy Policy • Contact Us • FAQs





Get Instant



Toppr Ad - Sisters | Better learning be



Practice important Questions

IIT Foundation & Olympiad Class 10 Maths Chapter 9 & 10

Related Questions to study

Five cards are drawn successively with replacement from a well-shuffled deck of $52\,\mathrm{cards}$. What is the probability that

- (i) all the five cards are spades?
- (ii) only $3 \, \mathrm{cards} \ \mathrm{are} \ \mathrm{spades} \ ?$
- (iii) none is a spade?

Study later ☐ **View Answer** ▶