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NPTEL

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Courses » Groups : Motion, symmetry and puzzles

Announcements **Course** Ask a Question Progress Mentor FAQ

Unit 3 - Week 1- Groups, as they occur naturally

Course outline

How to access the portal

Pre-requisite

Week 1- Groups, as they occur naturally

Introduction to the Course

Permutation, symmetry and groups

Groups acting on a set / an object

More on group actions

Groups and parity

Quiz : Assignment 1

Week 1 - Feedback - Groups : Motion, symmetry and puzzles

Week 2- Structure of groups

Assignment 1

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment. **Due on 2018-09-12, 23:59 IST.**

Pick all options which are true concerning group of symmetries of following objects

1) A rectangle that is not a square 2 points

- It has 4 elements
 It is abelian

No, the answer is incorrect.
Score: 0

Accepted Answers:
It has 4 elements
It is abelian

2) A hexagon 2 points

- It has 6 elements
 It is nonabelian

No, the answer is incorrect.
Score: 0

Accepted Answers:
It is nonabelian

3) A cone 2 points

- It is finite
 It is abelian

No, the answer is incorrect.

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VIDEO
DOWNLOAD It is nonabelian**No, the answer is incorrect.****Score: 0****Accepted Answers:***It is finite*

5) A cube

2 points It has 24 elements It is nonabelian**No, the answer is incorrect.****Score: 0****Accepted Answers:***It has 24 elements**It is nonabelian*

6) Consider a cuboid whose all sides are of different length. Let G be the group of symmetries of this cuboid. How many elements are there in G ?

No, the answer is incorrect.**Score: 0****Accepted Answers:***(Type: Numeric) 4***4 points**

7) How many distinct types of tiles of size 6 inch \times 6 inch can you make whose corners are colored with red or blue colors? (A tile whose all corners have same color is also an acceptable type).

Hint : You may use Burnside's lemma

No, the answer is incorrect.**Score: 0****Accepted Answers:***(Type: Numeric) 6***4 points**

In a class of 50 students, a teacher collects pens from each student (one pen per student), shuffles them well in an urn and redistributes

8) On average, how many students will get back their own pen?

No, the answer is incorrect.**Score: 0****Accepted Answers:***(Type: Numeric) 1***3 points**

9) Solve the same problem when the class size is 100.

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Numeric) 1

1 point

10 Let $\sigma = (1\ 3\ 4)$ and $\theta = (2\ 3\ 4)$ be elements in S_4 , the group of permutations of 4 objects. Which of the following is/are not equal to either $\sigma\theta$ or $\theta\sigma$? 2 points

$(1\ 2)(3\ 4)$

$(1\ 3)(2\ 4)$

$(1\ 4)(2\ 3)$

$(4\ 3)(2\ 1)$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$(1\ 2)(3\ 4)$

$(4\ 3)(2\ 1)$

11 Let C_n denote the cyclic group of n elements. Is it true that $C_2 \times C_4$ is isomorphic to C_8 ? 1 point

True

False

No, the answer is incorrect.

Score: 0

Accepted Answers:

False

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