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
   - 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
   - It has 6 elements
   - It is nonabelian

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   - It is nonabelian

3) A cone
   - It is finite
   - It is abelian

   No, the answer is incorrect.
   Score: 0
5) A cube

- It has 24 elements
- It is nonabelian

No, the answer is incorrect.
Score: 0
Accepted Answers:
- It is finite

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:
- It has 24 elements
- It is nonabelian

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) 4

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

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

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

9) Solve the same problem when the class size is 100.
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 $\theta\sigma$?

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

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

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

- True
- False

No, the answer is incorrect.
Score: 0
Accepted Answers:
False