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NPTEL

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Courses » Groups : Motion, symmetry and puzzles

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Unit 5 - Week 3- Symmetries and GAP exploration

Course outline

How to access the portal

Pre-requisite

Week 1- Groups, as they occur naturally

Week 2- Structure of groups

Week 3- Symmetries and GAP exploration

Rotational symmetries of platonic solids

Symmetries of plane and wallpapers

Introduction to GAP

GAP through Rubik's cube

Week 3 - Feedback - Groups : Motion, symmetry and puzzles

Quiz : Assianment 3

Assignment 3

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment. **Due on 2018-09-19, 23:59 IST.**

1) How many rotational symmetries does a tetrahedron have?

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Numeric) 12

2 points

2) What is the Sclafl symbol of a cube?

(3,3)

(3,4)

(4,3)

(5,4)

(5,5)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(4,3)

2 points

3) Which platonic solid has Schlafl symbol (3,5)?

Tetrahedron

Octahedron

Dodecahedron

2 points

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4) Which of the following is/are not possible values for a Schläfli symbol? 2 points

(3,3)

(4,4)

(5,5)

(3,4)

(5,3)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(4,4)

(5,5)

5) Number of Platonic solids is 2 points

3

5

7

11

13

No, the answer is incorrect.

Score: 0

Accepted Answers:

5

6) In the Euler's formula $v - e + f = n$, the value of n is 2 points

1

2

3

4

5

No, the answer is incorrect.

Score: 0

Accepted Answers:

2

7) Which is/are true about Schläfli symbol (n,m) ? 2 points

$n + m < 10$

$nm > 10$

$1/n + 1/m > 0.5$

$n - m < 3$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$n + m < 10$

$1/n + 1/m > 0.5$

$$n - m < 3$$

8) If you are walking on a muddy road then which of the following **2 points**
best describes the symmetry of your footprints?

- Reflection
- Rotation
- Translation
- Glide reflection

No, the answer is incorrect.

Score: 0

Accepted Answers:

Glide reflection

9) How many types of wallpapers are possible, based on the symmetry considerations?

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Numeric) 17

2 points

10) In context of computer algebra system, GAP is an acronym for **2 points**

- Groups And Parity
- Groups, Algorithms and Permutations
- Groups, Abelianization and Permutations
- Groups, Algorithms and Programming

No, the answer is incorrect.

Score: 0

Accepted Answers:

Groups, Algorithms and Programming

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