

Ch 13 Geometry of Transformations Practice Test

True/False

Indicate whether the sentence or statement is true or false.

If false, write the corrected statement in the space provided.

- _____ 1. A frieze pattern repeats in many directions.

- _____ 2. An image from a transformation cannot be congruent to the original figure.

- _____ 3. Translations, rotations, and reflections change the sides or angles of the original figure.

- _____ 4. A translation arrow describes the translation of a figure on a coordinate grid..

- _____ 5. Translations cannot be carried out on a coordinate grid.

- _____ 6. The image of a point after a transformation is often named using the prime symbol.

- _____ 7. A tiling pattern covers a plane with some overlapping and leaving some gaps.

- _____ 8. Tiling a plane refers to using repeated congruent shapes cover a region completely.

- _____ 9. A circle can be used to tile a plane.

- _____ 10. There are four types of regular figures that can tile a plane.

- _____ 11. You cannot use rotations to tessellate a plane.

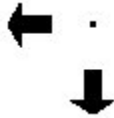
Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

- ____ 12. The transformation that is a slide along a straight line is called a(n)
a. translation. c. reflection.
b. rotation. d. image.

- ____ 13. The transformation that is a turn about a fixed point is called a(n)
a. translation. c. reflection.
b. rotation. d. image.

- ____ 14. Identify the following transformation.



- a. translation c. reflection
b. rotation d. image
- ____ 15. Which transformation do you use in a game of checkers?
a. translation c. reflection
b. rotation d. none of the above

- ____ 16. Which transformation may a skier use?
a. translation c. reflection
b. rotation d. both a and b

- ____ 17. Which of the following is formed by three square tiles?
a. tetromino c. triomino
b. domino d. pentomino

- ____ 18. Square tiles can be combined to make different shapes. Which of the following is not one of them?
a. tetromino c. domino
b. pentomino d. omino

- ____ 19. When you read A, B, and C of a figure in alphabetical order, we say that the ____ of this triangle is clockwise.
a. sense c. feeling
b. time d. none of the above

- ____ 20. The figure below is an example of a



- a. hexomino. c. triomino.
b. tetromino. d. pentomino.
- ____ 21. Point A(4, 5) is translated 2 units left and 3 units up. What are the new coordinates of point A?
a. (2, 8) c. (2, 2)
b. (6, 8) d. (6, 2)
- ____ 22. Point C(0, 3) is translated 3 units right and 1 unit down. What are the new coordinates of point C?
a. (3, 2) c. (2, 2)
b. (3, 4) d. (2, 3)

Completion

Complete each sentence or statement.

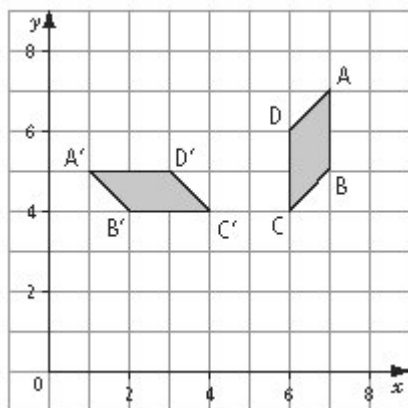
23. Three common types of _____ are translations, rotations, and reflections.
24. The transformation that is a slide along a straight line is called a(n) _____.

25. The transformation that is a flip over a mirror line is called a(n) _____.
26. A(n) _____ is needed for a reflection to occur.
27. A fixed point about which a rotation occurs is called the _____.
28. A(n) _____ can describe the translation of a figure on a coordinate grid.
29. A polygon with all sides and all angles equal is a(n) _____.
30. A(n) _____ is a picture or design made of small shapes of different colours.

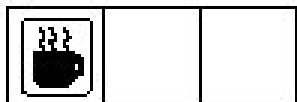
Short Answer

Write your answer in the space provided.

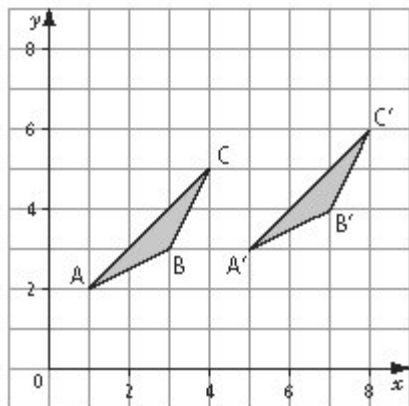
31. Name the type of transformation that moves parallelogram ABCD onto its image, parallelogram A'B'C'D'.



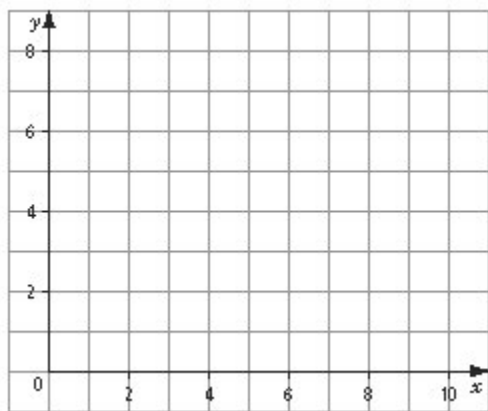
32. Use a 180° rotation to create images of the restaurant sign in the squares provided.



33. Where would you place a mirror line on a coordinate grid so that the image of a figure is standing right beside it?
34. Design a frieze pattern that involves the translation and rotation of an irregular figure.
35. Find the coordinates of the image of each point after the given translation.
 - a) A (1, 1); 3 units right
 - b) B (3, 1); 1 unit down
 - c) C (4, 2); 1 unit right and 2 units up
36. Describe the transformation that moves the figure onto its image.



37. A figure has vertices at A(1, 5), B(2, 5), C(2, 4), D(3, 4), E(3, 3), F(4, 3), G(4, 2), and H(1, 2). Draw the figure on the coordinate grid. Identify the image, and draw the image of the figure after a reflection along the mirror line. The mirror line is formed by joining the points (5, 6) and (5, 1).

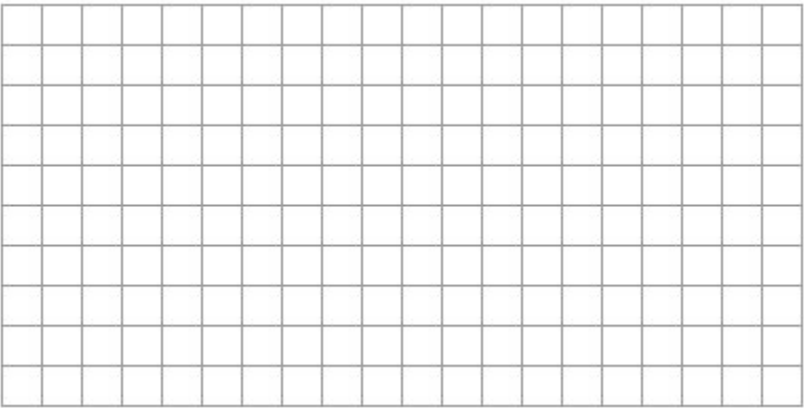


38. Can any quadrilateral cover a plane? Explain.
39. Can a parallelogram tile the plane? Explain.

Problem

Write your answer in the space provided.

40. Use a parallelogram to create an interesting tile. Use the tile to tessellate a plane.



Ch 13 Geometry of Transformations Practice Test

Answer Section

TRUE/FALSE

1. ANS: F

A frieze pattern repeats in one direction.

DIF: Level 3 REF: Knowledge/Understanding OBJ: Section 13.1
STO: GSS-7m51 TOP: Geometry and Spatial Sense KEY: Frieze

2. ANS: F

An image from a transformation can be congruent to the original figure.

DIF: Level 3 REF: Knowledge/Understanding OBJ: Section 13.1
STO: GSS-7m49 TOP: Geometry and Spatial Sense KEY: Congruent

3. ANS: F

Translations, rotations, and reflections do not change the sides or angles of the original figure. The image (transformed figure) is congruent to the original figure.

DIF: Level 3 REF: Knowledge/Understanding OBJ: Section 13.1
STO: GSS-7m50 TOP: Geometry and Spatial Sense KEY: Transformation

4. ANS: T

DIF: Level 1 REF: Knowledge/Understanding
OBJ: Section 13.3 STO: GSS-7m51 TOP: Geometry and Spatial Sense
KEY: Translation

5. ANS: F

Translations can be carried out on a coordinate grid.

DIF: Level 2 REF: Knowledge/Understanding OBJ: Section 13.3
STO: GSS-7m51 TOP: Geometry and Spatial Sense KEY: Translation

6. ANS: T

DIF: Level 3 REF: Knowledge/Understanding
OBJ: Section 13.3 STO: GSS-7m50 TOP: Geometry and Spatial Sense
KEY: Image

7. ANS: F

A tiling pattern covers a plane without overlapping or leaving gaps.

DIF: Level 2 REF: Knowledge/Understanding OBJ: Section 13.4
STO: GSS-7m51 TOP: Geometry and Spatial Sense KEY: Tiling

8. ANS: T

DIF: Level 3 REF: Knowledge/Understanding
OBJ: Section 13.4 STO: GSS-7m51 TOP: Geometry and Spatial Sense
KEY: Tiling

9. ANS: F

A circle cannot be used to tile a plane.

DIF: Level 3 REF: Knowledge/Understanding OBJ: Section 13.4
STO: GSS-7m51 TOP: Geometry and Spatial Sense KEY: Tiling

10. ANS: F

There are three types of regular figures that can tile a plane.

DIF: Level 3	REF: Knowledge/Understanding	OBJ: Section 13.4
STO: GSS-7m51	TOP: Geometry and Spatial Sense	KEY: Tiling

11. ANS: F
You can use rotations to tessellate a plane.

DIF: Level 3	REF: Knowledge/Understanding	OBJ: Section 13.6
STO: GSS-7m51	TOP: Geometry and Spatial Sense	KEY: Tessellation

MULTIPLE CHOICE

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|----------------------------|---------------------------------|---------------------------------|-------------------|
| 12. ANS: A | DIF: Level 1 | REF: Knowledge/Understanding | |
| OBJ: Section 13.1 | STO: GSS-7m50 | TOP: Geometry and Spatial Sense | |
| KEY: Translation | | | |
| 13. ANS: B | DIF: Level 1 | REF: Knowledge/Understanding | |
| OBJ: Section 13.1 | STO: GSS-7m50 | TOP: Geometry and Spatial Sense | |
| KEY: Rotation | | | |
| 14. ANS: B | DIF: Level 2 | REF: Knowledge/Understanding | |
| OBJ: Section 13.1 | STO: GSS-7m50 | TOP: Geometry and Spatial Sense | |
| KEY: Rotation | | | |
| 15. ANS: A | DIF: Level 2 | REF: Knowledge/Understanding | |
| OBJ: Section 13.1 | STO: GSS-7m50 | TOP: Geometry and Spatial Sense | |
| KEY: Translation | | | |
| 16. ANS: D | DIF: Level 2 | REF: Knowledge/Understanding | |
| OBJ: Section 13.1 | STO: GSS-7m50 | TOP: Geometry and Spatial Sense | |
| KEY: Translation, Rotation | | | |
| 17. ANS: C | DIF: Level 2 | REF: Knowledge/Understanding | |
| OBJ: Section 13.1 | STO: GSS-7m51 | TOP: Geometry and Spatial Sense | |
| KEY: Square Tiles | | | |
| 18. ANS: D | DIF: Level 3 | REF: Knowledge/Understanding | |
| OBJ: Section 13.1 | STO: GSS-7m51 | TOP: Geometry and Spatial Sense | |
| KEY: Square Tiles | | | |
| 19. ANS: A | DIF: Level 4 | REF: Knowledge/Understanding | |
| OBJ: Section 13.1 | STO: GSS-7m51 | TOP: Geometry and Spatial Sense | |
| KEY: Congruent | | | |
| 20. ANS: D | DIF: Level 3 | REF: Knowledge/Understanding | |
| OBJ: Section 13.1 | STO: GSS-7m51 | TOP: Geometry and Spatial Sense | |
| KEY: Square Tiles | | | |
| 21. ANS: A | DIF: Level 2 | REF: Application | OBJ: Section 13.3 |
| STO: GSS-7m51 | TOP: Geometry and Spatial Sense | KEY: Translation | |
| 22. ANS: A | DIF: Level 3 | REF: Application | OBJ: Section 13.3 |
| STO: GSS-7m51 | TOP: Geometry and Spatial Sense | KEY: Translation | |

COMPLETION

23. ANS: transformation

DIF: Level 1	REF: Knowledge/Understanding	OBJ: Section 13.1
STO: GSS-7m50	TOP: Geometry and Spatial Sense	KEY: Transformation

24. ANS: translation

DIF: Level 1	REF: Knowledge/Understanding	OBJ: Section 13.1
STO: GSS-7m50	TOP: Geometry and Spatial Sense	KEY: Translation

25. ANS: reflection

DIF: Level 1	REF: Knowledge/Understanding	OBJ: Section 13.1
STO: GSS-7m50	TOP: Geometry and Spatial Sense	KEY: Reflection

26. ANS: mirror line

DIF: Level 2	REF: Knowledge/Understanding	OBJ: Section 13.1
STO: GSS-7m50	TOP: Geometry and Spatial Sense	KEY: Reflection

27. ANS: turn centre

DIF: Level 2	REF: Knowledge/Understanding	OBJ: Section 13.1
STO: GSS-7m50	TOP: Geometry and Spatial Sense	KEY: Rotation

28. ANS: translation arrow

DIF: Level 3	REF: Knowledge/Understanding	OBJ: Section 13.3
STO: GSS-7m50	TOP: Geometry and Spatial Sense	KEY: Translation

29. ANS: regular polygon

DIF: Level 3	REF: Knowledge/Understanding	OBJ: Section 13.4
STO: GSS-7m51	TOP: Geometry and Spatial Sense	KEY: Polygon

30. ANS: mosaic

DIF: Level 4	REF: Knowledge/Understanding	OBJ: Section 13.4
STO: GSS-7m51	TOP: Geometry and Spatial Sense	KEY: Mosaic

SHORT ANSWER

31. ANS:

Parallelogram ABCD is moved onto parallelogram A'B'C'D' by a rotation.

DIF: Level 2	REF: Application	OBJ: Section 13.1	STO: GSS-7m50
TOP: Geometry and Spatial Sense	KEY: Rotation		

32. ANS:

Responses will vary depending on the turn centre. One possible set of images is



DIF: Level 2	REF: Application	OBJ: Section 13.1	STO: GSS-7m50
TOP: Geometry and Spatial Sense	KEY: Rotation		

33. ANS:

Place the mirror line along the y -axis.

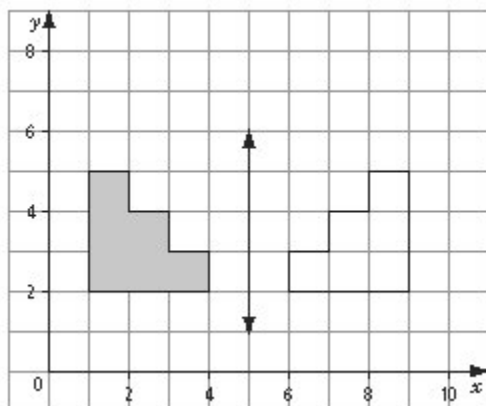
DIF: Level 3	REF: Communication	OBJ: Section 13.1
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- STO: GSS-7m50 TOP: Geometry and Spatial Sense KEY: Reflection
34. ANS:
Patterns will vary.

- DIF: Level 3 REF: Thinking/Inquiry/Problem Solving OBJ: Section 13.2
STO: GSS-7m51 TOP: Geometry and Spatial Sense KEY: Frieze
35. ANS:
a) A (4, 1)
b) B (3, 0)
c) C (5, 4)

- DIF: Level 2 REF: Application OBJ: Section 13.3 STO: GSS-7m51
TOP: Geometry and Spatial Sense KEY: Coordinate Grid
36. ANS:
The figure has been translated 4 units right and 1 unit up.

- DIF: Level 2 REF: Application OBJ: Section 13.3 STO: GSS-7m51
TOP: Geometry and Spatial Sense KEY: Translation
37. ANS:
The figure is in the shape of a set of stairs.



- DIF: Level 3 REF: Application OBJ: Section 13.3 STO: GSS-7m51
TOP: Geometry and Spatial Sense KEY: Coordinate Grid
38. ANS:
Any quadrilateral can cover a plane. The sum of all angles inside a quadrilateral equals 360° .

- DIF: Level 3 REF: Communication OBJ: Section 13.4
STO: GSS-7m51 TOP: Geometry and Spatial Sense KEY: Tiling
39. ANS:
Yes. A parallelogram is a quadrilateral and any quadrilateral can tile a plane.

- DIF: Level 3 REF: Communication OBJ: Section 13.4
STO: GSS-7m51 TOP: Geometry and Spatial Sense KEY: Tiling

PROBLEM

40. ANS:

Tessellations will vary, but there should not be gaps or overlaps on the plane.

DIF: Level 3

REF: Thinking/Inquiry/Problem Solving

OBJ: Section 13.5

STO: GSS-7m51

TOP: Geometry and Spatial Sense

KEY: Tessellation