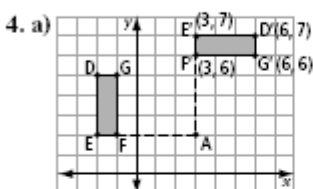
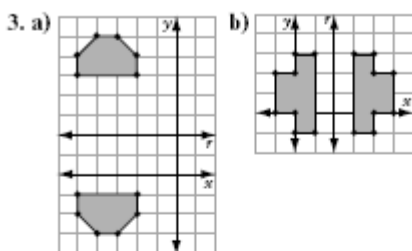


MathLinks 9 Practice and Homework Book

Chapter 1 Answers

1 Get Ready

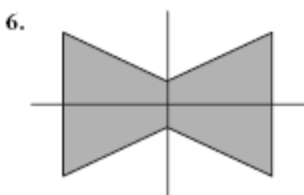
- Triangle ABC is translated 4 units up.
- $P'(3, 3)$



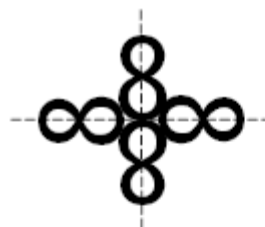
- b) a 270° counter-clockwise rotation
 5. 286 cm^2
 6. a) 5 b) 3

1.1 Line Symmetry

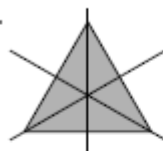
- True
- False. Example: An isosceles triangle has one line of symmetry.
- True
- False. Examples: A shape that has a line of symmetry is symmetrical. A shape that does not have a line of symmetry is asymmetrical.
- False. Example: A curved shape may have lines of symmetry.



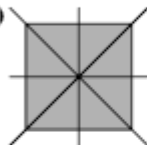
7. Example:



8. Three lines of symmetry



9. a) Four lines of symmetry



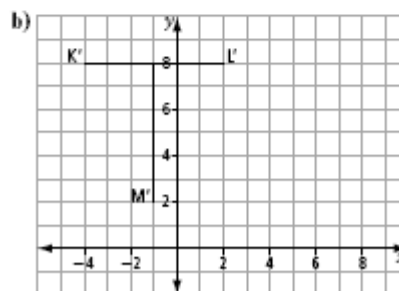
b) Two lines are oblique.

10. a) There are none.

b) One line



11. a) $K(2, 8)$, $L(8, 8)$, $M(5, 2)$



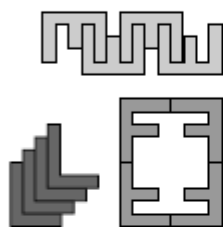
- c) $K'(-4, 8)$, $L'(2, 8)$, $M'(-1, 2)$
 d) Yes. They show symmetry along a vertical line.
 e) $x = 2$

1.2 Rotation Symmetry and Transformations

- a) rotation b) order c) symmetry d) centre e) circle
- Both. Example: Parts of the design have rotational symmetry. The octagon has an order of 8 and the square has an order of 4. There is line symmetry because there is a reflection along any side of any figure.

Shape	Lines of Symmetry	Order of Rotation	Angle of Rotation
Small square	4	4	90°
Octagon	8	8	45°

- a) Example:



- Example: The letter E; horizontal
 - Example: The design with F has an order of rotation of 2 and an angle of rotation of 180° .
- a) Example:



- Example: 180°
- a) Four
 - Example: Yes. Susan could repeat the pattern using rotational symmetry, or line symmetry, or both.
- a) 2 b) 2 c) 2
 2. Note that if the letter is perfectly square, there may be four lines of symmetry.

e) Examples: I, O

f) Examples: A, B, C, D, E, I, K, M, O, T, U, V, W, Y

1.3 Surface Area

- a) 675 cm^2 b) 706.9 cm^2 c) 1488 cm^2 d) 477.5 cm^2 e) 1.5 m^2
- Example: The total area of all of the surfaces of a shape.
- Example: The can has the greater surface area of approximately 596.9 cm^2 . The surface area of the tetra box is 444 cm^2 . The difference between the objects is approximately 152.9 cm^2 .
- a) 280 cm^2 b) 460 cm^2
- a) $30\,240 \text{ cm}^2$ b) $22\,680 \text{ cm}^2$ c) $52\,920 \text{ cm}^2$
- a) $53\,176.4 \text{ m}^2$.
b) Each side is $21\,513.6 \text{ m}^2$. The total surface area of the four triangular sides is $86\,054.3 \text{ m}^2$.
c) The total area of the pyramid is $139\,230.7 \text{ m}^2$.
- 1738.2 cm^2
- a) 72 cm^2 b) 108 cm^2

1 Chapter Link

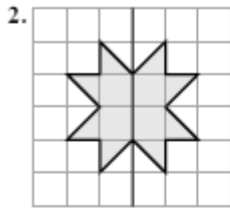
Answers will vary.

1 Vocabulary Link

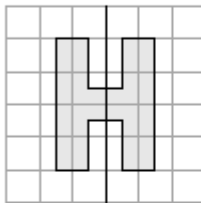
- line of symmetry
- line symmetry
- rotation symmetry
- symmetry
- centre of rotation
- translation
- angle of rotation
- surface area
- symmetrical

Chapter 1 Review

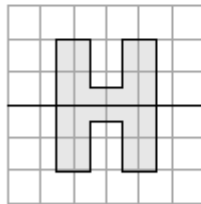
1. a) rotational symmetry
b) horizontal, vertical, and rotational symmetry



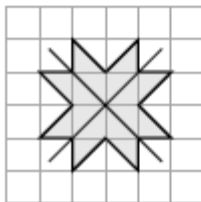
3. a) Example: A type of symmetry where an image can be divided into two identical reflected halves by a vertical line of symmetry.



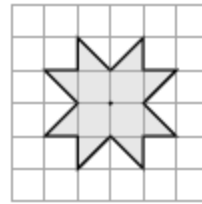
- b) Example: A type of symmetry where an image can be divided into two identical reflected halves by a horizontal line of symmetry.



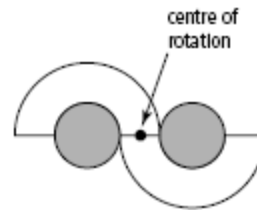
- c) Example: A type of symmetry where an image can be divided into two identical reflected halves by a diagonal line of symmetry.



- d) Example: A type of symmetry where an image can be turned about its centre of rotation so that it fits onto its outline more than once in a complete turn.

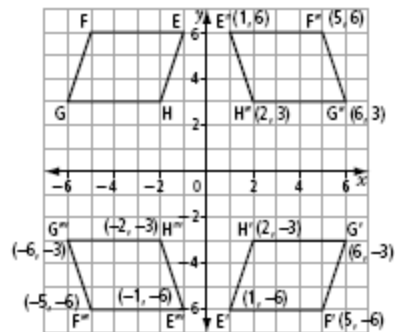


4. a) rotation symmetry



- b) This design is not symmetrical. Example:
To give the design symmetry, reflect a row of cats. The two rows of cats would then have symmetry along the line of reflection.

5. a)–b)



6. a) 167.5 m^2 b) 277.7 m^2

7. a) 128.425 m^2 b) 1285