

7.6

Frieze Patterns

- Goals**
- Use transformations to classify frieze patterns.
 - Use frieze patterns to design border patterns in real life.

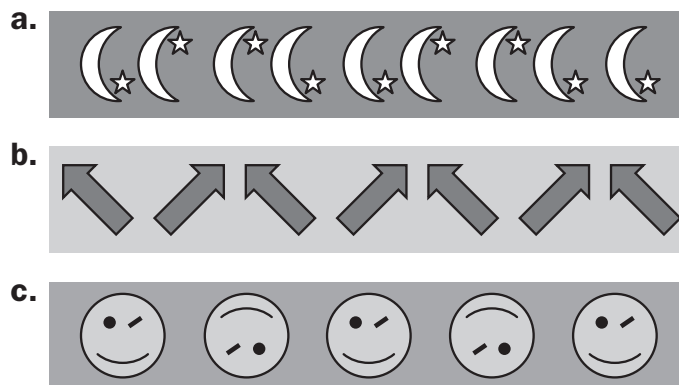
VOCABULARY

Frieze pattern A frieze pattern is a pattern that extends to the left and right in such a way that the pattern can be mapped onto itself by a horizontal translation.

Border pattern Frieze patterns are also called border patterns.

Example 1 Describing Frieze Patterns

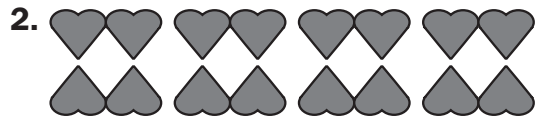
Describe the transformations that map the frieze pattern onto itself.



Solution

- a. This frieze pattern can be mapped onto itself by a horizontal translation (T) or by a horizontal glide reflection (G).
- b. This frieze pattern can be mapped onto itself by a horizontal translation (T) or by a reflection in a vertical line (V).
- c. This frieze pattern can be mapped onto itself by a horizontal translation (T) or by a 180° rotation (R).

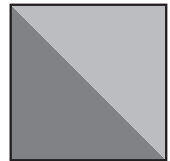
✓ **Checkpoint** Classify the frieze pattern.



TRHVG

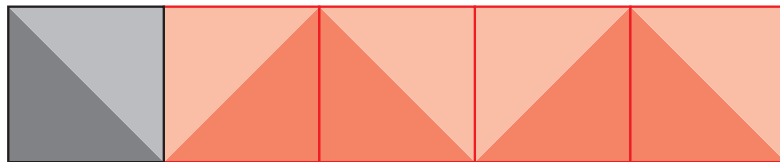
Example 3 *Drawing a Frieze Pattern*

Tiling A border on a floor is created using the tile shown at the right. The border pattern is classified as TV. Draw one such pattern.



Solution

Begin by reflecting the given tile vertically. Use this tile and the original tile to create a pattern that has a vertical line of symmetry. Then translate the pattern several times to create the frieze pattern.



✓ **Checkpoint** Complete the following exercise.

3. Use the tile in Example 3 to draw a pattern that can be classified as TG.

Sample Answer:

