

Important Concepts . . .

Preview Review



Mathematics Grade 5 TEACHER KEY

W3 - Lesson 3: Transformations

Important Concepts of Grade 5 Mathematics

W1 - Lesson 1	Number Sense Numbers 0 to 100 000
W1 - Lesson 2	Exploring Proper Fractions
W1 - Lesson 3	Exploring Decimals
W1 - Lesson 4	Numbers With Up to 2 Decimal Places
W1 - Lesson 5	Multiplication
W1 - Quiz	
W2 - Lesson 1	Division
W2 - Lesson 2	Collecting Data and Analyzing Patterns
W2 - Lesson 3	Estimating and Taking Measurements
W2 - Lesson 4	Perimeter and Area Measurements
W2 - Lesson 5	Metric Measurements
W2 - Quiz	
W3 - Lesson 1	Volume, Capacity, Mass, and Time
W3 - Lesson 2	2-D Shapes and 3-D Objects
W3 - Lesson 3	Transformations
W3 - Lesson 4	Statistics and Probability
W3 - Lesson 5	Chance and Probability
W3 - Quiz	

Materials Required

Protractor
Ruler
Calculator

A textbook is not
needed.

This is a stand-alone
course.

Mathematics Grade 5

Version 5

Preview/Review W3 - Lesson 3 TEACHER KEY

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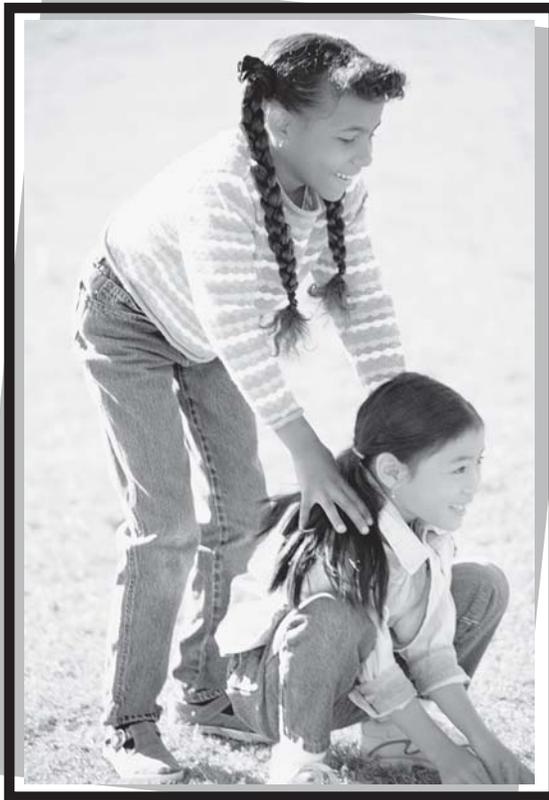
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Preview/Review Concepts for Grade Five Mathematics

TEACHER KEY

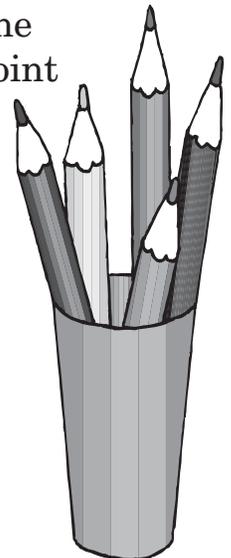
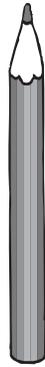
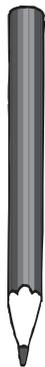
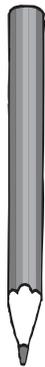


*W3 - Lesson 3:
Transformations*

OBJECTIVES

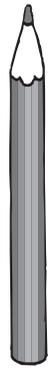
By the end of this lesson, you should

- understand and show slides, turns, and flips
- understand symmetry and identify points and lines of symmetry
- understand tessellations

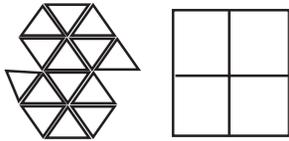


Glossary of Terms

- Coordinates:** the numbers in an ordered pair for a graph
- Flip:** a motion during which a figure or an object is rotated over a flip line to create a mirror image of the figure or object
- Flip Line:** a fixed line used in a flip
- Grid:** a ruled, square surface using horizontal and vertical lines
- Line of symmetry:** the centre line of a geometric figure that can be folded so the two halves are an exact match
- Line symmetry:** a property of having a line of symmetry
- Origin:** the starting point on a graph (0,0)
- Point symmetry:** the property of having more than one symmetrical image when using a point of symmetry
- Point of symmetry:** the pivot point at which a figure can be turned for another line of symmetry
- Slide:** a motion during which an object moves in a straight line while changing position



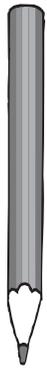
Tessellation:



a set of shapes that cover an area or surface without gaps or overlaps to create a pattern

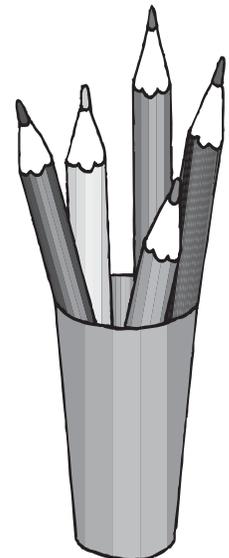
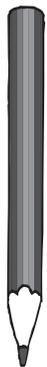
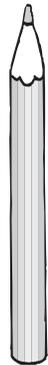
Turn:

a motion in which an object moves clockwise or counter clockwise using a turn centre



Turn centre:

a pivot point for an object turn



W3 - Lesson 3: Transformations

Concepts:

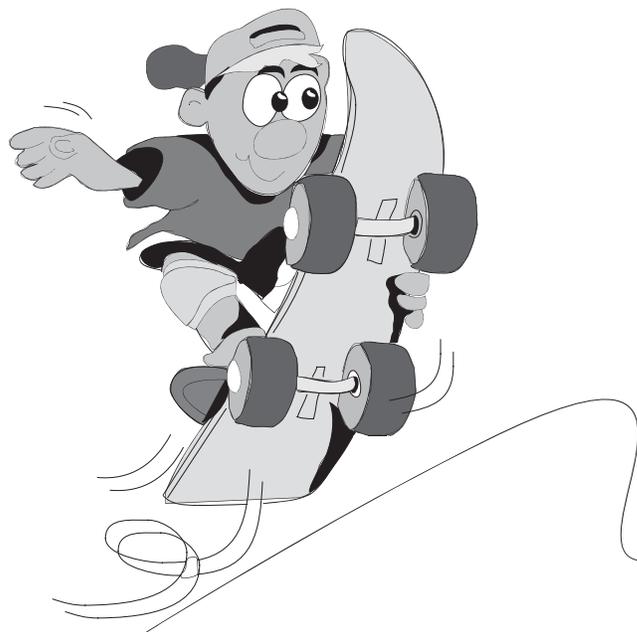
- Slides, Turns, and Flips
- Understanding Symmetry
- Tessellations

Slides, Turns, and Flips

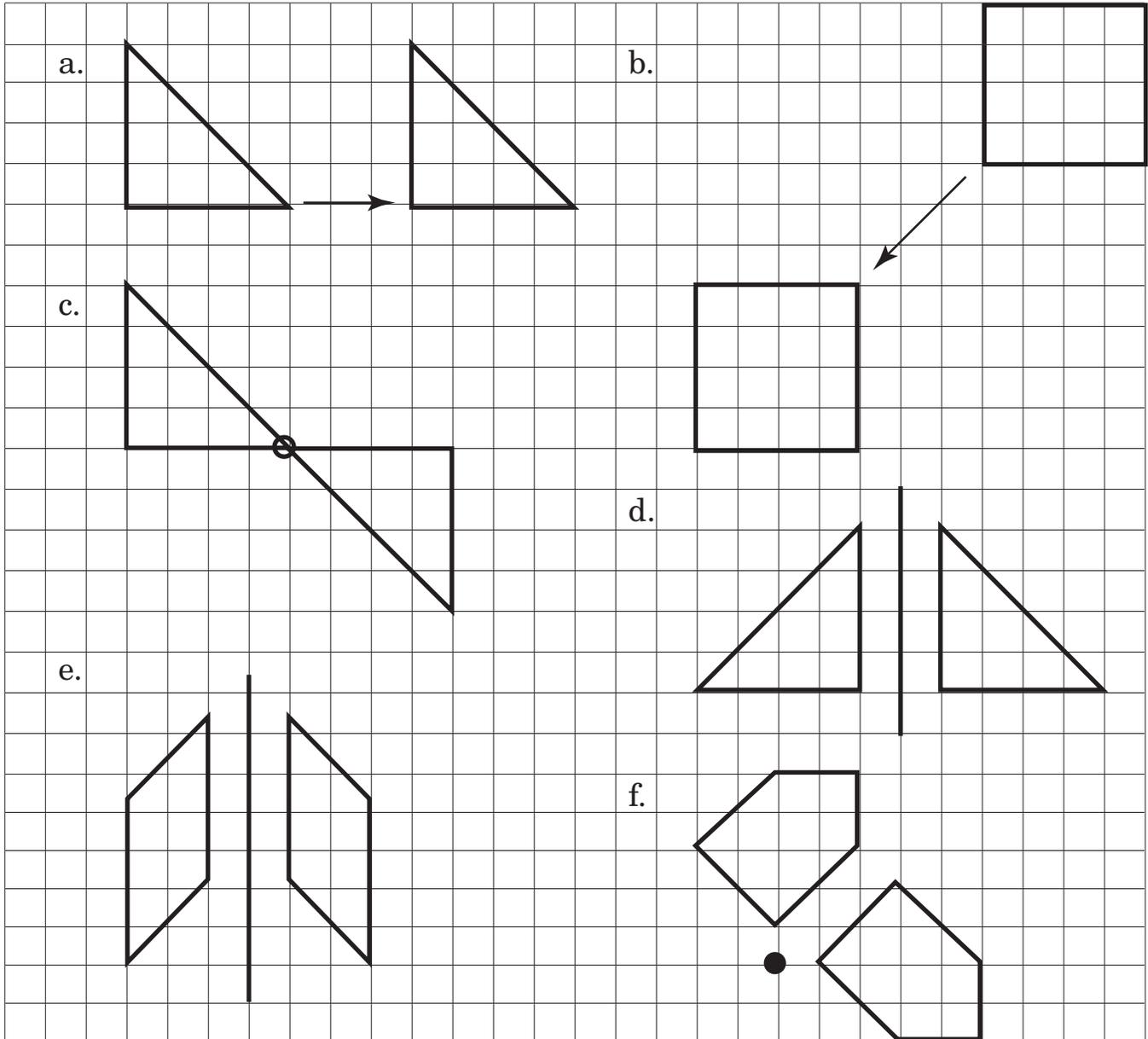
A **slide** is a motion during which an object moves in a straight line while changing position.

A **flip** is a motion during which a figure or an object rotates over a flip line to create a mirror image of the figure or object.

A **turn** is a motion in which an object moves clockwise or counter clockwise using a turn centre.



1. For the diagrams below, state whether the movement made was a **slide**, **turn**, or **flip**. Place your answers at the bottom.



a. Slide

b. Slide

c. Turn

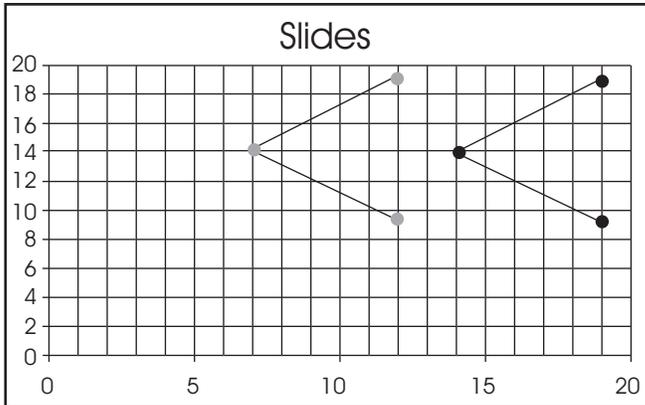
d. Flip

e. Flip

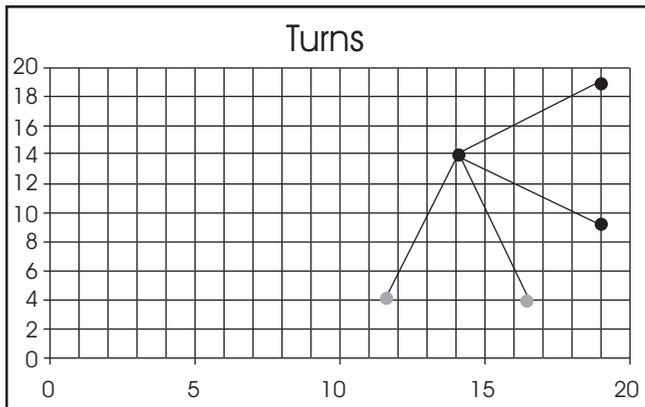
f. Turn

2. For each graph, create a triangle to match the graph's title.

a. Show how this triangle would slide.



b. What would this triangle look like after a quarter turn clockwise on points 14, 14?



Understanding Symmetry

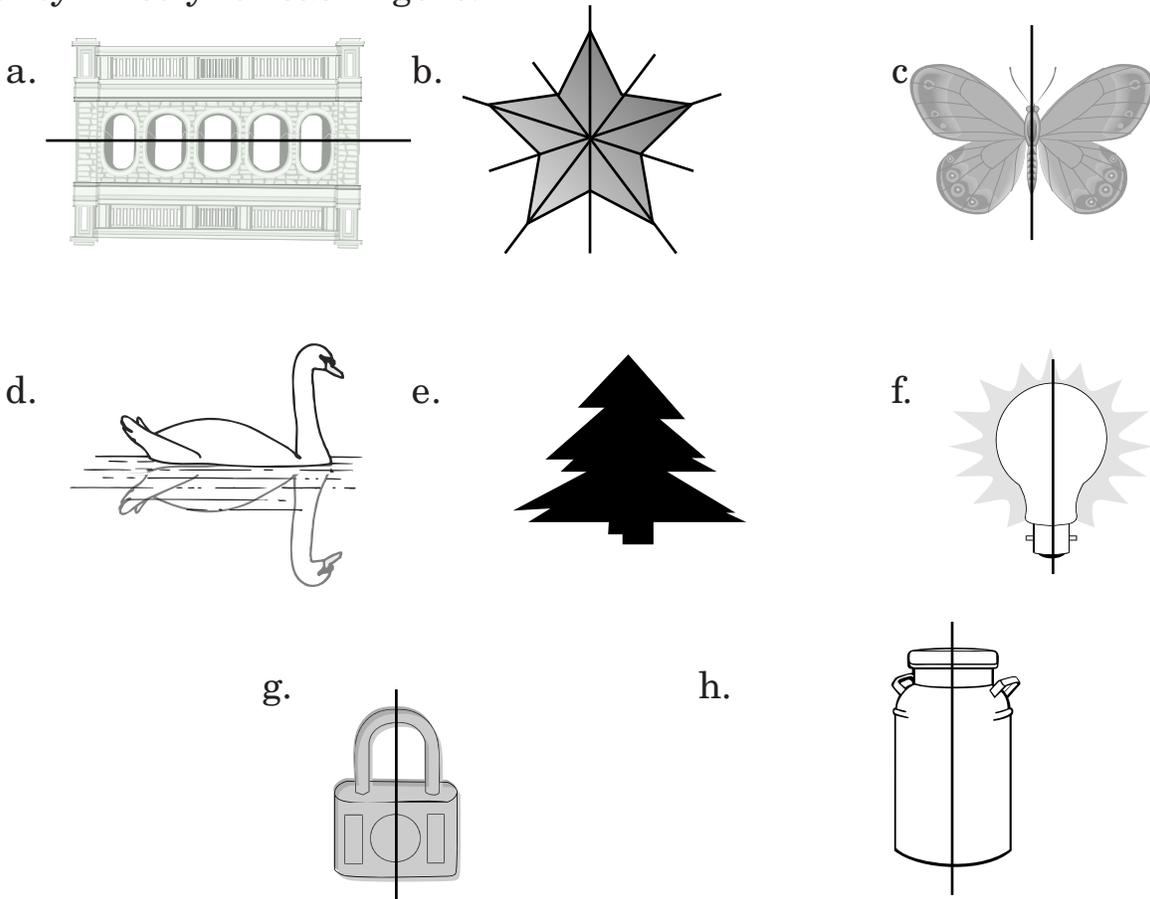
A **line of symmetry** is the centre line of a geometric figure that can be folded so the two halves are an exact match.

A **line symmetry** is a property of having a line of symmetry. The line of symmetry is the line that you draw. Line symmetry means that the figure has at least one possible line of symmetry.

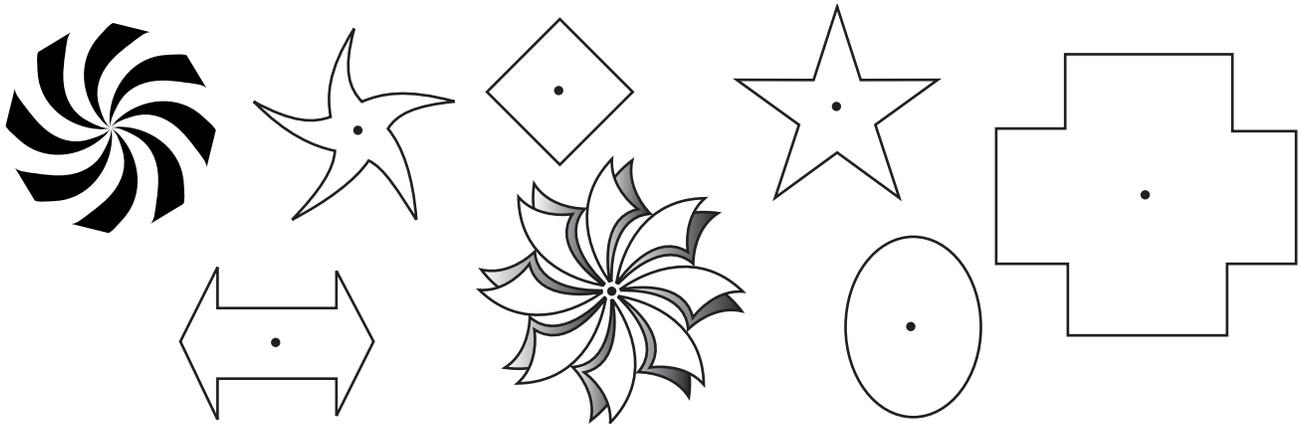
A **point symmetry** is the property of having more than one symmetrical image when using a point of symmetry. In other words, when an object is turned at its point of symmetry, it will be symmetrical at least twice before it makes a full turn.

A **point of symmetry** is the pivot point at which a figure can be turned to create another line of symmetry.

- Each of the following has one or more lines of symmetry. Draw all lines of symmetry for each figure.

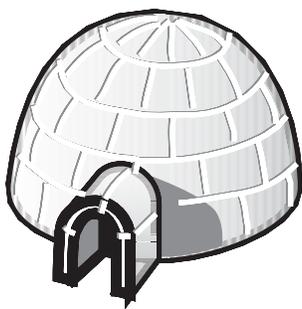


2. Each of the following has a point of symmetry. Mark in the point of symmetry **CLEARLY** with a dot.



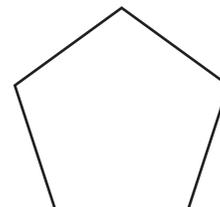
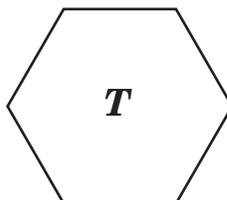
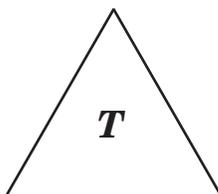
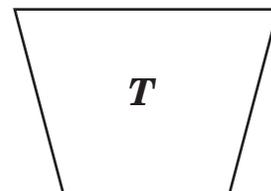
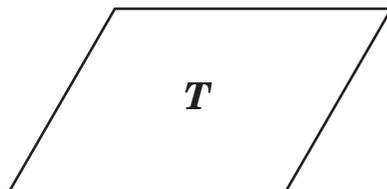
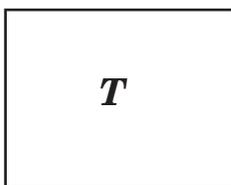
Tessellations

A **tessellation** is a set of shapes that cover an area or surface without gaps or overlaps to create a pattern.



The shapes may or may not all be identical.

Which of the following shapes can create a tessellation? Trace each shape repeatedly to find out. Put a "T" in the shapes that tessellate.



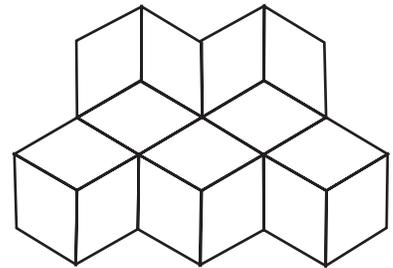
Can you make a tessellation with more than one shape? Yes

Where can you find tessellations in nature? Honeycomb

Is a stained glass window a tessellation? Not always, but it can be.

Why or why not?

A stained glass window consists of a set area of shapes that cover an area without gaps or overlaps. However, pieces of stained glass are not all the same size.



Problem Solving

- Mr. John wants to cover his rectangular kitchen counter with pentagon tiles. Unfortunately, these tiles do not tessellate, so Mr. John must fill in the holes with another shape. What tile shape will Mr. John need to buy to complete his counter top?

Two trapezoids will be needed to complete the rectangular kitchen counter.

- Find all the capital letters in the alphabet that have lines of symmetry. What word containing the most letters can you make from these symmetrical letters?

A B C D E H I K M O T V W X Y

Answers will vary. Examples: THEMATIC, TOMAHAWK

3. Move only 3 circles in the bottom picture so that the circle sets form mirror images of each other.

