Sliding Shapes

Identify and describe slides.

1. Can you slide the white shape to cover all of the grey shape? If not, tell why.
   a) 
   ![White shape on grey shape]
   yes
   
   b) 
   ![White shape on grey shape]
   no, needs to be flipped
   
   c) 
   ![White shape on grey shape]
   no, not same shape

2. Describe each slide.
   a) 
   ![Triangle slide]
   left 1 and up 2
   
   b) 
   ![Line slide]
   left 1 and down 2
   
   c) 
   ![Heart slide]
   left 2 and down 1

3. Which shapes can you slide to cover another shape? Describe each slide.
   A and E: A to E right 8, E to A left 8
   B and C: B to C right 2, C to B left 2

At-Home Help

To slide a shape is to move it left or right, up or down, without turning or flipping. The shape does not change size or shape.

This slide is 2 left and 1 down.
Flipping Shapes

Goal Identify and describe flips.

1. Can you flip the white shape to cover all of the grey shape? If not, tell why.
   a) no, it's a slide, not a flip
   b) yes
   c) yes
   d) no, needs to be turned
   e) no, needs to be turned

2. Write the letters of the flips in Question 1 that are flips over a horizontal line. ________

3. Write the letters of the flips in Question 1 that are flips over a vertical line. ________

4. a) Write the letter of the slide in Question 1. ________
   b) Describe the slide. right 2
1. Describe each turn by the amount ($\frac{1}{2}$, $\frac{1}{4}$, or $\frac{3}{4}$) and the direction (CW or CCW).

   a) $\frac{1}{2}$ CW
   b) $\frac{1}{4}$ CW
   c) $\frac{1}{2}$ CCW
   d) $\frac{3}{4}$ CW
   e) $\frac{1}{4}$ CCW
   f) $\frac{3}{4}$ CCW
   g) $\frac{1}{2}$ CW

2. a) Write the letter of the turn in Question 1 that has the same start and end positions for the triangles as those in part c). _______ g _______

   b) What are the descriptions for these 2 turns? _______ $\frac{1}{2}$ CCW and $\frac{1}{2}$ CW _______

3. a) Write the letter of the turn in Question 1 that has the same start and end positions for the triangles as those in part d). _______ e _______

   b) What are the descriptions for these 2 turns? _______ $\frac{3}{4}$ CW and $\frac{1}{4}$ CCW _______
Communicate About Slides, Flips, and Turns

Goal Explain how to make a picture by sliding, flipping, and turning shapes.

Use the Communication Checklist.

1. This pattern was made using slides, flips, and turns.

Describe each move.

a) from A to B  
   right 2 and down 1

b) from B to C  
   flip right in vertical line, or turn $\frac{1}{4}$ CW or $\frac{3}{4}$ CCW

c) from C to D  
   flip right in vertical line

d) from D to E  
   turn $\frac{1}{2}$ CW or $\frac{1}{2}$ CCW

2. Make your own pattern with at least 6 more shapes on this grid. Then describe each move.
For example:

slide right 1, slide right 1, slide right 1, turn $\frac{1}{2}$ CW, slide right 1, slide right 1.

flip right in a vertical line, slide right 1, slide right 1, turn $\frac{1}{2}$ CW, slide right 1, slide right 1.
Comparing Patterns

**Goal**

Compare patterns that use slides, flips, and turns.

1. a) Create a different pattern using the same shape as in the pattern in the At-Home Help box. Have at least 1 attribute that changes. For example:

   ![](triangle_pattern.png)

   b) Which attribute(s) stay the same in your pattern? shape

   c) Which attribute(s) change in your pattern? position

   d) Write a pattern rule for your pattern. Start with a triangle flip down in a horizontal line, flip that triangle right in a vertical line, flip that triangle up in a horizontal line, flip that triangle right in a vertical line, repeat.

2. Compare your pattern with the pattern in the At-Home Help box.

   For the example in Question 1:

   a) How are they the same? The patterns have the same shape. Position changes in both, and the position change is from flipping.

   b) How are they different? The patterns have different colours. The colour changes in the At-Home Help pattern, but not in mine. The At-Home Help pattern flips only in a vertical line, but my pattern flips in both horizontal and vertical lines.
1. a) Which attributes are changing in the pattern below?

A. shape  
B. colour  
C. size  
D. position

b) For each attribute that changes, describe how it changes.

   colour: black, grey, repeat

   position: by flipping in a vertical line to the right

c) Extend the pattern by drawing 2 more repeats.

2. a) Which attributes are changing in the pattern below?

A. shape  
B. colour  
C. size  
D. position

b) For each attribute that changes, describe how it changes.

   shape: rhombus, square (with a dot in it), repeat

   colour: black, grey, repeat

   position: rhombus by sliding right 2 and square by flipping right in a vertical line

c) Extend the pattern by drawing 2 more repeats.
Circle the correct answer.

1. Which pair of shapes shows a slide?
   - A. 
   - B. 
   - C. 
   - D. 

2. Which pair of shapes in Question 1 shows a flip?
   - A. 
   - B. 
   - C. 
   - D. 

3. Which pair of shapes in Question 1 shows a turn?
   - A. 
   - B. 
   - C. 
   - D. 

4. How would you describe this slide?
   - E. right 2 and down 1
   - F. right 1 and down 2
   - G. left 2 and up 1
   - H. left 1 and up 2

5. Which pair of shapes shows a flip over a horizontal line?
   - A. 
   - B. 
   - C. 
   - D. 

6. How would you describe this turn?
   - E. $\frac{1}{4}$ CW
   - F. $\frac{1}{2}$ CCW
   - G. $\frac{3}{4}$ CCW
   - H. $\frac{1}{4}$ CCW
Test Yourself  Page 2

Circle the correct answer.

7. Which shows a turn of $\frac{3}{4}$ CCW?

8. Which describes this pattern? 
   E. Flip a P in a vertical line, repeat.
   F. Flip a black P in a vertical line and colour it white, flip the white P in a vertical line and colour it black, repeat.
   G. Flip a black P in a horizontal line and colour it white, flip the white P in a horizontal line and colour it black, repeat.
   H. Turn a black P $\frac{1}{2}$ turn CW and colour it white, turn the white P $\frac{1}{2}$ turn CW and colour it black, repeat.

9. Which attributes are changing in this pattern?
   A. colour and shape  
   B. shape and size  
   C. colour and position  
   D. position and shape

10. Which shapes extend this pattern?