

**YOUR NAME:** KTUNSTALL

**LESSON PLAN CONCEPT / TOPIC:** TRANSFORMATIONS

**TARGETED GRADE LEVEL(S):** 6

**NC STANDARDS COURSE OF STUDY OBJECTIVE(S) ADDRESSED:**

3.03 TRANSFORM FIGURES IN THE COORDINATE PLANE AND DESCRIBE THE TRANSFORMATION

**SPECIFIC LESSON PLAN OBJECTIVES:** AT THE END OF THIS LESSON STUDENTS WILL BE ABLE TO:

1)PERFORM TRANSFORMATIONS OF VARIOUS FIGURES; 2)DESCRIBE THE TRANSFORMATION PERFORMED

**REQUIRED MATERIALS:** GRAPH PAPER, PENCIL, PROJECTOR, COMPUTER, 2 DIFFERENT COLOR PENCILS (ONE FOR THE ORIGINAL FIGURE, ONE FOR THE NEW FIGURE)

### **VOCABULARY**

TRANSFORMATION -A CHANGE IN POSITION SHAPE OR SIZE OF A FIGURE IN A PLANE

IMAGE – THE RESULT OF A TRANSFORMATION

ROTATE – TO TURN A FIGURE ABOUT A CENTER POINT

TRANSLATE – TO SLIDE A FIGURE IN A PLANE WITHOUT ROTATING OR RESIZING THE FIGURE

REFLECT – TO FLIP A FIGURE OVER A LINE; THE POINTS OF THE REFLECTION AND THE FIGURE ARE EQUAL DISTANCE FROM THE LINE

**ANTICIPATORY SET (LEAD-IN):** STUDENTS WILL *FAST WRITE* FOR 3 MINUTES ON THE TOPIC OF TRANSFORMATIONS. AT THE END OF THE 3 MINUTE PERIOD, CALL ON STUDENTS TO READ WHAT THEY WROTE. FROM THEIR RESPONSES PUT IDEAS ON THE BOARD OR USE LARGE SHEETS OF PAPER AND HAVE STUDENTS TO WRITE DOWN THEIR IDEAS. USE THIS TO LEAD A DISCUSSION ON TRANSFORMATIONS. START THE TRANSFORMATION ALICE WORLD AND HAVE THE PROFESSOR TO EXPLAIN TO THE CLASS THE DEFINITION OF A TRANSFORMATION. PAUSE WHEN HE IS DONE.

### **STEP-BY-STEP PROCEDURES:**

**THE FIRST TRANSFORMATION THAT WILL BE PERFORMED WILL BE A TRANSLATION. RESUME THE VIDEO SHOWING STUDENTS HOW A FIGURE SLIDES FROM ONE POSITION TO ANOTHER WHEN TRANSLATED.**

ON A SHEET OF GRAPH PAPER DRAW A TRIANGLE IN THE FIRST QUADRANT. GRAPH AND CONNECT THE FOLLOWING POINTS. (1,1) (3,6) (5,1)(1,1). ***NEW IMAGE COORDINATES (-1,4) (1,9) (3,4) (-1,4)***

**NOW WE ARE GOING TO TRANSLATE (SLIDE) THE FIGURE TO THE LEFT 2 AND UP 3.** TO DO THIS, SUBTRACT 2 FROM EACH X-COORDINATE; NOW ADD 3 TO EACH Y-COORDINATE. FILL IN YOUR TABLE. DRAW YOUR NEW IMAGE.

**THE NEXT TRANSFORMATION THAT WILL BE PERFORMED WILL BE A ROTATION. RESUME THE VIDEO SHOWING STUDENTS HOW A FIGURE CAN ROTATE.**

ON A YOUR GRAPH PAPER DRAW A TRIANGLE IN THE SECOND QUADRANT. GRAPH AND CONNECT THE FOLLOWING POINTS [ (-1,1) (-1,5) (-6,1) (-1, 1) ]. **NEW IMAGE COORDINATES (-1,1) (-1,6) (5,1) (-1,1)**

TURN YOUR TRIANGLE  $90^{\circ}$  CLOCKWISE (TO THE RIGHT). WRITE DOWN THE POINTS OF YOUR NEW IMAGE.

**RESUME THE VIDEO SHOWING STUDENTS HOW A FIGURE CAN BE REFLECTED OVER A LINE.**

**GRAPH AND G .HE THIRD QUADRANTDRAW A TRIANGLE IN TN A YOUR GRAPH PAPER O G POINTSCONNECT THE FOLLOWIN [(1,1) (6,1) (1,5) (1,1)] **NEW IMAGE COORDINATES (-1,-1) (-6,-1) (-1,-5) (-1,-1)****

**NOW WE ARE GOING TO REFLECT THE FIGURE OVER THE Y-AXIS.**

MULTIPLY THE X-COORDINATES BY -1 TO GET THE X-COORDINATES OF THE NEW IMAGE. FILL IN YOUR TABLE. DRAW YOUR NEW IMAGE.

### **CLOSURE (REFLECT ANTICIPATORY SET):**

HAVE A STUDENT TO EXPLAIN WHAT A TRANSFORMATION IS AND TO LIST THE 3 MAJOR TYPES. HAVE A DIFFERENT STUDENT TO EXPLAIN TRANSLATIONS AND TO GIVE AN EXAMPLE EITHER WRITTEN ON THE BOARD OR PERFORMED LIVE ACTION. REPEAT WITH A DIFFERENT STUDENT FOR REFLECTION AND ROTATION.

### **ASSESSMENT BASED ON OBJECTIVES:**

STUDENTS WILL PERFORM THE FOLLOWING TRANSFORMATIONS ON A SHEET OF GRAPH PAPER OF EACH OF THE FIGURES BELOW.

SQUARE – TRANSLATE DOWN 3 AND RIGHT 5 FROM THE ORIGINAL FIGURE

RIGHT TRIANGLE – ROTATE ABOUT A POINT  $90$  DEGREES COUNTERCLOCKWISE (TO THE LEFT)

PENTAGON – REFLECT OVER THE X-AXIS

NAME \_\_\_\_\_  
 DATE \_\_\_\_\_

FAST WRITE HANDOUT

INSTRUCTIONS: WHEN I TELL YOU TO WRITE THE TOPIC IN THE BOX AT THE TOP OF THE HEAD. WHEN TOLD TO START YOU ARE TO WRITE NONSTOP FOR 3 MINUTES ON THE TOPIC. IF YOU GET STUCK YOU ARE ALLOWED TO WRITE **I AM STUCK** UNTIL YOUR THOUGHTS FLOW AGAIN. PLEASE REFRAIN FROM WRITING I DON'T KNOW.

NAME \_\_\_\_\_ DATE \_\_\_\_\_

ORIGINAL FIGURE		NEW FIGURE <u>TRANSLATED</u>	
X-COORDI NATE	Y-COORDI NATE	X-COORDI NATE (-2)	Y-COORDI NATE (+3)
1	1		
3	6		
5	1		
1	1		

ORIGINAL FIGURE		NEW FIGURE <u>ROTATED</u>	
X-COORDI NATE	Y-COORDIN ATE	X-COORDI NATE	Y-COORDIN ATE

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ORIGINAL FIGURE		NEW FIGURE <u>REFLECTED</u>	
X-COORDI NATE	Y-COORDI NATE	X-COORDI NATE (* -1)	Y-COORDINATE (=ORIGINAL Y)