

TEKS 2A.4.B



LESSON

1-8

# Problem Solving

## Exploring Transformations

Harry is working on a budget for a concert. The graph shows the total cost of renting the hall. A cleaning fee of \$40 for each rental is included in the graph. Use the graph for Exercises 1–6.

1. What is the cost of renting the hall for 2 hours? for 3 hours? for 6 hours? for 7 hours?

\_\_\_\_\_

2. What is the rate per hour not including the cleaning fee if Harry rents the hall for up to 3 hours?

\_\_\_\_\_

3. What is the rate per hour after the first 3 hours?

\_\_\_\_\_

4. Describe the effect on the graph if the cleaning fee were changed to \$25.

\_\_\_\_\_

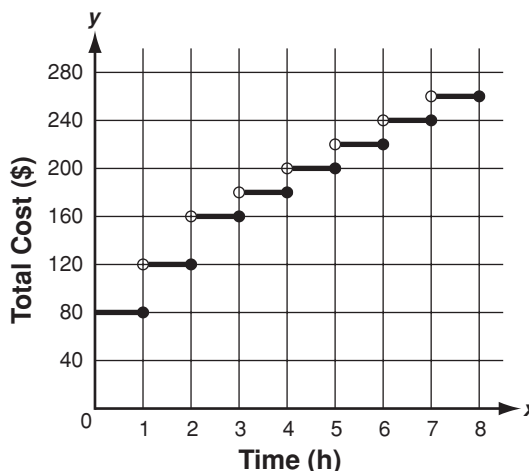
5. The managers decide that the minimum time for which the hall can be rented is 3 hours. Describe the effect this change would have on the graph above. How would the range change?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Concert Hall Rental



6. The Art Center gives Harry a graph showing its charges. This graph is the same shape as the graph above, but every point has been translated up 10 units. What would be the effect on Harry's budget if he chose to have the concert at the Art Center?

\_\_\_\_\_

\_\_\_\_\_

### Choose the letter for the best answer.

7. Martha's profits from her bagel store last year were \$0.35 per dozen bagels sold. This year her profits decreased 10%. What kind of transformation does this represent?

- A vertical compression
- B vertical stretch
- C horizontal compression
- D horizontal stretch

8. Shana drew the graph for a quadratic function. Then she did a horizontal stretch of the curve. Which transformation did she perform?

- F  $(x, y) \rightarrow (x, ay); |a| > 1$
- G  $(x, y) \rightarrow (bx, y); 0 < |b| < 1$
- H  $(x, y) \rightarrow (x, ay); 0 < |a| < 1$
- J  $(x, y) \rightarrow (bx, y); |b| > 1$

TEKS 2A.4.B



LESSON

1-8

## Problem Solving

### Exploring Transformations

Harry is working on a budget for a concert. The graph shows the total cost of renting the hall. A cleaning fee of \$40 for each rental is included in the graph. Use the graph for Exercises 1–6.

1. What is the cost of renting the hall for 2 hours? for 3 hours? for 6 hours? for 7 hours?

**\$120; \$160; \$220; \$240**

2. What is the rate per hour not including the cleaning fee if Harry rents the hall for up to 3 hours?

**\$40 per hour**

3. What is the rate per hour after the first 3 hours?

**\$20 per hour**

4. Describe the effect on the graph if the cleaning fee were changed to \$25.

**Translated down 15 units**

5. The managers decide that the minimum time for which the hall can be rented is 3 hours. Describe the effect this change would have on the graph above. How would the range change?

**Possible answers: A line would go**

**from (0, 160) to (3, 160) with no**

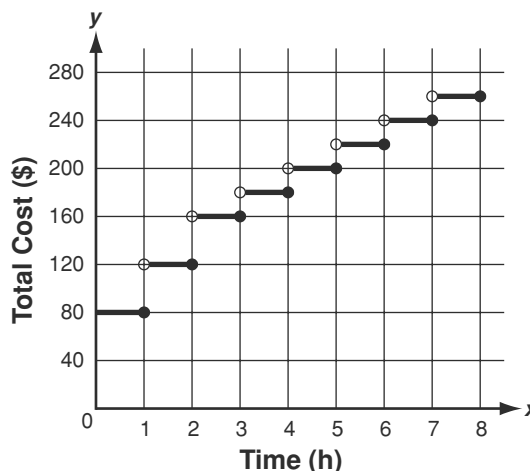
**open circle; the range would not include any numbers less than 160.**

Choose the letter for the best answer.

7. Martha's profits from her bagel store last year were \$0.35 per dozen bagels sold. This year her profits decreased 10%. What kind of transformation does this represent?

- A** vertical compression  
 **B** vertical stretch  
 **C** horizontal compression  
 **D** horizontal stretch

Concert Hall Rental



6. The Art Center gives Harry a graph showing its charges. This graph is the same shape as the graph above, but every point has been translated up 10 units. What would be the effect on Harry's budget if he chose to have the concert at the Art Center?

**He would have to pay more to rent the Art Center.**

8. Shana drew the graph for a quadratic function. Then she did a horizontal stretch of the curve. Which transformation did she perform?

- F**  $(x, y) \rightarrow (x, ay); |a| > 1$   
 **G**  $(x, y) \rightarrow (bx, y); 0 < |b| < 1$   
 **H**  $(x, y) \rightarrow (x, ay); 0 < |a| < 1$   
 **J**  $(x, y) \rightarrow (bx, y); |b| > 1$