Name _____ Date _____ Hour _____

THINKING WITH MATHEMATICAL MODELS

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For Exercises 4–7, tell whether the relationship between *x* and *y* is an inverse variation. If it is, write an equation for the relationship.

4.)

x	1	2	3	4	5	6	7	8	9	10
y	10	9	8	7	6	5	4	3	2	1

5.)

x	1	2	3	4	5	6	7	8	9	10
y	48	24	16	12	9.6	8	6.8	6	5.3	4.8

6.)

x	2	3	5	8	10	15	20	25	30	40
y	50	33	20	12.5	10	6.7	5	4	3.3	2.5

7.)

x	0	1	2	3	4	5	6	7	8	9
y	100	81	64	49	36	25	16	9	4	1

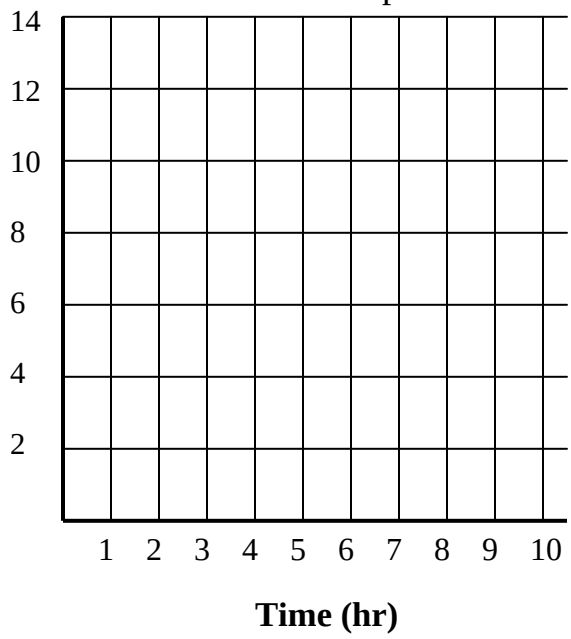
8.) A marathon is a 26.2-mile race. The best marathon runners can complete the race in a little more than 2 hours.

a.) Make a table and graph that show how the average running speed for a marathon changes as the time increases. Show times from 2 to 8 hours in 1-hour intervals.

Marathon Speeds

Time (hr)	Running Speed (mi/hr)
2	
3	
4	
5	
6	
7	
8	

Marathon Speeds



b.) Write an equation for the relationship between time (***t***) and average running speed (***s***) for a marathon.

c.) Tell how the average running speed changes as the time increases from:

2 hours to 3 hours: 3 hours to 4 hours: 4 hours to 5 hours:

d.) How do the answers for part (**c**) show that the relationship between average running speed and time is not linear?

Name _____ Date _____ Hour _____

THINKING WITH MATHEMATICAL MODELS

INV 3 – ACE # 4-8, 27, 28, 30-35 pg. 54 – 58 continued

Jamar takes a 10-point history quiz each week. Here are his scores on the first five quizzes: 8, 9, 6, 7, and 10. Use this information for Exercises 27–28.

27. Multiple Choice What is Jamar's average quiz score?

A. 6 **B.** 7 **C.** 8 **D.** 9

28. a.) Jamar misses the next quiz and gets a 0. What is his average after six quizzes?

b.) After 20 quizzes, Jamar's average is 8. He gets a 0 on the 21st quiz. What is his average after 21 quizzes?

c.) Why did a score of 0 have a different effect on the average when it was the sixth score than when it was the 21st score?

Solve the equation using a symbolic method. Then, describe how the solution can be found by using a graph and a table.

30. $5x - 28 = -3$

31. $10 - 3x = 7x - 10$

For Exercises 32–34, find the equation of the line with the given information.

32. Slope is -1/2, *y*-intercept (0, 5)

33. Slope of 3, passes through the point (2, 2)

34. Passes through the points (5, 2) and (1, 10)

35. Find the equation for the line below.