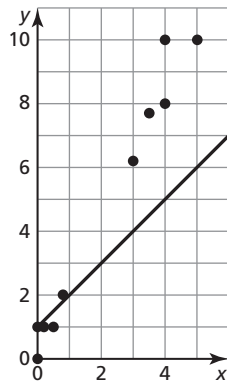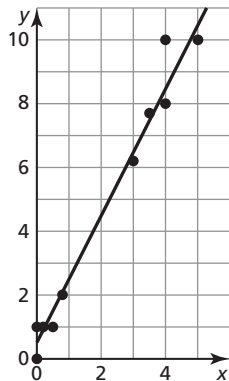## 4.5 Start Thinking

Compare the scatter plots below. Which line best represents the data? Support your answer with evidence from the graphs.

4.5 Warm Up

Plot the points from the table in a coordinate plane. Write the equation of the line in slope-intercept form.

1.

x	−3	−2	−1	0	1
y	−19	−13	−7	−1	5

2.

x	2	3	4	5	6
y	12	18	24	30	36

4.5 Cumulative Review Warm Up

Solve the equation. Determine whether the equation has *one solution*, *no solution*, or *infinitely many solutions*.

1. $4t - 3 = 13 + 4t$

2. $3h = 6h + 6$

3. $14y - 5 = 7(2y - 2)$

4. $2(5g - 5) = 3(5g - 10)$

5. $3(6 - 4m) = 2(9 - 6m)$

6. $3(t - 5) = \frac{2}{5}(25 + 10t)$

Name _____ Date _____

In Exercises 1 and 2, use residuals to determine whether the model is a good fit for the data in the table. Explain.

1. $y = \frac{7}{2}x - 8$

x	−4	−3	−2	−1	0	1	2	3	4
y	−21	−19	−15	−12	−8	−4	−1	2	6

2. $y = -4x + 27$

x	1	2	3	4	5	6	7	8	9
y	24	22	19	18	15	11	9	6	5

In Exercises 3 and 4, use a graphing calculator to find an equation of the line of best fit for the data. Identify and interpret the correlation coefficient.

3.

x	1	2	3	4	5	6	7	8	9
y	−7	−4	−1	0	0	1	4	7	9

4.

x	−5	−3	−1	1	3	5	7	9	11
y	20	18	15	14	12	9	7	4	2

5. The table shows the number of people x in a room and the temperature in the room in degrees Fahrenheit, y.

x	0	1	2	3	4	5	6	7	8
y	76	76	77	77	78	79	79	80	82

    a. Use a graphing calculator to find an equation of the line of best fit.

    b. Identify and interpret the correlation coefficient.

    c. Interpret the slope and y-intercept of the line of best fit.

    d. Approximate the temperature when 15 people are in the room.

Name_____ Date _____

4.5 Practice B

In Exercises 1 and 2, use residuals to determine whether the model is a good fit for the data in the table. Explain.

1. $y = \frac{3}{2}x - 10$

x	2	4	6	8	10	12	14	16	18
y	−1	−1	1	2	5	6	8	10	14

2. $y = -2x + 56$

x	1	2	3	4	5	6	7	8	9
y	52	50	48	47	45	42	41	38	35

In Exercises 3 and 4, use a graphing calculator to find an equation of the line of best fit for the data. Identify and interpret the correlation coefficient.

3.
x	−12	−8	−4	0	4	8	12	16	20
y	48	42	37	31	29	24	19	14	7

4.
x	3	4	5	6	7	8	9	10	11
y	20	36	15	32	12	28	17	16	24

5. The table shows the average number of minutes y per kilometer for runners and the total distance of a running race, x (in kilometers).

x	3.1	6.2	9.3	12.4	15.5	18.6	21.7	24.8	27.9
y	5.4	5.6	5.7	5.9	6.0	6.1	6.3	6.5	6.9

   a. Use a graphing calculator to find an equation of the line of best fit.

   b. Identify and interpret the correlation coefficient.

   c. Interpret the slope and y-intercept of the line of best fit.

   d. Approximate the average number of minutes per kilometer when the distance of a race is 31 kilometers.

4.5 Enrichment and Extension

Frequency and Percentiles

When test scores are reported, students are put into a certain percentile based on their grade compared to others who have taken the same test. The table shows certain test scores and their frequencies. The frequency is the number of students who had a particular score.

Score	Frequency
95	1
90	3
85	4
80	6
75	7
70	8
65	6
60	5
55	4
50	3
45	2
40	1

Example: What score is in the 18th percentile?

A score at the 18th percentile is the score that is just above the lowest 18% of scores. There are 50 scores, so the lowest 18% of the 50 total consists of 9 scores. The highest of these scores is a 55, so then the score at the 18th percentile would be also be a 55.

In Exercises 1–6, use the table above to find the score at the percentile.

1. 40th percentile

2. 50th percentile

3. 80th percentile

4. 58th percentile

5. 92nd percentile

6. 34th percentile

In Exercises 7–9, use the table above to find the percentile at the score.

7. a score of 45

8. a score of 80

9. a score of 75

4.5 Puzzle Time

What Did The Mother Buffalo Say To Her Son Before He Left?

Write the letter of each answer in the box containing the exercise number.

Use a graphing calculator to determine whether the model is a good fit for the data in the table.

1. $y = 3x - 6$

x	−7	−5	−3	−1	0	1	3	5	7
y	−26	−22	−15	−8	−7	−3	4	8	16

O. yes   **P.** no

2. $y = -2x + 8$

x	0	1	2	3	4	5	6	7	8
y	9	7	4	1	−1	−3	−4	−5	−8

I. yes   **J.** no

3. $y = -0.2x + 15$

x	−40	−30	−20	−10	0	10	20	30	40
y	27	23	17	14	12	0	−4	−7	−11

M. yes   **N.** no

Use a graphing calculator to find an equation of the line of best fit for the data.

4.

x	−12	−9	−6	−3	0	3	6	9	12
y	−27	−15	−2	6	21	30	42	58	67

Q. $y = -3.9x - 20$ **R.** $y = 3.9x - 20$ **S.** $y = 3.9x + 20$

5.

x	−4	−3	−2	−1	0	1	2	3	4
y	15	12	5	3	−5	−10	−13	−20	−23

A. $y = 4.95x + 4$ **B.** $y = -4.95x - 4$ **C.** $y = -4.95x + 4$

5	2	4	1	3