

## Task 1

1) Find the slope of the line of best fit, and describe what it means in the context of the situation.

$$\frac{27-0}{3.5-0} = \frac{27}{3.5} \approx 7.7 \quad \text{They ran about 7.7 miles every hour.}$$

2) Find the y-intercept of the line of best fit, and describe what it means in the context of the situation.

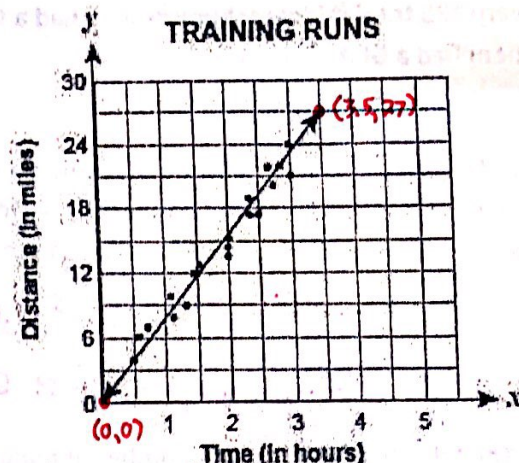
y-intercept = 0; at 0 hours, they ran 0 miles

3) Write an equation in the form  $y=mx+b$  for the line of best fit.

$$y = 7.7x$$

4) Use your equation to predict the distance of a four-hour training run.

$$7.7(4) = 30.8 \text{ miles}$$



## Task 2

1) Find the slope of the line of best fit, and describe what it means in the context of the situation.

$$\frac{22-53}{9-0} = \frac{-31}{9} = -3\frac{4}{9} \approx -3.4$$

Each year, the rainfall decreased by about 3.4 cm.

2) Find the y-intercept of the line of best fit, and describe what it means in the context of the situation. (You can assume that  $x=0$  represents year 1999)

53; In 1999, there was probably around 53 cm of rainfall.

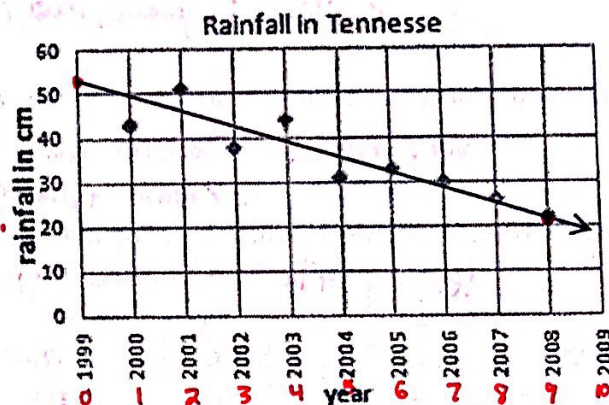
3) Write an equation in the form  $y=mx+b$  for the line of best fit, where  $x$  is the number of years after 1999.

$$y = -3.4x + 53$$

4) Use your equation to predict the amount of rainfall in Tennessee in 2016.

$$y = -3.4(17) + 53$$

$$-5.6 \text{ inches (unreasonable)}$$



## Task 3

A high school ran a survey on hair color. Use the information in the frequency table to answer the questions.

1) What percentage of the school is a 10<sup>th</sup> grader with black hair?

$$\frac{60}{500} = 12\%$$

2) Find the relative frequency (percentage) of 9<sup>th</sup> graders at this school.

$$\frac{150}{500} = 30\%$$

3) What percentage of the 12<sup>th</sup> graders have blond hair?

$$\frac{20}{105} \approx 11.4\%$$

4) What percentage of the redheads are older than 10<sup>th</sup> graders?

$$\frac{7}{15} = 46.6\%$$

5) Out of all the underclassmen (9<sup>th</sup> and 10<sup>th</sup> graders) what percentage of them do not have blond hair?

$$\frac{205}{275} = 74.54\%$$

6) Who was more likely to have red hair - 10<sup>th</sup> graders or 12<sup>th</sup> graders? Justify your reasoning with numbers.

$$10\text{th: } \frac{5}{125} = 4\% \quad 12\text{th: } \frac{5}{105} \approx 4.8\%$$

12<sup>th</sup> graders were slightly more likely to have red hair - 4.8% vs. 4%.

Grade	Hair Color				Total
	Blond	Brown	Black	Red	
9 <sup>th</sup>	45	41	61	3	150
10 <sup>th</sup>	25	35	60	5	125
11 <sup>th</sup>	36	48	34	2	120
12 <sup>th</sup>	20	29	51	5	105
Total	126	153	206	15	500



### Task 4

180 middle schoolers took a survey about their grade point average and whether or not they played a sport. There were 125 total middle schoolers who had a GPA of over 3.0. Out of the 70 middle schoolers who played a sport, 15 of them had a GPA under 3.0.

1) Complete the frequency table.

	Plays Sport	Does Not Play Sport	Total
GPA over 3.0	55	70	125
GPA under 3.0	15	40	55
Total	70	110	180

2) Is there a correlation between the middle

schoolers' GPA and whether or not they played a sport? (In other words, based on this sample, who is more likely to have a GPA over 3.0 -- sport-players or non sport-players?) Justify your reasoning.

Sport-players:  $\frac{55}{70} \approx 78.6\%$  have a GPA over 3.0.

Non-sport-players:  $\frac{20}{110} \approx 18.2\%$  have a GPA over 3.0.

→ Sport players are more likely to have a GPA over 3.0.

### Task 5

1) The table below shows the number of points per game (PPG) scored by 20 NBA players in the 2015-16 season, along with their 2015-16 salary. Create a scatter plot of the data. Put points per game as the x-axis and their salary on the y-axis. Be sure to choose appropriate intervals for your x and y-axis.

2) Is there a positive, negative, or no correlation? What does this correlation mean?

Positive; in general, the more points a player scores, the more they get paid.

3) Do you think the correlation is strong, moderate, or weak? Why?

Very Weak; there are many other factors besides scoring ability that affect how much a player gets paid. (defensive ability, passing ability, age)

4) Do you see any outliers? What causes them to be outliers?

Yes; Roy Hibbert - he scores very little but gets paid a lot. Stephen Curry scores a lot but doesn't get paid that much.

Player	PPG	Salary
Kobe Bryant	17.6	\$25,000,000
LeBron James	25.3	\$23,000,000
Carmelo Anthony	21.8	\$22,900,000
Kevin Durant	28.2	\$22,000,000
Chris Paul	19.5	\$21,500,000
Dwyane Wade	19	\$20,000,000
Russell Westbrook	23.5	\$16,700,000
James Harden	29	\$15,700,000
Roy Hibbert	5.9	\$15,500,000
Demarcus Cousins	26.9	\$14,700,000
John Wall	19.9	\$14,700,000
Draymond Green	14	\$14,300,000
Stephen Curry	30.1	\$11,200,000
Luol Deng	12.3	\$10,100,000
Dirk Nowitzki	18.3	\$8,200,000
Tim Duncan	8.6	\$5,200,000
Victor Oladipo	16	\$5,100,000
Kristaps Porzingis	14.3	\$4,000,000
Paul Pierce	6.1	\$3,300,000
Jeremy Lin	11.7	\$2,100,000

