## Task 1

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

$\frac{27-0}{3.5-0} = \frac{27}{3.5} \approx \boxed{7.7}$; for each hour, people

(8 is fine)   ran about 7.7 miles.

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

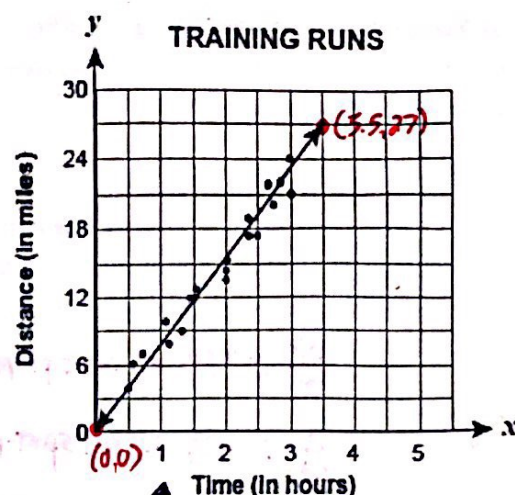y-int = $\boxed{0}$; someone who runs for 0 hours would go 0 miles

**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.**

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

(32 is fine)

**TRAINING RUNS**



Distance (in miles) vs Time (in hours)   (3.5, 27)   (0,0)

USE THE LINE, NOT THE DOTS!!!

## Task 2

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

$\frac{49-39}{2000-2003} = \frac{10}{-3} = \boxed{-3.\overline{3}}$

Each year, it rained approximately 3.3 cm less.

**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)**
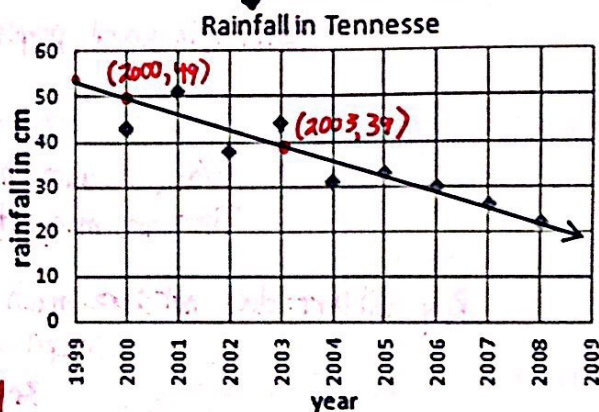
$\boxed{\approx 54}$; in 1999, it likely rained about 54 cm

**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.**

$y = -3.\overline{3}x + 54$

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

2016 = 1̲7̲ years after 1999 →   $y = -3.\overline{3}(17) + 54$   $\boxed{\approx -2.\overline{6} \text{ cm}}$ (technically impossible)

**Rainfall in Tennesse**



rainfall in cm vs year   (2000, 49)   (2003, 39)

## 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 10th grader with black hair?**

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

**2) What percentage of the school is a 9th grader?**

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

**3) What percentage of the 12th graders have blond hair?**

$\frac{20}{105} \approx \boxed{19\%}$

**4) What percentage of the redheads are older than 10th graders?**

$\frac{7}{15} = \boxed{46.\overline{6}\%}$

**5) Out of all the underclassmen (9th and 10th graders), what percentage of them do not have blond hair?**   $\frac{205}{275} = \boxed{74.\overline{54}\%}$

41+61+3+35+60+5 = 205

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

**6) Who was more likely to have red hair – 10th graders or 12th graders? Justify your reasoning with numbers.**

$\frac{5}{125} = 4\%$ of 10th graders have red hair.

$\frac{5}{105} \approx 4.8\%$ of 12th graders have red hair. → 12th graders are barely more likely to be redheads than 10th graders.

**Scanned with CamScanner**

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.

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.

|  | 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 |

$\frac{55}{70} \approx 79\%$ of sport-players had a GPA over 3.0.

$\frac{70}{110} \approx 64\%$ of non sport-players had a GPA over 3.0.   So sport players were 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, people who scored more points had a higher salary.

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

Weak because the dots are fairly spread out.
There are many other factors that determine a salary (defense, rebounding, age)

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

Roy Hibbert: does not score much but gets paid a lot.
Steph Curry: scores a lot but gets paid relatively little.

| 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 |