Warm Up

10/23

Write the equation of the line that has a slope = 1/3 and passes through the point (6, 10).

$y = \frac{1}{3}x + b$

$(6, 10)$ (x, y)

$10 = \frac{1}{3}(6) + b$

$\frac{1}{3}\left(\frac{6}{1}\right) = \frac{6}{3} = 2$

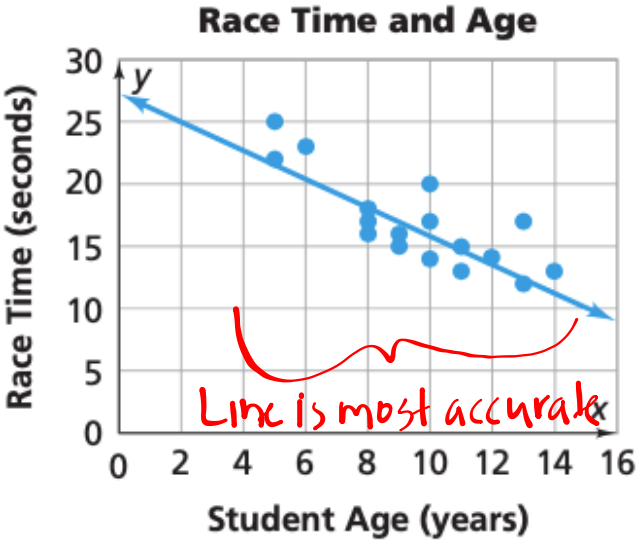
$10 = 2 + b$

$-2 \quad -2$

$8 = b$

$y = \frac{1}{3}x + 8$

4.2 Recap



$\frac{\Delta y}{\Delta x} = -\frac{5}{4} = -1.25$

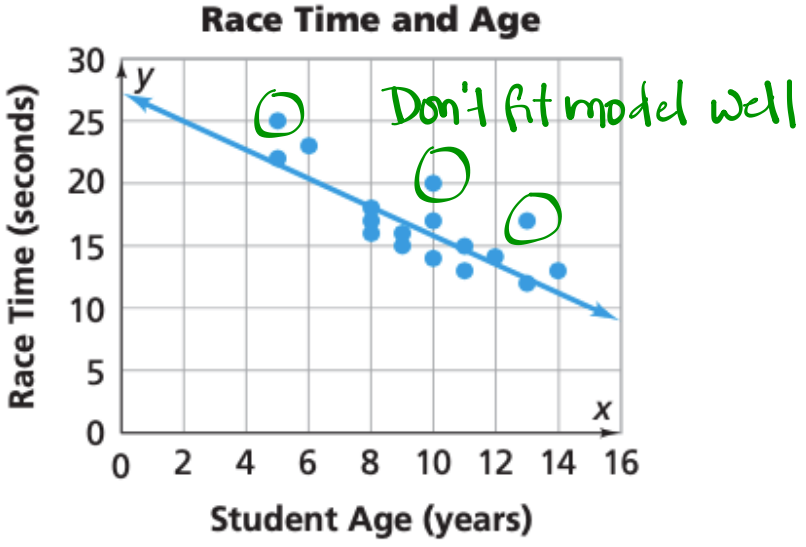
$\frac{\Delta y}{\Delta x} = \frac{\text{Race Time}}{\text{Age}}$ Units!

Problem 4.2

Use the Race Time and Age graph.

A The line drawn on the graph models the relationship between age and race time.

1. What is the approximate slope of the line?
2. How does the slope help you understand the relationship between age and race time?
3. Do you think it makes sense to predict a race time for a 7-year-old student using the line? If so, what do you predict for a 7-year-old? How confident are you in your prediction?
4. Do you think it makes sense to predict a race time for a 21-year-old person using the line? If so, what do you predict for a 21-year-old? How confident are you in your prediction?



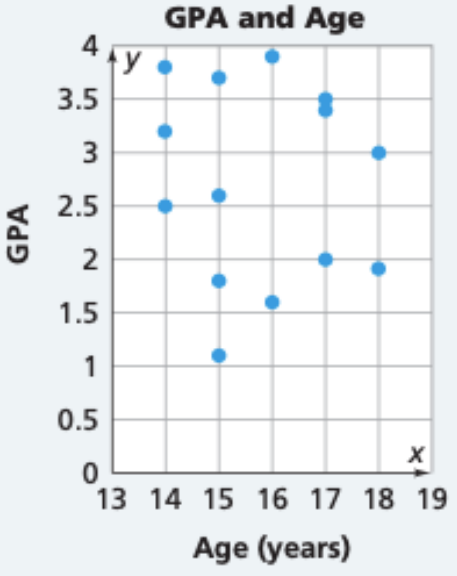
Problem 4.2 continued

B Some data points are very close to the line while others are far from it. The points far from the line don't seem to fit the model.

1. Find two points that don't seem to fit the model. What are their coordinates (age, race time)?
2. Why do you think the points don't match the overall pattern? Explain. Think about the relationship between race time and age.

C The table and graph show age and grade point average (GPA) for 14 students at Magnolia High School.

Student Age (years)	14	14	14	15	15	15	15	16	16	17	17	17	18	18
GPA	2.5	3.2	3.8	1.8	2.6	3.7	1.2	1.6	3.9	2.0	3.4	3.5	1.9	3.0



Not related at all.

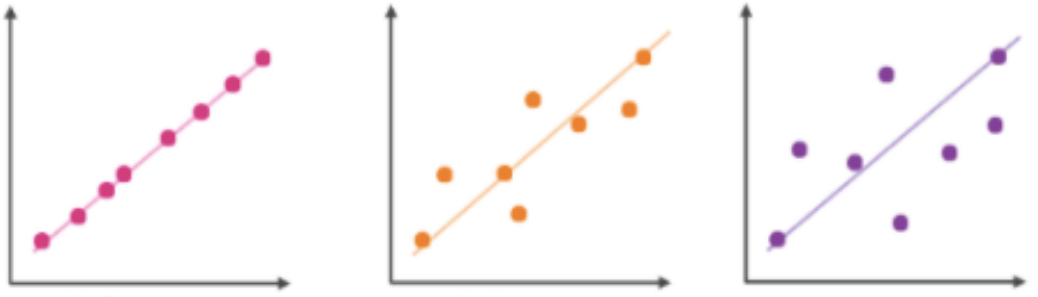
1. Are age and GPA strongly related for these students? Explain.
2. How is your answer to part (1) supported by the table?
3. How is your answer to part (1) supported by the scatter plot?

Correlation

How strongly two variables are related to each other.

Positive Correlation

↘ Positive slope (increasing)



Strong Positive

Positive

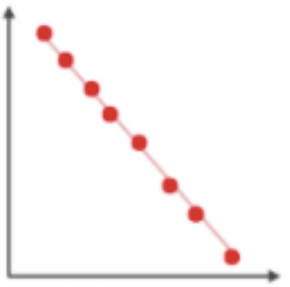
Weak Positive

Negative Correlation

Negative slope (decreasing)

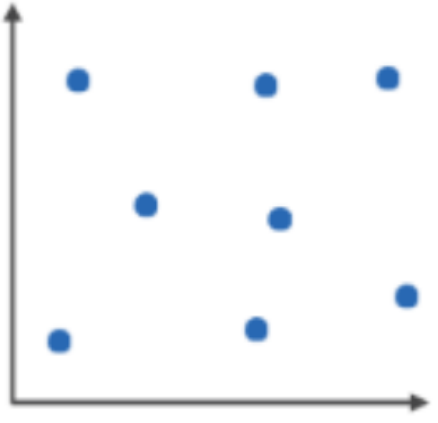
Weak Negative

Negative



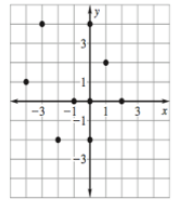
Strong Negative

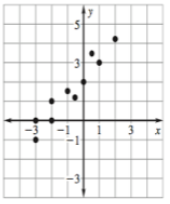
No Correlation

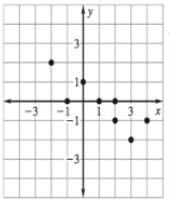


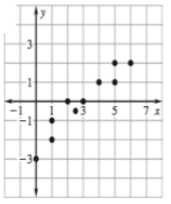
4.4 Best–Fit Lines Worksheet

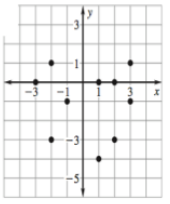
For 1–6, state the type of correlation that each scatter plot depicts.

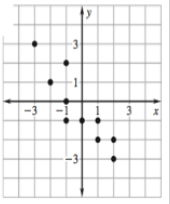
1. 

2. 

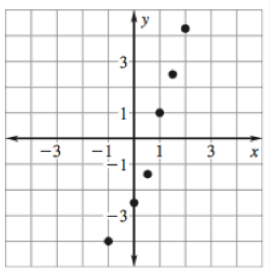
3. 

4. 

5. 

6. 

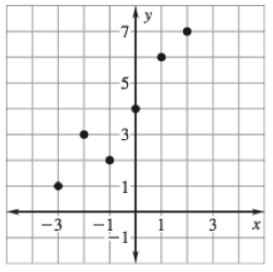
For 7–9, use a ruler to draw a best–fit line through the data. Calculate the slope (show work!) and state the y–intercept of the line you drew. Then write the equation of your best–fit line.

7. 

m: _____

b: _____

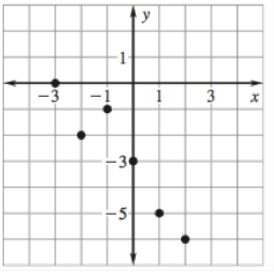
_____
best–fit equation

8. 

m: _____

b: _____

_____
best–fit equation

9. 

m: _____

b: _____

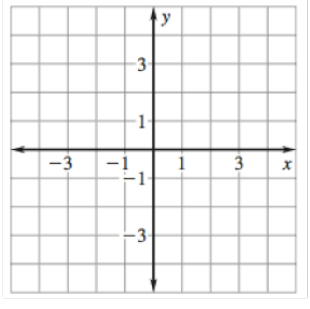
_____
best–fit equation

Remember: Calculated LoBF's can vary between you and your table mates.

For 10–11, plot the points from the table. Then use a ruler to draw a best–fit line through the data and write the equation of the line. Use the space to show your work.

10.

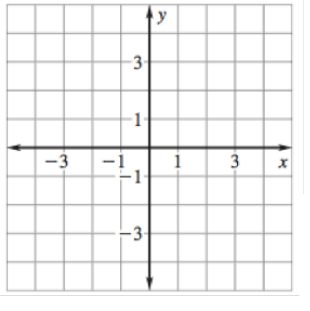
x	−2	−1	0	1	2	3
y	4	2	1	−2	−1	−2



_____
best–fit equation

11.

x	0	0	0.5	1.5	2	2.5
y	−4	−3	−1.5	1	3	4



_____
best–fit equation

Homework

Finish classwork