

## Warm Up

10/26

Linear or not? If linear write the equation of the line.

x	3	9	30	36
y	4	2	-5	-7

Always write this to remind yourself that change in y is in the numerator!

$$\frac{\Delta y}{\Delta x} = \frac{-2}{6} = \frac{-7}{21} = \frac{-2}{6} = -\frac{1}{3}$$

Linear because there is a constant slope between all points.

$$y = -1/3x + 5$$

What if the data is not linear?

$$\frac{\Delta y}{\Delta x} = \frac{7}{3} \neq \frac{5}{2} \neq \frac{1}{10}$$

Not linear because slope is NOT constant between all points.

# 5.1 Recap

**A** Use the survey data. Is each statement *true* or *false*? Explain.

1. Younger riders are three times as likely as older riders to prefer wood-frame coasters.
2. Younger riders are three times as likely as older riders to prefer steel-frame coasters.
3. The number of riders who prefer wood-frame coasters is about three quarters of the number who prefer steel-frame coasters.
4. Younger riders are more likely than older riders to prefer steel-frame coasters.
5. Older riders are more likely than younger riders to prefer wood-frame coasters.

→ We need to compare ratios

Young  
Old

	Prefer Wood	Prefer Steel
Age ≤ 40 years	45	60
Age > 40 years	15	20

Need these to make ratios  

Total
105
35

1.  $\frac{45}{105}$   $\frac{\# \text{ young who prefer wood}}{\text{Total \# of young}} \sim 43\%$

$\frac{15}{35} = 43\%$

**B** Suppose that a park installed one of each type of roller coaster. One day there were 210 riders over the age of 40 and 420 riders under the age of 40. Use the survey data from Question A.

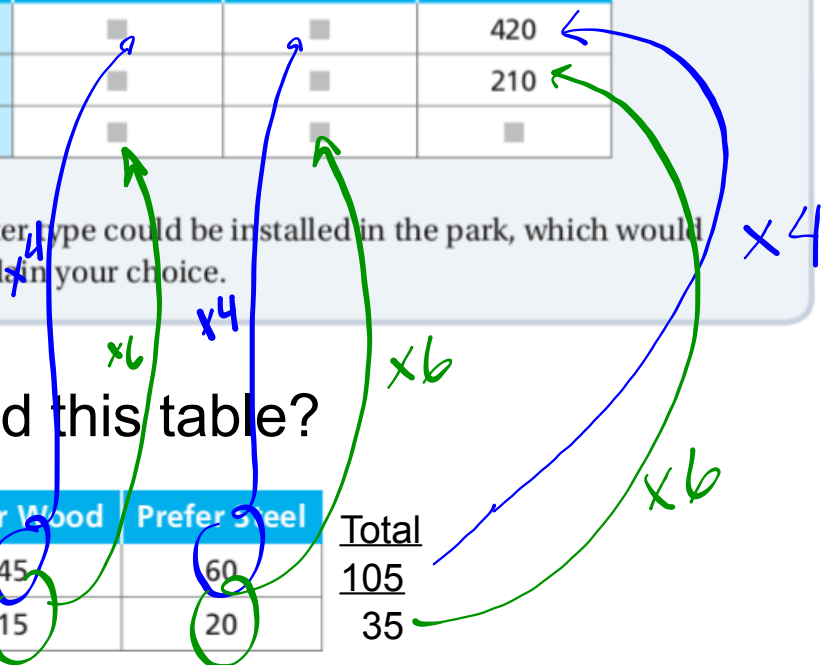
1. How many riders would you expect on the wood-frame coaster and how many on the steel-frame coaster?
2. How would you expect those riders to be distributed by age and coaster type in the following table?

	Prefer Wood	Prefer Steel	Total
Age ≤ 40 years	■	■	420
Age > 40 years	■	■	210
Total	■	■	■

**C** If only one roller coaster type could be installed in the park, which would you recommend? Explain your choice.

Why do we need this table?

	Prefer Wood	Prefer Steel	Total
Age ≤ 40 years	45	60	105
Age > 40 years	15	20	35



# 5.2 Politics of Girls and Boys

## Analyzing Data in Two-Way Tables

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Every four years social studies teachers at the middle school hold a mock election. Each student registers as a Democrat, Independent, or Republican, all of which are categorical data values. Then the classes hold primary and final elections for President.

The table shows the student registrations in one class.

	Democrat	Independent	Republican
Boys	8	4	12
Girls	8	2	6



- Do you think boys and girls have different party preferences?
- What evidence could you give as support?

## Problem 5.2

There are different ways to answer the question about political preferences of girls and boys in the sampled class.

**A** Use the table on the previous page. Do you think each statement is *true* or *false*? Justify your answers.

- Girls and boys are equally likely to be Democrats.
- Boys are more likely than girls to be Independents.
- Boys are more likely than girls to be Republicans.
- Girls are only half as likely as boys to be Republicans.

**B** Study the table of party choices and claims about differences between boys and girls. Notice that there are 24 boys and 16 girls in the class.

- Copy and complete this extended table.

	Democrat	Independent	Republican	Totals
Boys	8	4	12	■
Girls	8	2	6	■
Totals	■	■	■	■

- Do the totals of political party choices change your answers to Question A? Explain your reasoning.

**C** One way to compare groups with unequal numbers of members is to compute percents.

- Copy and complete the table below to show the fractions or percents of boys and girls with each preference.

	Democrat	Independent	Republican
Boys	$\frac{8}{24} = \frac{1}{3} = 33\frac{1}{3}\%$	■	■
Girls	■	■	■

- Do the percent calculations change your answers to Question A? Explain your reasoning.

# Homework

Page 121, #'s 16, 17