Warm Up

10/7

In your groups, determine …

Which of these points are collinear?

(Which ones all lie on the same line)

(–70, –35) (56, 55) (154, 125)

(196, 165) (364, 275)

Not on the line!

Problem 2.4

Recap

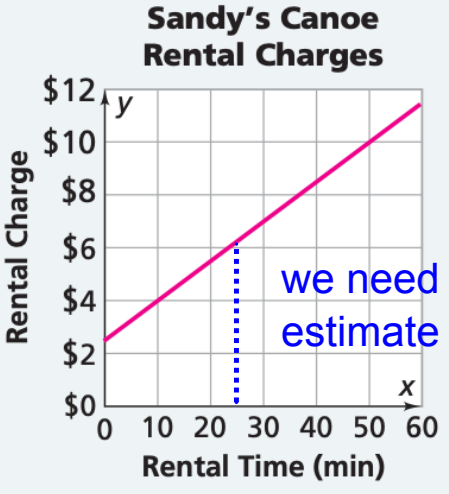
When Rashida and Serena applied for jobs at Sandy's, the owner gave them the following test questions to see if they could calculate charges correctly.

A

1. Explain what the numbers in the equation $c = 0.15t + 2.50$ tell you about the situation.
2. How much does it cost to rent a canoe for 25 minutes?
3. A customer is charged \$9.25. How long did he use the canoe?
4. A customer has \$6 to spend. How long can she use a canoe?

B The owner gave Rashida a graph of $c = 0.15t + 2.50$ and asked her how it could be used to estimate answers to Question A. How could Rashida respond?

Is it easiest to solve this using the equation or the graph?



Easiest to use the equation!

C The owner asked Serena to explain how she could use the table below to estimate answers to Question A. How could Serena respond?

Canoe Rental Time (min)	10	20	30	40	50	60
Rental Charge (dollars)	4.00	5.50	7.00	8.50	10.00	11.50

continued on the next page >

D The owner next asked Serena and Rashida to work together to find exact answers, not estimates, for Question A, parts (3) and (4).

1. For part (3) of Question A, the girls solved the linear equation $0.15t + 2.50 = 9.25$. They reasoned as follows:

   - If $0.15t + 2.50 = 9.25$, then $0.15t = 6.75$.
   - If $0.15t = 6.75$, then $t = 45$.
   - To check the answer, substitute 45 for t: $0.15(45) + 2.50 = 9.25$.

   Are Serena and Rashida correct? How do you know?

E River Fun Boats rents paddle boats. The equation $c = 4 + 0.10t$ gives the charge in dollars c for renting a paddle boat for t minutes.

1. What is the charge to rent a paddle boat for 20 minutes?
2. A customer at River Fun is charged \$9. How long did the customer use a paddle boat?
3. Suppose you want to spend at most \$12. How long could you use a paddle boat?

Homework Questions?

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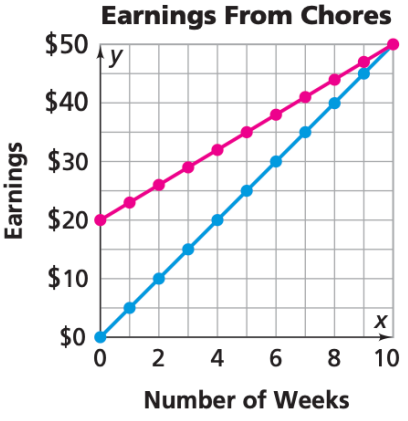
21. Anchee and Jonah earn weekly allowances for doing chores over the summer.

- Anchee's father pays her \$5 each week.
- Jonah's mother paid him \$20 at the beginning of the summer and now pays him \$3 each week.

The relationships between number of weeks and dollars earned are shown in this graph.



a. Which line represents Jonah's earnings? Which line represents Anchee's earnings? Explain.

b. Write two linear equations in the form $y = mx + b$ to show the relationships between Anchee's earnings and the number of weeks she works and between Jonah's earnings and the number of weeks he works.

c. In each equation, what do the values of m and b tell you about the relationship between the number of weeks and the dollars earned?

d. What do the values of m and b tell you about each line?

2.5 Amusement Park or Movies

Intersecting Linear Models

A company owns two attractions in a resort area—the Big Fun amusement park and the Get Reel movie multiplex. At each attraction, the number of visitors on a given day is related to the probability of rain. The company wants to be able to predict Saturday attendance at each attraction in order to assign its workers efficiently.

This table gives attendance and rain-forecast data for several recent Saturdays.

Saturday Resort Attendance

Probability of Rain (%)	0	20	40	60	80	100
Big Fun Attendance	1,000	850	700	550	400	250
Get Reel Attendance	300	340	380	420	460	500

- What equations model the relationships of Big Fun and Get Reel attendance to the probability of rain?
- For what probability of rain will one attraction be more popular than the other?

Complete 2.5 A - B3

Problem 2.5

A Use the table to find linear functions relating the probability of rain p to the following quantities.

1. Saturday attendance F at Big Fun
2. Saturday attendance R at Get Reel

Saturday Resort Attendance

A

Probability of Rain (%)	0	20	40	60	80	100
Big Fun Attendance	1,000	850	700	550	400	250
Get Reel Attendance	300	340	380	420	460	500

A_F

A_R

This table is really 2 tables combined to make 1.

1.

Probability of Rain (%)	0	20	40	60	80	100
Big Fun Attendance	1,000	850	700	550	400	250

2.

Probability of Rain (%)	0	20	40	60	80	100
Get Reel Attendance	300	340	380	420	460	500

Problem 2.5

A Use the table to find linear functions relating the probability of rain p to the following quantities.

1. Saturday attendance F at Big Fun

+20 +20 +20 +20 +20

Saturday Resort Attendance

Probability of Rain (%)	0	20	40	60	80	100
Big Fun Attendance	1,000	850	700	550	400	250

Y-int

-150 -150 -150 -150 -150

$$\frac{\Delta y}{\Delta x} = \frac{-150}{20} = -7.5$$

probability of rain

$$A_F = -7.5p + 1000$$

Attendance for 'p' probability of rain

1000 people will attend when 0% chance of rain

7.5 fewer people for every 1% increase of the probability of rain

Problem 2.5

A Use the table to find linear functions relating the probability of rain p to the following quantities.

2. Saturday attendance R at Get Reel

Saturday Resort Attendance

Probability of Rain (%)	0	20	40	60	80	100
Get Reel Attendance	300	340	380	420	460	500

B Use your functions from Question A to answer these questions. Show your calculations and explain your reasoning.

1. Suppose there is a 50% probability of rain this Saturday. What is the expected attendance at each attraction?
2. Suppose 475 people visited Big Fun one Saturday. Estimate the probability of rain on that day.
3. What probability of rain gives a predicted Saturday attendance of at least 360 people at Get Reel?

Homework

Finish classwork