

Geyser Water Park

Teacher Notes

Tennessee State Standards:

0706.3.12 Use linear equations to solve problems and interpret the meaning of slope, m and y -intercept, b , $f(x) = mx + b$ in terms of the context.

0706.3.13 Given a graph that exhibits the intersection of a line and the y -axis, write a linear function in the slope-intercept form: $y = mx + b$.

Skills to be covered:

Slope-intercept form $y = mx + b$

Graphing Linear equations

Using graphing calculators

Making predications

Students:

Work individually or in pairs

Setting:

It is the summer and a new water park has opened in Tennessee. You and your friends are making plans to attend. You check the plans at the ticket counter, and since you have a limited amount of money, you want the best buy.

Lesson

Study the two plans below and then decide which plan you will recommend to your friends.

Plan A

\$5.00 admission

\$1.00 per ride

Plan B

\$10.00 admission

\$.50 per ride

Which plan would you recommend?

Why? _____

Calculate the total cost under both rides for riding 0,1,2,3,4,5,and 6 rides.

(Calculators are optional)

Plan A		Plan B	
Rides	Total Cost	Rides	Total Cost
0		0	
1		1	
2		2	
3		3	
4		4	
5		5	
6		6	

Describe how the find the total cost of going under Plan A and riding any number of rides.

The total cost will equal _____ plus _____ times the number of rides.

Describe how to find the cost using symbols only!!

Use **Y** to equal the total cost and **X** to equal the number of rides.

$$Y = \underline{\hspace{2cm}} + \underline{\hspace{2cm}}X$$

Describe how to find the total cost of going under Plan B and riding any number of rides.

The total cost will equal _____ plus _____ times the number of rides.

Describe how to find the cost using symbols only!!

Use **Y** to equal the total cost and **X** to equal the number of rides.

$$Y = \underline{\hspace{2cm}} + \underline{\hspace{2cm}}X$$

Now enter the graphs you have written into the graphing calculator.

Now Trace (Menu 5) and use the arrow keys to trace along the equations.

Answer the following equations about the graphs:

1. If I ride 9 rides under Plan A, it will cost _____.
2. If I ride 9 rides under Plan B it will cost _____.
3. If I ride 30 rides under Plan A, it will cost _____.
4. If I ride 30 rides under Plan B, it will cost _____.
5. If I spent \$15 under Plan A, how many rides did I ride? _____.
6. If I spent \$20 under Plan B, how many rides did I ride? _____.
7. When would it cost the same under both plans? _____
_____.
8. Explain what you see on the graph that shows you this.

_____.
9. When would it cost more under Plan A?

_____.
10. Explain what you see on the graph that helps you to determine this.
_____.
11. When would it cost less under Plan A?
_____.

12. Explain what you see on the graph that helps you to determine this.

13. Comparing the graphs of Plan A and B, which of the lines is steeper and what does this mean as it relates to the total cost? _____

14. Predict what the line would look like if you graphed the following situations:

a.) a plan that has no admission price and each ride is \$3.00 _____

b.) a plan that has a \$25 admission price and no charge for rides _____

c.) a plan that has a \$5 admission for 3 free rides, and then \$1 for each additional ride _____

Math Connection:

As a result of this activity, the students will learn how a system of equations can be used to find the best use of information to make decisions in real world situations.