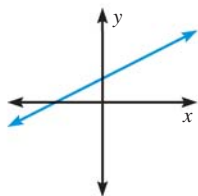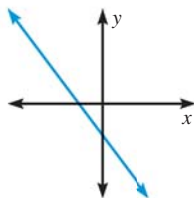**For Your Notebook**

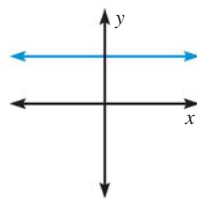## Classification of Lines by Slope

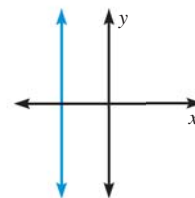| A line with positive slope ($m > 0$) *rises* from left to right.	A line with negative slope ($m < 0$) *falls* from left to right.	A line with zero slope ($m = 0$) is *horizontal.*	A line with undefined slope is *vertical.*

RATE OF CHANGE A **rate of change** compares a change in one quantity to a change in another quantity. For example, if you are paid $60 for working 5 hours, then your hourly wage is $12 per hour, a rate of change that describes how your pay increases with respect to time spent working.

EXAMPLE 5   **Find a rate of change**

INTERNET CAFE The table shows the cost of using a computer at an Internet cafe for a given amount of time. Find the rate of change in cost with respect to time.

Time (hours)	2	4	6
Cost (dollars)	7	14	21

Solution

ANALYZE UNITS
Because the cost is in dollars and time is in hours, the rate of change in cost with respect to time is expressed in dollars per hour.
.

$$\text{Rate of change} = \frac{\text{change in cost}}{\text{change in time}}$$

$$= \frac{14 - 7}{4 - 2} = \frac{7}{2} = 3.5$$

▶ The rate of change in cost is $3.50 per hour.

✓ **GUIDED PRACTICE**   **for Example 5**

7. **EXERCISE** The table shows the distance a person walks for exercise. Find the rate of change in distance with respect to time.

Time (minutes)	Distance (miles)
30	1.5
60	3
90	4.5