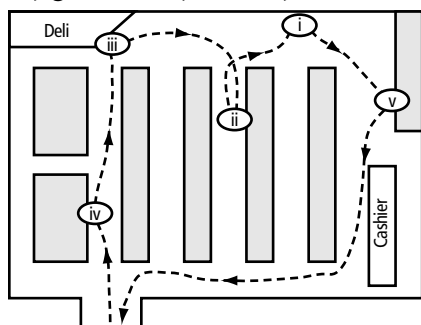


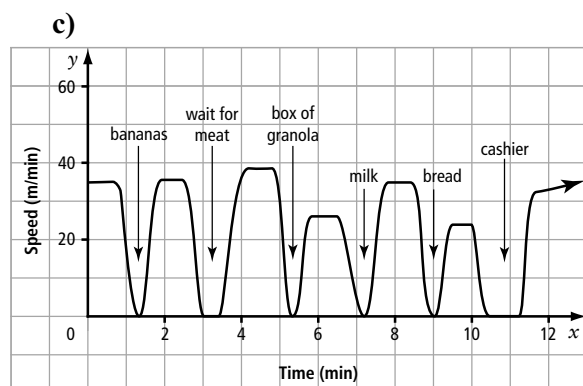
## Chapter 6 Review

### 6.1 Graphs of Relations

1. a) items: i) bananas, ii) deli ham, iii) granola, iv) milk, v) bread



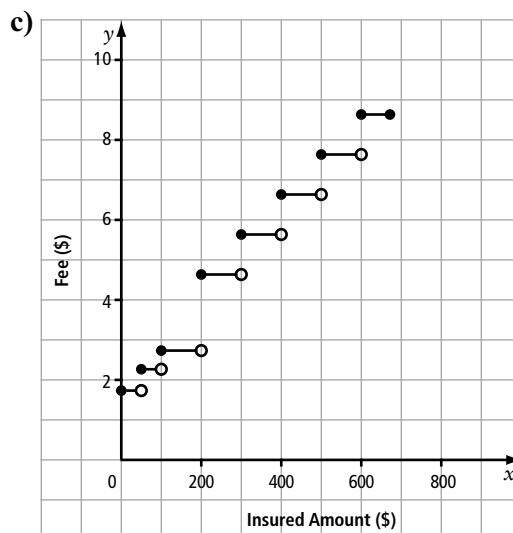
- b) For speed, use either metres per minute or feet per minute. Time would best be measured in minutes.



2. a) Example: mile 0 to approximately mile 3, the cyclist would face a long, steep climb and then would go downhill steeply for almost 2 miles; mile 15 to mile 20 might be a rolling portion of the ride, with short climbs and descents  
b) Example: easiest portion: mile 23 to mile 28, where the riding is flat, with no elevation gain; most difficult: mile 0 to mile 8, where there are a series of steep climbs and descents

### 6.2 Linear Relations

3. a) Discrete. The number will always be a whole number. The numbers between have no meaning.  
b) Continuous. Time increases constantly. The player could have any number of minutes and seconds.  
c) Discrete. The number is always countable. Again, numbers between have no meaning.
4. a)  $\text{fee charged} = f(\text{fee})$   
insured amount =  $v$  (value)  
The insured amount would be the independent variable, as the fee depends on the value shipped.
- b) Non-linear. The fees do not rise in a pattern. Some sections are linear, going up by \$1.00 for each \$100 increase in value; others don't change by that same amount.



### 6.3 Domain and Range

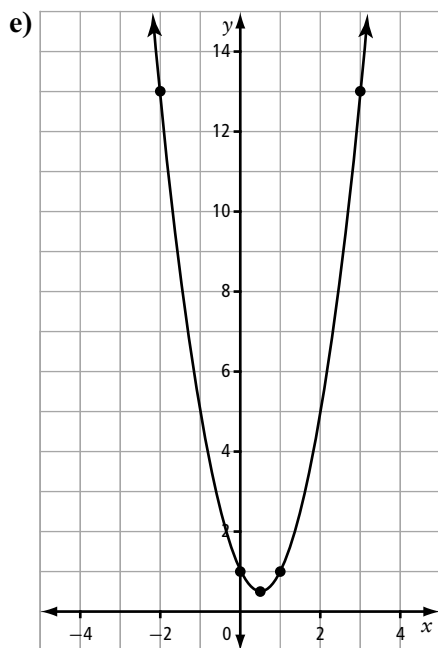
5. a)  $D = \{0, 3, 5\}$ ;  $R = \{-7, 5, -4, 0, 11\}$   
b) Factors of 10 are  $D = \{1, 2, 5, 10\}$ ;  
Answers are  $R = \{10, 5, 2, 1\}$

Set Notation	Interval Notation
$\{x \mid 3 < x < 7\}$	$(3, 7)$
$\{x \mid -5 \leq x \leq 0\}$	$[-5, 0]$
$\{x \mid -13 < x \leq 27\}$	$(-13, 27]$
$\{x \mid x \leq 5\}$	$(-\infty, 5]$

7. a)  $D = \{x \mid -5 \leq x \leq 1\}$ ;  
 $R = \{y \mid -4 \leq y \leq 1\}$   
 b)  $D = \{x \mid 1 \leq x < 6\}$ ;  
 $R = \{y \mid -5 < y < 1\}$

#### 6.4 Functions

8. a)  $f(0) = 1$   
 b)  $f(-1) = 5$   
 c)  $f(3) = 13$   
 d) Different domain values giving the same range value still defines a function. It is when the same input value produces 2 different outcomes that a relation is then not a function.



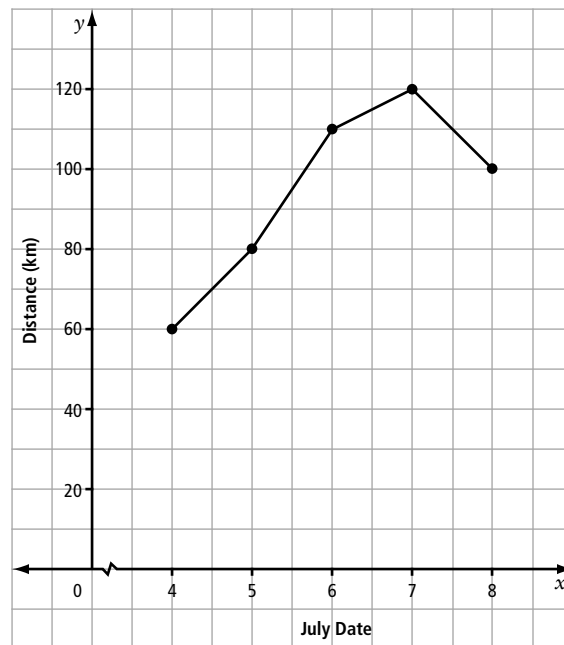
It passes the vertical line test because a vertical line passes through only one point on the graph.

9. a)  $V(s) = s^3$ ;  $V(r) = (4/3)\pi r^3$ .  
 b)

Side Length of Cube	Volume of Cube	Volume of Sphere Inside
10 cm	1000 cm <sup>3</sup>	523.6 cm <sup>3</sup>
20 cm	8000 cm <sup>3</sup>	4188.8 cm <sup>3</sup>
30 cm	27 000 cm <sup>3</sup>	14 137 cm <sup>3</sup>
40 cm	64 000 cm <sup>3</sup>	33 510 cm <sup>3</sup>

#### 6.5 Slope

10. a)  $-\frac{5}{9}$ ; negative  
 b)  $\frac{4}{3}$ ; positive  
 c)  $-\frac{12}{1}$ ; negative  
 11. a)



- b) The four slopes are  $+\frac{20}{1}$ ,  $+\frac{30}{1}$ ,  $+\frac{10}{1}$ , and  $-\frac{20}{1}$ .  
 c) These slope values show the rate of increase in daily distance from one day to the next.  
 d) A negative slope means that he didn't increase his daily distance, but decreased it instead.