

Notes: T3-44 Equation Intervals

Formulas:  $m = \frac{\text{rise}}{\text{run}} = \frac{y - y_1}{x - x_1}$

$y = mx + b$

$y - y_1 = m(x - x_1)$

Table

Driveways Shoveled	Profit (dollars)
0	-20
1	-12
2	-4
3	4
4	12
5	20
6	28

Equation

Write the equation of the line using the given points.

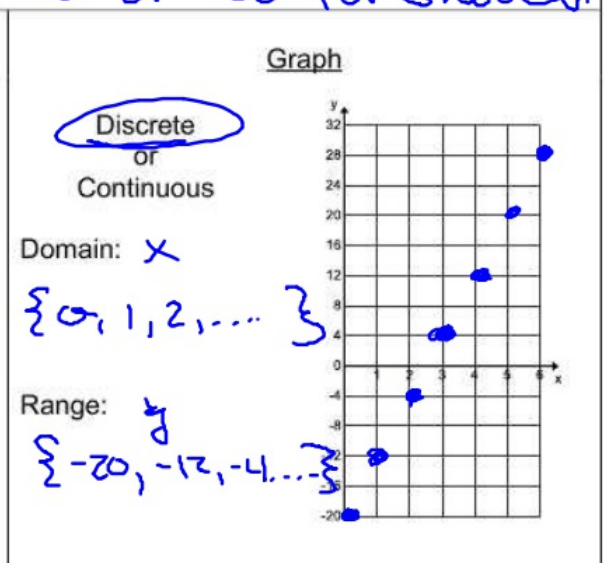
$m = \frac{\Delta y}{\Delta x} = \frac{24}{3} = \frac{8}{1}$

$b: -20$

What is the slope and what does it mean?  
 $m = 8$  earn \$8 for each driveway

What is the y-intercept and what does it mean?  
 $b = -20$  or \$20 for shovel.

Context



$f(x) = 8x - 20$

Function Notation

What is the value of  $f(12)$  and what does it mean?

$f(12) = 8(12) - 20$   
 $= 96 - 20$   
 $= 76$

What is the value of  $f(20)$  and what does it mean?

$f(20) = 8(20) - 20$   
 $= 160$

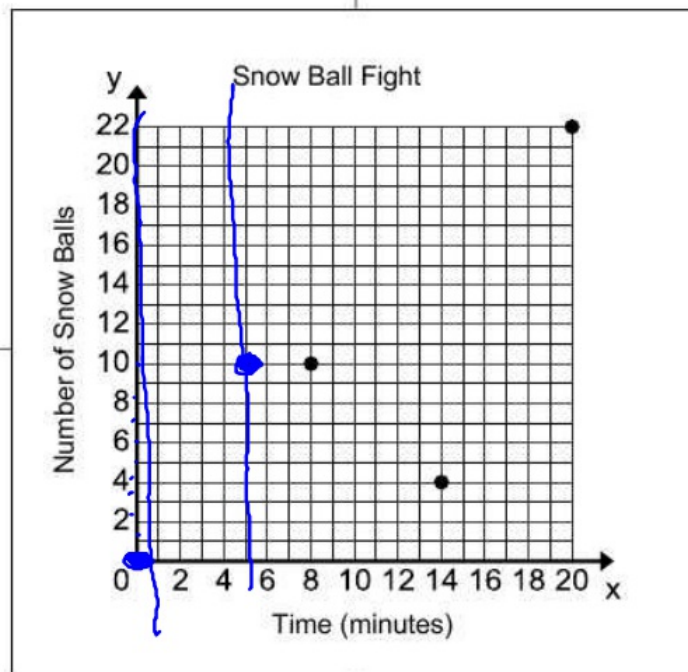
What  $x$ -value makes  $f(x) = 100$  true?

$100 = 8x - 20$   
 $+20 \quad +20$   
 $120 = 8x$   
 $\frac{120}{8} = \frac{8x}{8}$   
 $15 = x$

Find the slope at each domain interval and explain what it means for the situation. Then write the equation of the line at the given domain interval.

D:  $[0, 5]$   $\Rightarrow m = \frac{10}{5} = \frac{2}{1} = 2$

D:  $[5, 8]$



D:  $[8, 14]$

D:  $[14, 20]$

Formulas:  $m = \frac{\text{rise}}{\text{run}} = \frac{y - y_1}{x - x_1}$        $y = mx + b$        $y - y_1 = m(x - x_1)$

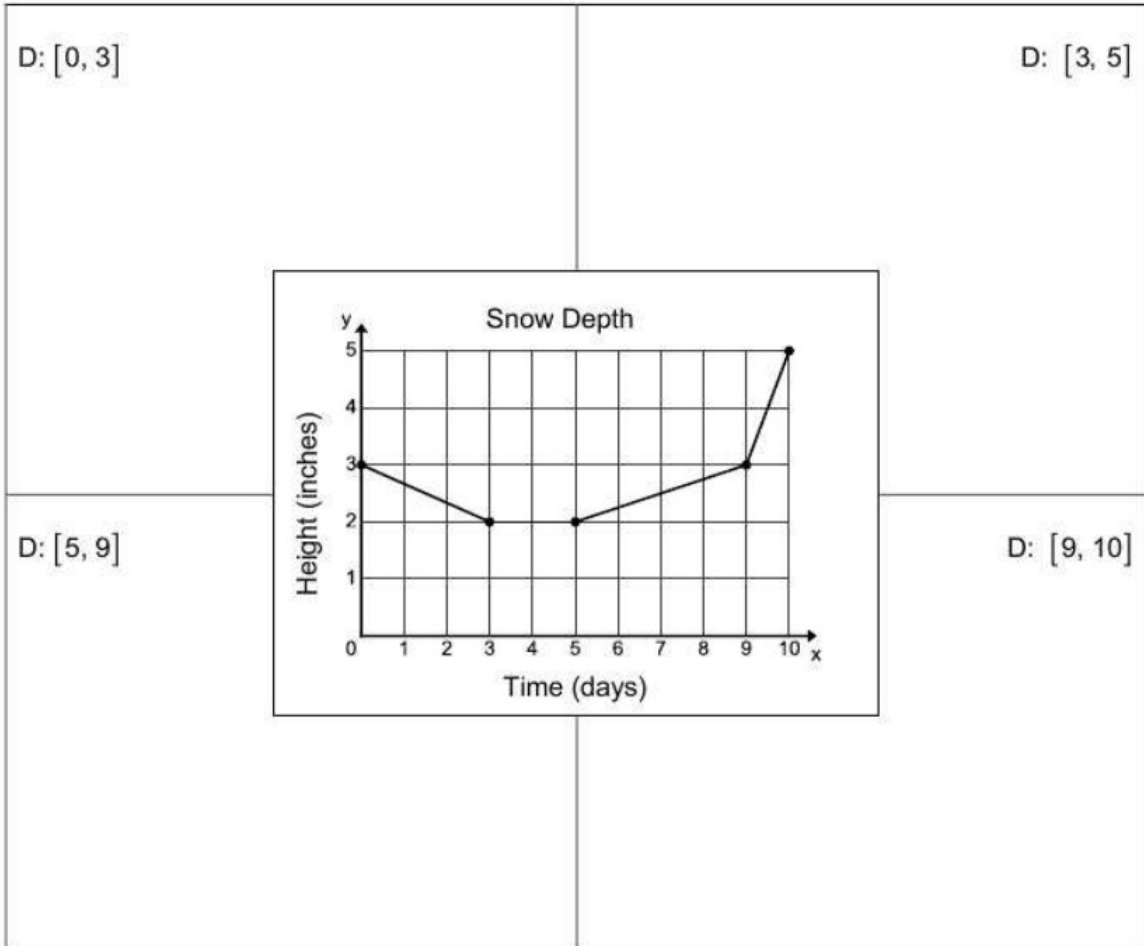
<u>Table</u>	<u>Equation</u>														
<table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">Time (minutes)</th> <th style="padding: 5px;">Driveways Shoveled</th> </tr> </thead> <tbody> <tr><td style="padding: 5px;"> </td><td style="padding: 5px;"> </td></tr> <tr><td style="padding: 5px;">20</td><td style="padding: 5px;">1</td></tr> <tr><td style="padding: 5px;"> </td><td style="padding: 5px;"> </td></tr> <tr><td style="padding: 5px;"> </td><td style="padding: 5px;"> </td></tr> <tr><td style="padding: 5px;">100</td><td style="padding: 5px;">5</td></tr> <tr><td style="padding: 5px;"> </td><td style="padding: 5px;"> </td></tr> </tbody> </table>	Time (minutes)	Driveways Shoveled			20	1					100	5			<p style="text-align: center;">Write the equation of the line using the given points.</p> <p style="text-align: center;">What is the slope and what does it mean?</p> <p style="text-align: center;">What is the y-intercept and what does it mean?</p>
Time (minutes)	Driveways Shoveled														
20	1														
100	5														

<u>Context</u>	<u>Graph</u>
<p style="text-align: center;">Discrete or Continuous</p> <p>Domain:</p> <p>Range:</p>	

Function Notation

What is the value of  $f(30)$  and what does it mean?      What is the value of  $f(160)$  and what does it mean?      What  $x$ -value makes  $f(x) = 10$  true?

Find the slope at each domain interval and explain what it means for the situation. Then write the equation of the line at the given domain interval.



Use the map of Washington D.C. to answer the questions below. Research the underlined words to answer the questions.

- Which building is a corresponding angle with the National Zoo?
- Which building is an alternate exterior angle with the Supreme Court?
- Which buildings form a linear pair with the US Treasury?
- Which building is a consecutive interior angle with Ford's Theater?

