

Notes: T3-43 Four Representations

Review:

Linear Equation:

$$y = mx + b$$

$$f(x) = mx + b$$

****Remember $y =$ and $f(x) =$ are essentially the same thing!****

Evaluating a function:

Given $f(x) = 4x - 7$, find the value when $x = 3$

(Handwritten: $y = 4x - 7$)

$$f(3) = 4(3) - 7$$

$$= 12 - 7$$

$$f(3) = 5$$

For $f(x) = 4x - 7$, What is the value of x when $f(x) = 33$? *answer is 33*

$$33 = 4x - 7$$

$$\begin{array}{r} +7 \\ \hline 40 = 4x \\ \hline \frac{40}{4} = \frac{4x}{4} \end{array} \quad x = 10$$

Given $f(x) = \frac{1}{2}x + 3$, find the value of when $x = -10$

$$f(-10) = \frac{1}{2}(-10) + 3$$

$$= -5 + 3$$

$$f(-10) = -2$$

For $f(x) = \frac{1}{2}x + 3$, What is the value of x when $f(x) = 63$?

$$63 = \frac{1}{2}x + 3$$

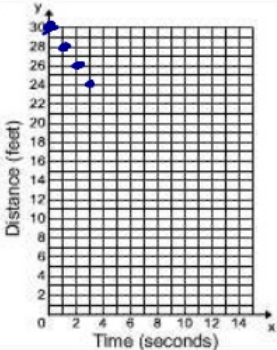
$$\begin{array}{r} -3 \\ \hline 60 = \frac{1}{2}x \\ \hline 120 = x \end{array}$$

Directions: In each of the following problems, you are given one of the representations of a linear function. Complete the remaining 3 representations and answer the questions.

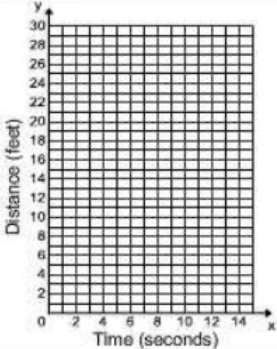
1.

Context	Table	Questions																																
<p>You and your friends go to the state fair. It costs \$5 to get into the fair and \$3 each time you go on a ride</p>	<table border="1"> <thead> <tr> <th>Δx</th> <th>x</th> <th>y</th> <th>Δy</th> </tr> </thead> <tbody> <tr> <td></td> <td>0</td> <td>5</td> <td></td> </tr> <tr> <td>\downarrow</td> <td>1</td> <td>8</td> <td>+3</td> </tr> <tr> <td>\downarrow</td> <td>2</td> <td>11</td> <td>+3</td> </tr> <tr> <td>\downarrow</td> <td>3</td> <td>14</td> <td>+3</td> </tr> <tr> <td>\downarrow</td> <td>4</td> <td>17</td> <td></td> </tr> <tr> <td></td> <td>5</td> <td>20</td> <td></td> </tr> <tr> <td></td> <td>6</td> <td>23</td> <td></td> </tr> </tbody> </table>	Δx	x	y	Δy		0	5		\downarrow	1	8	+3	\downarrow	2	11	+3	\downarrow	3	14	+3	\downarrow	4	17			5	20			6	23		<p>a) <u>discrete</u> or continuous</p> <p>b) domain [0, 1, 2, 3, ...]</p> <p>c) range [5, 8, 11, ...]</p> <p>d) What is the value at $f(10)$? $f(10) = 3(10) + 5$ $f(10) = 35$</p> <p>e) What is the value at $f(15)$? $f(15) = 3(15) + 5$ $= 50$</p> <p>f) What x-value makes $f(x) = 41$ true? <i>answer</i> $41 = 3x + 5$ $\begin{array}{r} -5 \\ \hline 36 = 3x \\ \hline \frac{36}{3} = \frac{3x}{3} \end{array} \quad x = 12$</p>
Δx	x	y	Δy																															
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<p><u>Graph</u></p>	<p>Rate of Change (Slope): $m = \frac{\Delta y}{\Delta x} = \frac{3}{1} = 3$</p> <p>Start Point (y-intercept): $b = 5$</p> <p>Equation: $y = 3x + 5$ $f(x) = 3x + 5$</p>																																	

2.

<p><u>Context</u></p>	<p><u>Table</u></p> <table border="1"> <tr> <td>x</td> <td>y</td> </tr> <tr> <td>0</td> <td>30</td> </tr> <tr> <td>1</td> <td>28</td> </tr> <tr> <td>2</td> <td>26</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </table>	x	y	0	30	1	28	2	26									<p><u>Questions</u></p> <p>a) discrete or continuous</p> <p>b) domain</p> <p>c) range</p> <p>d) What is the value at $f(7)$?</p>
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<p><u>Graph</u></p> 	<p><u>Rate of Change:</u></p> <p>$m = -2$</p> <p><u>Start Point (y-intercept):</u></p> <p>$b: 30$</p> <p><u>Equation:</u> $f(x) = -2x + 30$</p>	<p>e) What is the value at $f(11)$?</p> <p>f) What x-value makes $f(x) = -10$ true?</p>																

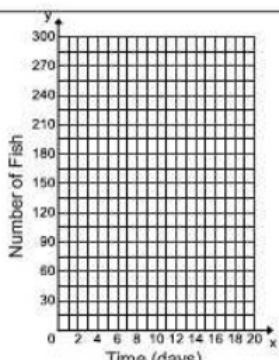
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<p><u>Context</u></p>	<p><u>Table</u></p> <table border="1"> <tr> <td>0</td> <td>6</td> </tr> <tr> <td>3</td> <td>12</td> </tr> <tr> <td>6</td> <td>18</td> </tr> <tr> <td>9</td> <td>24</td> </tr> <tr> <td>12</td> <td>30</td> </tr> </table>	0	6	3	12	6	18	9	24	12	30	<p><u>Questions</u></p> <p>a) discrete or continuous</p> <p>b) domain</p> <p>c) range</p> <p>d) What is the value at $f(4)$?</p>
0	6											
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<p><u>Graph</u></p> 	<p><u>Rate of Change:</u></p> <p><u>Start Point (y-intercept):</u></p> <p><u>Equation:</u></p>	<p>e) What is the value at $f(40)$?</p> <p>f) What x-value makes $f(x) = 66$ true?</p>										

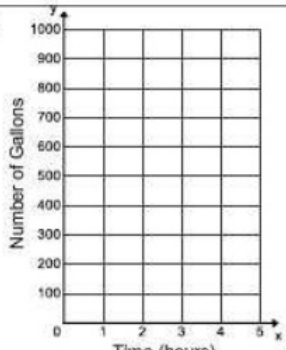
WS: T3-43 Four Representations

Directions: In each of the following problems, you are given one of the representations of a linear function. Complete the remaining 3 representations and answer the questions.

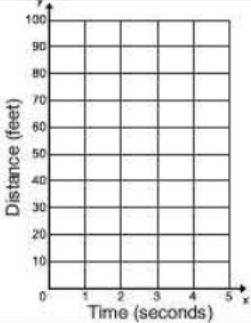
1.

<p><u>Context</u></p> <p>There are 300 fish in a pond. A crocodile is loose in the pond and is eating the fish. Each day the crocodile eats 15 fish.</p>	<p><u>Table</u></p> <table border="1" style="width: 100%; height: 60px; border-collapse: collapse;"> <tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> </table>																	<p><u>Questions</u></p> <p>a) discrete or continuous</p> <p>b) domain</p> <p>c) range</p> <p>d) What is the value at $f(12)$?</p>
<p><u>Graph</u></p> 	<p><u>Rate of Change:</u></p> <p><u>Start Point (y-intercept):</u></p> <p><u>Equation:</u></p>	<p>e) What is the value at $f(20)$?</p> <p>f) What x-value makes $f(x) = 225$ true?</p>																

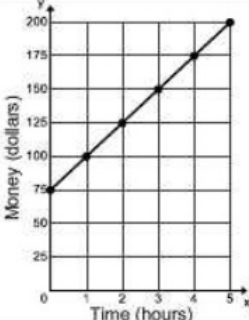
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<p><u>Context</u></p>	<p><u>Table</u></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Time (hours)</th> <th style="text-align: center;">Water (gallons)</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">0</td><td style="text-align: center;">1000</td></tr> <tr><td style="text-align: center;">1</td><td style="text-align: center;">800</td></tr> <tr><td style="text-align: center;">2</td><td style="text-align: center;">600</td></tr> <tr><td style="text-align: center;">3</td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> </tbody> </table>	Time (hours)	Water (gallons)	0	1000	1	800	2	600	3						<p><u>Questions</u></p> <p>a) discrete or continuous</p> <p>b) domain</p> <p>c) range</p> <p>d) What is the value at $f(2.5)$?</p>
Time (hours)	Water (gallons)															
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<p><u>Graph</u></p> 	<p><u>Rate of Change:</u></p> <p><u>Start Point (y-intercept):</u></p> <p><u>Equation:</u></p>	<p>e) What is the value at $f(4)$?</p> <p>f) What x-value makes $f(x) = 250$ true?</p>														

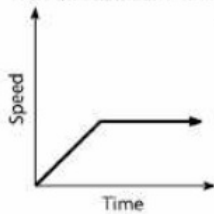
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<p><u>Graph</u></p> 	<p><u>Rate of Change:</u></p> <p><u>Start Point (y-intercept):</u></p> <p><u>Equation:</u> $f(x) = 5x + 50$</p>	<p>e) What is the value at $f(15)$?</p> <p>f) What x-value makes $f(x) = 200$ true?</p>														

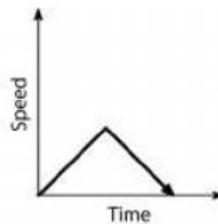
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<p><u>Context</u></p>	<p><u>Table</u></p> <table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>															<p><u>Questions</u></p> <p>a) discrete or continuous</p> <p>b) domain</p> <p>c) range</p> <p>d) What is the value at $f(3.75)$?</p>
<p><u>Graph</u></p> 	<p><u>Rate of Change:</u></p> <p><u>Start Point (y-intercept):</u></p> <p><u>Equation:</u></p>	<p>e) What is the value at $f(10)$?</p> <p>f) What x-value makes $f(x) = 275$ true?</p>														

5. Write the context for each graph



Context:



Context: