

Warmup

Ked is saving up money for a car to impress his friend Monica. He starts with \$450 in the account and puts in \$75 every month.

Write an equation that represents the amount of money Ked has at the the beginning of the saving process.

$$y = 450 + 75x$$

Evaluate $f(10)$

$$1200 \quad 450 + 75(10)$$

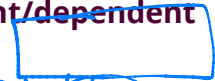
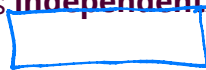
What does $f(10)$ represent in context?

In 10 months, Ked will have \$1200 saved.

Pick the correct word:

x represents **independent/dependent**

y represents **independent/dependent**



DKI O'S ROYD

What are two things you know that make a relationship a function?

- * Passes vertical line test
- * No repeating x-values

3.7 To Function or Not to Function

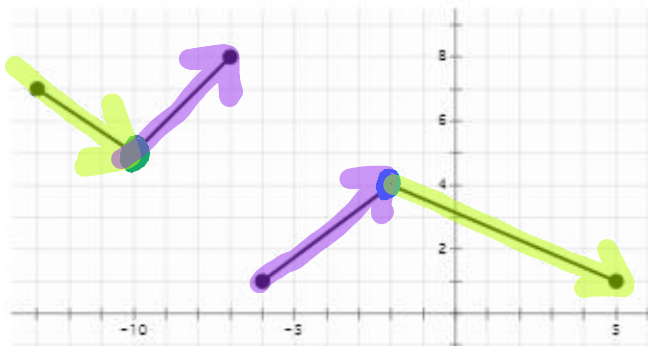
A Practice Understanding Task



Independent – x values (DOMAIN)
 Dependent – y values (RANGE)

Identify the two variables for each situation and determine which is independent and which is dependent. Then, determine if the relationship is a function and justify your reasoning.

<p>1. A person's name versus their social security number.</p> <p>Indep – name Dep – SS# Not a func → one name has multiple #s</p>	<p>2. A person's social security number versus their name.</p> <p>Indep – SS# Dep – name Func – one SS# to one name</p>	<p>3. The cost of gas versus the amount of gas pumped.</p> <p>Indep – cost Dep – Amt pumped Function unless cost changes up or Down</p>	<p>10. The size of the radius of a circle dependent on the area.</p> <p>Ind – Area Dep – Radius Func → one area gives you one Radius</p>	<p>11. Students letter grade dependent on the percent earned.</p> <p>Ind – % Dep – Letter Grade Func → % goes with one letter</p>												
<p>4. { (3,6), (4, 10), (8,12) }</p> <p>Indep: 3, 4, 8 Dep: 6, 10, 12 Func – no x values repeat</p>	<p>5. The temperature in degrees Fahrenheit with respect to the time of day.</p> <p>Indep – Time Dep – Temp Function – no repeating time</p>	<p>6.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Indep</th> <th>Dep</th> </tr> <tr> <th>distance</th> <th>days</th> </tr> </thead> <tbody> <tr> <td>6</td> <td>2</td> </tr> <tr> <td>10</td> <td>4</td> </tr> <tr> <td>6</td> <td>5</td> </tr> <tr> <td>9</td> <td>8</td> </tr> </tbody> </table> <p>Not – x repeats</p>	Indep	Dep	distance	days	6	2	10	4	6	5	9	8	<p>12. The length of fence needed with respect to the amount of rectangular area to be enclosed.</p> <p>Ind – Fence Dep – area Not a function – same fencing can give diff. areas</p>	<p>13. The explicit formula for the recursive situation below: $f(1) = 3$ and $f(n + 1) = f(n) + 4$</p>
Indep	Dep															
distance	days															
6	2															
10	4															
6	5															
9	8															
<p>7. The area of a circle as it relates to the radius.</p> <p>Ind – radius Dep – Area Func – one radius goes with one area</p>	<p>8.</p> <p>Indep: 3, 5, 7 Dep: 5, 9 Func – no repeat x values</p>	<p>9. The volume of water in a given cylinder is dependent on the height of water in cylinder.</p> <p>Ind – Height Dep – Volume Func → one height goes one Volume</p>	<p>14. If x is a rational number, then $f(x) = 1$ If x is an irrational number, then $f(x) = 0$</p>	<p>15. The national debt with respect to time.</p> <p>Ind: time \$ Dep: debt Function: time does not repeat</p>												



Continuous or discontinuous? *not attached to each other*

What is the domain (independent)?

$$[-13, -7] \cup [-6, 5]$$

What is the range (dependent)?

$$[1, 4] \cup [5, 8]$$

What is the relative max? (peak)

$$(-2, 4)$$

What is the relative min? (valley)

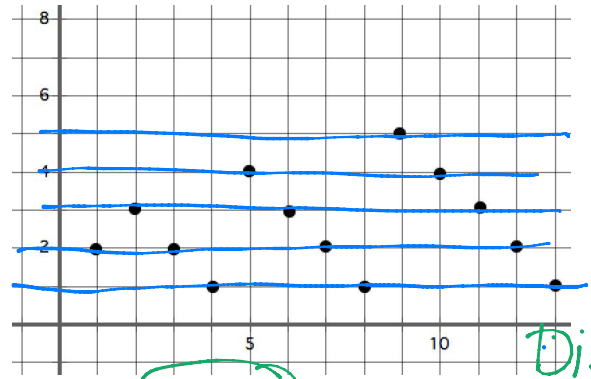
$$(-10, 5)$$

Increasing intervals:

$$(-10, -7) \quad (-6, -2)$$

Decreasing intervals:

$$(-13, -10) \quad (-2, 5)$$



Continuous or discontinuous?

Discrete

What is the domain (independent)?

$$\{1, 2, 3, 4, 5, \dots, 13\}$$

What is the range (dependent)?

$$\{1, 2, 3, 4, 5\}$$

****Function or not a function?** Remember, if the X-VALUE repeats, it is **NOT A FUNCTION!**

These are called mappings – they map one value onto the other

